European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.1490525 Volume 5 | Issue 6 | 2018

SCIENCE AND TECHNOLOGY OF EDUCATION: PANACEA FOR ENSURING PEACE, NATIONAL UNITY AND SUSTAINABLE DEVELOPMENT IN THE 21ST CENTURY NIGERIA

Akpokiniovo, Samuel Rukevwe[i]
Department of Science Education,
Delta State University, Abraka,
Nigeria

Abstract:
Education is the primary agent of transformation towards peace, national unity and sustainable development since it increases people's capacities to transform their visions into reality. The current shift in science and technology curricula objectives reflecting on self centred learning is a radical departure from the traditional emphasis on sustainable development product approach. This new trend requires that both the school community and education stakeholder should be actively involved in the pursuit of science and technology of education through adequate and meaningful hands-on-activities during every classroom instruction in science and technology. The 21st century Nigeria is witnessing rapidly changing developments in information, science and technology in all walks of life. To cope with these developments, we have to adopt and pave way scientific and technological experiments that will foster peace, national unity and sustainable development. In line with this context, the paper advocates the implementation of the Science and Technology of Education to ensure the optimum attainment for peace, national unity and sustainable development in Nigeria. In a bid to actualize this, the paper x-rayed the concept of science and technology education, the concept of peace, national unity and sustainable development, the state of Science and Technology in the 21st century Nigeria, the importance of science and technology education to peace, national unity and sustainable development, issues affecting Science and Technology Education in the 21st century Nigeria and the way to foster peace, national unity and sustainable development in Nigeria through science and technology of education.

Keywords: science, technology, peace, national unity, sustainable development

[i] Correspondence: email samuelakpokiniovo@gmail.com

1. Introduction

Education is the primary agent of transformation towards peace, national unity and sustainable development since it increases people's capacities to transform their visions into reality. Education not only provides scientific and technical skills, it also provides the motivation, justification and social support for pursuing and applying them. The international community now strongly believes that we need to foster, through education, the values, behaviour and lifestyles required for peace, national unity and sustainable future (Akpokinivo, 2017). The current shift in emphasis in science and technology curricula objectives reflecting on self-centred learning is a radical departure from the traditional emphasis on sustainable development product approach. This new trend requires that both the school community and education stakeholder should be actively involved in the pursuit of science and technology of education through adequate and meaningful hands-on-activities during every classroom instruction in science technology. While science is the bedrock of all technological advancement, the scientific feat has turned the world into a global village and turned those who are not technologically advanced to mere pawns in the game of survival thereby bringing disunity and backwardness in the 21st Nigeria (Akpokiniovo and Agboghoroma, 2016).

The 21st century Nigeria is witnessing rapidly changing developments in information, science and technology in all walks of life. To cope with these developments, we have to adopt and pave way for proper teaching methods for applied subjects requiring scientific and technological experiments that will foster peace, national unity and sustainable development. This perspective should be firmly established in the minds of curriculum designers and educational decision-makers, especially when they design, develop the curricula, and consider activities and experiments related to science and technology, bearing in mind that this may promote peace, national unity and sustainability. This paper therefore x-rays importance of science and technology of education in promoting peace, national unity and sustainable development.

2. Concept of Science and Technology

According to the Concise Oxford Dictionary, Science is referred to as the pursuit of systematic and ordered knowledge that promote growth. While the Science Teachers Association of Nigeria, STAN (2010), view science as part of human culture and social institution, the world over are products of science and their application to practical situation are clearly evident and shown around us. There seems to be no review of science without mentioning its societal functions to humans, as no man seems to be healthy without the application of science. However, Brown (1980) as cited by Brown (2015) sees science as a process of social activity in which man seek to discover and understand the natural world not as we would prefer to imagine it as it really is.

We live in a world where science has taken a predominant role, permeates our lives and inform our actions. Science is a body of empirical, theoretical and practical

knowledge about the natural world produced by consistent and cumulative process which emphasizes observation, explanation and prediction of real world phenomena using experiments (Mishra and Yadav, 2013). Brown (2015) also view science as some form of organized knowledge on which we can ascribe a sort of prescribed esoteric procedure for unraveling its nature and maintained that the term science cannot be used without associating it with technology for better implementation.

