

SUSTAINABLE SCHOOLS FOR SUSTAINABLE SCIENCE EDUCATION IN NIGERIA: WHAT CHALLENGES?

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Abstract

It is believed globally that the knowledge of science and technology is an essential tool for national development. This explains why African countries, Nigeria inclusive are struggling to establish functional Science and Technology education as efforts towards speeding up their development. Nigeria in particular wishes to be counted among the top 20 world economic giants by the year 2020. This poses a lot of challenges on the educational sector. This is because the education dispensed in a society should address the aspirations of that society. This paper considers critically the development of sustainable schools as an innovative strategy towards achieving sustainable science education in Nigeria and some recommendations made.

Schools are recognized as the central location where teaching and learning occurs. It is one of few experiences shared by most people growing in this country, especially the elementary level. Young people who pass through secondary education are expected to develop knowledge, skills and attitudes that will sustain them in the changing environment.

As in any other country of the world, our future economic prosperity, our prospects for a healthy environment, social justice and governance depends on education of the youth. Such educational practice that will equip the youth to think critically about situations, think longer-term, understand the importance of precaution and envision a brighter, more sustainable future can only be possible if anchored in sustainable development principles.

According to Akpama (2007), to sustain implies to nourish and support, to continue, and to keep going. The American Heritage Dictionary, cited by Adediran and Atanda (2010) defines sustenance as follows:

- 1) to keep in existence; maintain
- 2) to supply with necessities of nourishments; provide for
- 3) to support from below, keep from falling or sinking;
- 4) to support the spirits vitality or resolution of; encourage
- 5) to bear up under withstand
- 6) to affirm the validity of
- 7) to prove or corroborate; confirm
- 8) to keep up competently

A sound educational system should therefore, be capable of supporting and of course, keeping the economy of the society moving. Sustainable development is therefore seen as development that meets the present needs without compromising the ability of future generation to meet their own needs (WCED, 1987). Yero and Saleh (2002) noted that sustainable development must be based on principles aiming at not only the quality of the life of the people but also of entire cosmos. In their opinion this can only be achieved if there is rapid change in human behaviour. Sustainable development is a function of a literate population hence, developing sustainable schools in Nigeria will go a long way to promote the infusion of scientific and technological culture into the society. Consequently, the society will eventually become scientifically and technologically literate, enhancing youth empowerment. Certainly, people are increasingly recognizing that they need to change their lifestyles and habits if they will take care of the earth with its abundant resources. Sustainable science and technology education provided in sustainable schools is just the answer for these.

Sustainable Schools

These are schools developed, which provide a uniquely important setting in which to develop children's thinking and practices around sustainable development. In such schools, students, teachers and parents work together in making schools more environmentally sustainable. In some countries of the West, governments have paid greater attention towards developing sustainable schools. In Australia, there is an ACT termed Australian Sustainable Schools Initiative (AUSSI) which began as a pilot in 2006 with twenty local schools and it is now available to all schools in the ACT. AuSSI is a partnership of the Australian government to states and territories that support schools to work towards a sustainable future. A report from Kingston provided by

Ofsted Sustainable schools report of December, 2009 indicated that 'all schools are working towards becoming sustainable by 2020'.

There are quite a number of reasons why schools should become sustainable. The Kingston schools that are making difference in their states explained that sustainable schools can-

- i. Save money
- ii. Save energy and reduce carbon dioxide emissions
- iii. Improve health
- iv. Improve fitness and emotional well being
- v. Contribute significantly to local, social and environmental aims.

Usually, in addition to academic or theoretical work, sustainable schools have projects/programmes which are carried out depending on the school needs as well as the needs of the entire society in which they are located. In United Kingdom where there are efforts in carbon management, there is a carbon management strategy for the school sector. This strategy provides a road map by which those working or studying within the school sector and begin to radically reduce the emissions of green house gases from schools and schools related activity. The AuSSI has a lot of programmes and projects such as carbon kids which is aimed at providing primary and secondary schools with resources enabling them to encourage their community to address climate change the through teaching of the science of carbon. There are programmes aimed at protecting and improving the quality of water; monitoring and protecting from habitats increasing student health and well being and to developing awareness about sustainable transport etc.