Technology can be seen as an integrating activity, which is linked to different disciplines. Technology has both practical and experimental element, this goes beyond fusing on the qualitative and the quantitative aspects of designing that will foster peace but also promote national unity and sustainable development. It is through this activity in technology that various educationist and researchers has fashioned our world and determined much of our quality of life (Brown, 2015). However, Inomiesa (2010) sees technology from three perspectives: as an artefact or article, e.g., a computer, abacus, laser beam or stone axe, as progress, that is the application of knowledge and skills in solving practical problems, which is the knowledge and skill applied in using artifacts and processes. Science and Technology education can be looked at as a human activity related to social, economic and political welfare, a focus on a window for looking at many different issues like social change.

Science and technology is the parameter upon which the development of any nation is measured today. One major characteristics of the Nigerian school system is the emphasis placed on science programmes. Children are expected to acquire scientific skills and attitudes as well as the main objectives of secondary school science programme which include acquisition of relevant knowledge with understanding, ability to handle and process information and problem solving via acquired knowledge, experimental skills and scientific investigation that can foster peace, national unity which can lead to sustainable development (Olorundare, 2011; Agboghoroma, 2009). Thus, the term "science and technology education" portray a somewhat symbiotic relationship. A definition of education is therefore necessary so as to marry them together. Education is a basic social and human need. Without it or with inadequate education, national development is inconceivable. Therefore, the nature or quality of science and technology education can be judged only with reference to its enabling education to fulfill personal and social aspirations that will promotes peace, national unity and sustainable development.

2.1 Concept of Peace, National Unity and Sustainable Development

Peace is a process and way of life, which promotes personal and national unity; the absence of conflict result to peace. In other words, when there is mutual understanding between two or more persons, there is bound to be peace. But Ajala (2008) as cited by Akpochafo (2015) noted that peace means more than the absence of conflict, since peace must include many situations that will guarantee positive human conditions. Peace involves cooperation and non-violent attitudes which is aimed at creating more equitable and just structures in any society. Furthermore, Oleh (2013) also believe that peace is a state of harmony that is characterized by lack of violence and conflict

behaviour that is essential for healthy living, good neighbourliness that foster National unity.

The military government of Nigeria established the National Youth Service Corps (NYSC) in May 1973 as a means of enlisting the energies and talents of its educated young people in struggle for national unity. Henceforth, Nigeria graduates of Universities and Polytechnic (and starting in 1975, of Advanced Teachers Training Colleges) were required to spend one year in service to their country. This will help in actualizing the dream of national unity. The meaning of national unity has been discussed at great length in the scholarly literature, with little in the way of agreement on key terms. National unity has been the focal point of much political conflict and activity in Nigeria as groups and leaders have sought to fashioned and acceptable definition of the Nigerian nation. Thus, national unity is the harmonization of different cultures and ethnic group to see the oneness and pain of their love ones as their own pain. This could bring about peace and will lead to sustainable development (Akpokiniovo and Akpokinivo, 2015).

For better understanding of sustainable development, there is need to discuss separately what development is. Researchers from divers view have given so many definitions to the term development. However, from all their views one thing that comes to mind in the area of development is "progress" as various researchers could not overhaul development with contextualizing progress to it. According to Igbuzor (2009), development is making progress that could lead to good change manifested in so many areas. Some of the areas include but not limited to: increased capacity of people to have control over material assets; intellectual resources and ideology; being able to obtain physical necessities of life (food, clothing and shelter), employment, equality, participation in government, political and economic independence, adequate education, gender equality, sustainable development and peace. The World Bank (2003) as cited by Akpokiniovo and Akpokiniovo (2015) sees sustainable development to mean the ability to meet the needs of the present without compromising the ability of the future generations to meet their own needs. In same vein, sustainable national development can be seen as a process of improving the range of opportunities that will enable people to achieve their aspirations and full potential over a period of time while maintaining the resilience of economic, social and environmental systems. Basically, it involves a knowledge base which revolves round three basic concepts which are the economy, the environment, and the society. The members of a society are financially empowered and responsible not to damage the environment so that our children's future is not compromised (McKeown, 2002).

Peace, national unity and sustainable development education is the type of studies that essentially inculcates discipline in people. It is that course that teaches the past and present conflicts or wars noting the cause(s), the effects and recommendations towards averting such social ills. It also teaches the expectations of citizens in general, and more specifically, the duties, roles, obligations, activities of individual leaders and followers to see the pain of their fellow citizen as their own pain. Thus, Science and technology of education is the heart of human progress. Its economic and social

prosperity in the 21st century depend on the ability of nations to educate all members of their societies to thrive in a rapidly changing world.

2.2 The State of Science and Technology in the 21st Century Nigeria

The 21st century is an era of high taste in technology; this era is characterized with rapid technological advancement and security challenges, research as well as societal changes. It is also an era where the economy is now resting on high level of technology that is driven by information and technological knowledge that required rapid learning. The 21st century is an era even farmers now check oil moisture from their hand-held computers, even the mechanic now check for problems in the car with their hand-held computers, however, there seems to be a downtrodden in science and technology.

Nigeria is making some contributions to the development of Science and Technology, but we are underperforming, relative to our abundant human capital. According to NEPAD's African Innovation Outlook (2010), South Africa produced over 86,000 scientific papers – about 37 percent of the total research output of 19 African countries surveyed between 1990 and 2009; Egypt produced nearly 60,000 – about 27 percent of output. Nigeria produced 27,743 papers (or 12 percent of the total output) – about one-third of South Africa's output. But a worrying finding is that the productivity growth of Nigeria's scientific research is the second-lowest of the 19 countries. Even though our scientists doubled their productivity in the period 2005 to 2009 relative to output between 1990 and 1994, other African countries like Algeria and Uganda saw their productivity increase by a factor of 6.3 and 5.4 respectively. To put things in perspective, countries like Brazil and Malaysia saw productivity rise by a factor of above 100.

Similarly, South Africa was able to secure more than 1,000 patents in 2010 alone, according to data obtained from the World Intellectual Property Organization (WIPO); whereas, Nigeria secured only 18 patents in the last 8 years. This is unbelievably low. Egypt and Kenya got 604 and 49 patents, respectively, over the same period. I know that Nigerian scientists are making progress, sending our own satellite into orbit. I am also aware of developments in medical science, such as drugs used in combating sickle cell and other diseases; but a majority of these remain at the formative stages and do not become mainstream to peace, national unity and sustainable development.

2.3 Why Science and Technology Education for Peace, National Unity and Sustainable Development in the 21st Century Nigeria?

The role of Science and technology of education for peace, national unity and sustainable development in the 21st century Nigeria cannot be over emphasized, in the MDGs, issues of science and technology have focused predominantly on access to essential medicines (particularly for the treatment of HIV/AIDS) and on internet connectivity and the related spread of communication technologies (ICTs). The favoured approach has been through needs assessment and targeted capacity building. However, delivering on the full range of amenities which underpin the MDG agenda, including, inter alia, environmental protection, the containment of health epidemics,

mitigating climate change, requires access to a range of appropriate technologies. Much of the required technology is already available in the public domain but accessing and linking them to the required knowledge and skills within countries is neither automatic nor costless. It calls for investments in dynamic capabilities, particularly those that shape the ability of national stakeholders to uptake and absorb technologies and make improvements in line with local circumstances. This is not a one-way process.

Science and Technology of Education in this 21st century equally helps to bring information; action and international education. UNESCO (2000) stresses that education should include critical analysis of the adequate information and contemporary factors of an economic and political nature underlying the contradictions and tensions between countries together with the study of ways of overcoming these contradictions, which are the real impediments to understanding true international co-operation and the development of world peace, national unity and sustainable development.

Some level of technological capabilities in countries is critical to ensure the provision of these amenities to all. At the same time, the critical importance of such amenities spans beyond individual countries or regions. In such a case, the international community as such, has a collective responsibility to ensure the provision of these goods (Stiglitz, 2007) Within the UN Framework Convention on Climate Change, the new Technology Mechanism established by the Cancun Agreements in December 2010 represents a move towards a more 'dynamic' arrangement by fostering public-private partnerships; promoting innovation; catalyzing the use of technology road maps or action plans; mobilizing national, regional and international technology centres and network; and facilitating joint R&D activities. Scaling-up and extending this kind of approach will be a central part of the post- 2015 global partnership.

In addition to the role science and technology education in providing global public goods, science and technology of education serves as a crucial driver of rising prosperity and improved national competitiveness. However, because technological knowledge and skills are cumulative, first mover advantages have created a very uneven global landscape. Connecting local technological needs to international technological opportunities is a particular challenge for many developing countries. Science and Technology education include, inter alia, political stability and well functioning institutions, an educated workforce; sound research and education infrastructure and linkages between public and private innovation actors; enterprises committed to research and development; as well as a balanced intellectual property rights (IPRs) framework. Given that knowledge exhibits several properties of a public good, there is a persistent danger of underinvestment, and policymakers have increasingly sought to improve the incentives to create and transfer knowledge from publicly funded research to enterprises, thereby reinforcing the impact of that research on innovation capacity. Thus, science and technology of education has been able to harmonize this by bringing information closer to the finger tip. This has been able to foster peace, national unity and sustainable development.

Science and technology of education has also lay more emphases on commitment to the protection of intellectual property through cooperation among states coupled

with a commitment to ensuring that all countries are able to benefit from the use of intellectual property rights for economic, social and cultural development. Finding the right balance between accessibility and reward (for creativity and innovation) remains a fundamental challenge in building inclusive and sustainable development paths. Given that appropriate intellectual property policies are context specific, there is also a need to ensure that for those countries that request it, appropriate technical assistance is available to make most effective use of the IP system, especially in order to be able to foster peace, national unity and sustainable developmental goals.

Records show that social relevance of science to gain recognition as far back as the 17th century when science and technology made their first significant contributions to navigation, agriculture, industry, and of course, warfare. Edward and Leyner (1975) has observed in the report of the Educational Policies Commission of the National Education Association and the American Association of School Administrators that the following seven basic values underlie science:

1. Longing the know and to understand
2. Questioning of all things
3. Search for data and their meaning
4. Demand for verification
5. Respect for logic
6. Consideration of premises and
7. Consideration of consequences (Brown, 2015).

Science and technology of education has value dimension. It induces conflicts in our thinking, modifies the culture or makes demands on society most of the time. While science does not directly impose values, it creates conditions which demand the re-interpretation of oil values or the formation of new ones. Teaching science and technology with value focus, provides students with a means for interpreting what they have learnt within their own experience. This kind of learning makes it possible for students to become self-adaptive as science-related social conditions change and this can result to peace, national unity and sustainable development in Nigeria.

2.4 Issues and Challenges affecting Science and Technology Education in the 21st century Nigeria

There are a number of reasons for the poor state of our S&T sector. Firstly, we need a better and more coherent national strategy, as the sector remains highly fragmented, lacking effective coordination. Even the existence of our Science and Technology Ministry was intermittent, until the end of the 1990s.The Steven Oronsaye Committee for the Restructuring and Rationalization of Federal Government Parastatals and Agencies reports that there are about 106 core research and quasi-research institutes spread across the Ministries, with each one conducting its research without synergy and harmonization. Some of these institutions have been in existence for more than 30 years, yet there is little to show for their work as Nigeria still relies on research done internationally. If public sector research institutes in other countries can develop major technological advances like the internet and the human genome project, what is wrong

with our own? Thus, this has endangers the peace, unity and sustainable development in Nigeria.

Secondly, our scientists complain about lack of funding. It is obvious that fast growing economies must invest in S&T. China has been growing its R&D expenditure by 20 percent annually, since 1999. China now accounts for 12 percent of global R&D expenditure, spending nearly 5 percent of its budget (or 1.76 percent of GDP) in 2010, on the sector. Let's compare this to Nigeria. Over the past decade, government's S&T expenditure has been less than 2 percent of the yearly budget (less than 0.3 percent of GDP per year) - a grossly inadequate figure. But the question I have is "for what we have put in so far, what do we have to show for it? This question goes to our scientists: "why should the government increase your funding, in view of the limited contributions to S&T in Nigeria? South Africa spends 8.5 times more on R&D than Nigeria but produces over 70 percent of the drugs manufactured in Africa. What do we produce? Clearly, there is inefficient resource allocation in our S&T sector. For example, about N97.1 billion was allocated to all our research institutes in the 2011 fiscal year. Of this, only N10.4 billion or mere 11 percent was meant for core research activities, according to the Steve Oronsaye Committee Report. Personnel and overhead costs accounted for about N52.7 billion or 53 percent of the total. Surely, if there must be peace, unity and sustainable development, there is need for greater efficiency and reallocation here.

The quality of our education system is also a problem. Our education system has deteriorated to a point where students cannot acquire the necessary skills they need to become employable or innovative in an ever-changing world, upon graduation. Higher institutions are plagued with inadequate S&T facilities and materials for practical skills development. Many laboratories lack the basic equipment for thorough scientific research. How, for example, can a computer science graduate not understand the basics of writing software codes? Nigeria is churning out thousands of S&T graduates each year, but several of them are under-employed, going into banking and other non-scientific sectors. This is why I am proud that Mr. President is already taking strong steps to improve the quality of our scientists by recently instituting the Presidential Special Scholarship Scheme for Innovation and Development (PRESSID) to sponsor outstanding students in S&T, Economics, and Medicine for postgraduate studies in the top 25 universities in the world. Thus, this may bring peace, unity and sustainable development.

Recent happenings in many regions of the world have further hindered the quality of Science and technology education. For example, tsunamis and religious conflicts have forced the closure of schools for long periods. In Africa, many regions are disturbed by droughts or wars (East Africa Drought, 2011). In Nigeria particularly, flooding in recent times resulted in a compulsory holiday for many school children for a significant period of time, hindering school attendance (IRIN, 2012). The North-eastern part of Nigeria recently recorded a massive decline in school enrolment and attendance due to terrorist infiltration and insurgencies. The issue of Chibok and Dapchi schools girls are still in place thereby making parents to be afraid to send their children to

school. The average attendance in schools is dwindling, and is a major source of concern. The impact of these issues delay development of short and long term sustainability plans for the country. Absence from schools highest among states in the Northeast and Northwest zones. 72% of primary and secondary age children never attended school in Borno state. This compares with less than 3% in most southern zones (United States Embassy Education factual sheet, 2012).

In a bid to eradicate poverty, curtail the high unemployment rate, and empower graduates of Nigerian tertiary institutions with suitable employability skills, the federal government through the Ministry of Education in 2007 made entrepreneurship development study a compulsory course requisite for graduation. The essence was to offer students a well rounded education in terms of knowledge, skills, techniques and values needed to produce self-reliant individuals who can compete favourably anywhere in the world, as this may help in peace building, national unity and sustainable development. To the greatest surprise, years after the introduction of this initiative, no proper evaluation has been done to assess the level of skill and competences acquired by the students in view of the enormous resources voted into the programme. It is important to determine how equipped the students are to in order to create a niche for themselves, given little impetus in the labour market (Jimah, Jimah & Onuwka, 2010). The primary aim is to boost small and medium scale enterprises, create wealth, and empower Nigerian youths. If Nigeria can no longer have these able men and women in the industry, it will be difficult to attain peace, national unity and sustainable development.

Quality science education depends upon recognizing an affirmation of freedom of inquiry and expression of this commitment. Without freedom to inquire, the scientific enterprise would be ruled by intimidation rather than understanding through inquiry. If students are not assisted in developing sound investigative skills at a very early age, then there is no reason to believe that students will be able to think critically and scientifically as they grow older (Renner, Stafford & Ragan, 1973).

2.5 Way Forward

For the effective delivery of Science and Technology Education that will foster peace, national unity and sustainable development to take its place in the 21st century Nigeria, the following should be considered:

- The skills of science may be learned easily if the students are given opportunities to explore and tensions surrounding evaluation are relaxed in their minds. Hands on activities must be encouraged as it makes learning of science more real and practical to the student, encouraging critical thinking and exploration, leading to peace, national unity, and sustainable development.
- Awareness has to go beyond the borders of the classroom to the larger population who have not gone through any formal education system and are also stakeholders that must understand these issues. Because Nigerians are lovers of entertainment and spend considerable time on their television sets, the values could be taught in the various indigenous languages by the public media

through enlightenment programmes, dramas and films, for them to see science and technology education as a tool for peace, national unity and sustainable development.

- There is need for rapid investment not only in higher value manufacturing industries but also into sectors that contribute to broader public policy goals (such as health, agriculture, nutrition and environment) as well as across a range of activities that support overall development, including also marketing, management and financial services. Such investments, over a period of time, help to increase absorptive capacity and the ability to adapt and apply existing technologies, thereby leading to a gradual increase in productivity and social welfare. This will promote peace, national unity and sustainable development.
- If science technology education in the 21st century is to develop and compete favourably with advanced countries of the world, there is need to always evaluate each stage of the implementation process to ensure adequate utilization of funds in the provision of resources (human, material and infrastructure) as funding and adequate utilization of funds seems to be a major issue to science and technology of education, when these strategies are put in place, the purpose/ objectives of science and technology education in the 21st century will be achieve. It should be noted here that when purpose of a thing is unknown, abuse becomes inevitable. The abuse here may endanger peace, national unity and sustainable development in the 21st century Nigeria.

3. Conclusion

Science and technology of education if taught well both at primary, secondary and tertiary institutions will be a *sine-qua non* to peace, national unity and sustainable development in Nigeria. However, For Science and technology of education to achieve its goals and contribute to peace building, national unity and sustainable development, there is need for a paradigm shift from ethnic chauvinism to patriotism, from parochial to national unity through achieving the goal of science and technology education, there is need for provision of resources both human and materials especially those in the industry who are promoting science and technology. The *modus operandi* of science and technology of education should be evaluated and re-evaluated to ensure that what is been taught, produce and manufactured are related to the promotion of peace, national unity and sustainable development. There should be value reorientation in the area of science and technology, as to what to be produced in the area of health, medical science, teaching facilities to ensure that they all contribute towards promoting peace, national unity and sustainable development. All these can easily be achieved if governments, schools, science and technology teachers, parents, families, faith-based organisations, civil society organisations and the society at large team together to fight one particular fight known as destroyers of peace and national unity. Thus, when there is peace and national unity, there will be an open door for sustainable development.

References

Agboghoroma, T.E. (2009). Interaction effects of instructional mode and school setting on students' knowledge of integrated science. *International Journal of Scientific Research in Education,* 2(2), 67-75.

Ajala, E.M (2008). Peace education: a harbinger for conducive workplace environment in M. Boucouvalas & R. Aderinoye (eds) Education for millennium development (*easy in Honour of Professor Michael Omolewa*), Ibadan: spectrum Books Limited, 146-161

Akpochafo, W.P. (2015) Education in Nigeria for peace and sustainable development: Strategies and procedures. *Journal of Collaborative Research and Development (JCRD).3*(1):222-230

Akpokiniovo, R.S. and Agboghoroma, T.E. (2016) Laboratory facilities in public primary schools: A panacea to poverty eradication and sustainable national development. *Journal of Collaborative Research and Development (JCRD).* 4(1):109-121

Akpokiniovo, R.S. and Akpokiniovo, Lilian. O. (2015) Implementing the universal basic education curriculum for peace and sustainable development: A Sociological Dimension. *Journal of Collaborative Research and Development (JCRD).* 3(1):51-68

Akpokiniovo, R.S. (2017). Effects of four instructional methods and cognitive style on students' academic achievement in Physics in Delta Central Senatorial District. *The Nigerian Academic Forum.* 25(1):70-85

Brown, G.M (2015) Science and Technology Education in Nigeria: A Historical Perspective. *Journal of Educational Research (SCSR-JER)* 1(1):33–41 Available online at www.scholarconsult.com

East Africa drought (2011) http://en.wikipedia.org/wiki/2011_East_Africa_drought

Igbuzor, O (2009). *Challenges of development in Nigeria*. Lagos: Robitos Alliance Publishers

Inomiesa, E. A. (2010). Teaching of science in Nigerian secondary school: The beginning, the present and the future. 20Th in series of the Inaugural Lectures of Delta State University, Abraka.

IRIN, (2012) Nigeria-worst-flooding-in Warri/Lagos, http://www.irinnews.org/report/96504/nigeria-worst-flooding-in-decades. (Accessed July, 15. 2014)

McKeown, R. (2002). Environment Society Economy Education for Sustainable Development Toolkit Version 2. http://www.esdtoolkit.org (Accessed July. 11, 2014)

Mishra, S.K. & Yadav, B. (2013). Effect of activity based approach on achievement in science of students at elementary stage. *International Journal of Basic and Applied Science,* 1(4):694-704.

Oleh, F.X. (2013). Peace engenders economic development, growth of society. *The Urhobo Voice* of October 14, 10

Olorundare, A.S. (2011*).* Correlates of poor academic performance of secondary school students in the sciences in Nigeria. Paper Presented at the Virginia State University, Petersburg, Virginia, USA (June 23rd 2011).

Renner, Stafford & Ragan, W. (1973). Teaching Science in the Elementary School, Harper & Row, pp. 88, 89.

STAN (2010). *Science Teachers Association of Nigeria, Science Teachers Handbook.* Lagos: Longman Nigeria Limited.

Stiglitz, C. (2007) Educational Input Factors in Brazilian Schools. *American Educational Research Journal*, 9 (4): 493–504.

UNESCO (2000*). State of Education in Nigeria*. Lagos: Excellence Systems Ltd.

United States Embassy Education factual sheet. (2012). DOI http://photos.state.gov/libraries/nigeria/487468/pdfs/JanuaryEducationFactShee.pdf, Assessed July, 2014.

World Bank (2003). Sustainable development in a dynamic world: transforming institutions, growth and quality of life. Washington, D.C.: *The World Bank*