Sustainable Science Education

Science education is the key factor for skills development Hodson (1993), cited by Jegede (2002) explained science education as consisting of three major aspects, learning science, learning about science and doing science. Should emphasis be paid to all these aspects, the education acquired by learners will be seemingly functional and goal oriented. The National Policy on Education (2004) stated: Science education will cultivate inquiry knowledge and rational mind for the conduct of a good life and democracy; produce scientist for national development; provide knowledge and understanding of the complexity of the physical world, the forms and the conduct of life. As sound and convincing as these policy statements, nothing tangible has been achieved through the science education dispensed in Nigeria schools. This explains why Jegede (2002) described it as skewed, static and insensate science. He outlined the catalogue of woes responsible for this state of science education in the country. These according to him include:

- i. Steady decline in the number of students making science at the SSS or high school certificate levels.
- ii. Science not attracting the most able students
- iii. Crises in the supply of Science teachers at all levels of education

- iv. Science for all movement having only succeeded in providing modified version of traditional science education
- v. Characterizing teaching of science by textbook domination, lectures, note giving, rote memorization, lack of class practicals and poor understanding of scientific methods etc.

In support of the above, Aer and Ador (2010) showed that there are a number of unresolved issues that are still barriers in science education in this country, prohibiting acquisition and development of desirable skills, such as Qualified Teachers, Instructional Materials, Evaluation in Science education, large classes etc. It is not an over-emphasis that our future economy and society is going to depend on creative individuals to be able to thrive. Young people need and shall continue to need creative skills to care for themselves and the environment. A sustainable science education should therefore be an education provided, which the learners are equipped to think critically about situations, understanding the precautions as well as envision a brighter future for the country.

Sustainable Schools for Sustainable Science Education in Nigeria

There is so much worry in the country as a result of instabilities of all kinds experienced in areas of economy, education, politics, behavioural patterns to mention just a few. These instabilities are seen as obstacles against the progress and development of Nigeria.

In addressing this problem of statement or retrogressing with regard to the development of the country, Adelowo (2010) poses the following questions: When is Nigeria going to have –

- i) Electricity or power uninterrupted?
- ii) Water flowing in every house, every hamlet, every village, every town, and every state?
- iii) Roads within each town and outside
- iv) Well maintained and lasting railways
- v) Sustainable airways comparable to what they have in the US and Britain, and even some African countries
- vi) Uninterrupted food supply
- vii) Youth empowerment and development
- viii) Stability of the country's monetary system
- ix) Neat and enviable policies like the one Obama, the current President of the USA saw in Ghana
- x) Effective and effectual health care delivery?
- xi) Meaningful and result-oriented education opportunities of all kinds?

If you consider i, ii, iii, iv, v, vi and x above, their solutions lie with the effective application of science. Should the Nigerian society see and recognize the need to develop sustainable schools based on sound initiatives formulated into an ACT, individual schools could be empowered to study and practice one or two of the items addressed in the questions above. Remember, the students teachers, parents and all

those working within such schools will be charged with one responsibility or the other so that the project or programme objective becomes realistic. Such practice is one that works out solution to problems of a particular kind in the society. For instance in London, the Carbon Trust Project suggests that most schools can save around 20% of the energy bills simply by improving insulation, heating and lighting and by activity encouraging staff and students to participate in energy saving activities. Elsewhere some schools are known which execute programs in agriculture such as planting and caring for specific crops to alleviate the problem of food supply. You may ask why the talk about sustainable science education been linked to development of such schools. From the table where we were thinking out for this strategy we saw and of course believed strongly that as students learn the principles and skills of science and utilize them immediately in the school along with other members of the school community more meaning is made out of their own learning. Consequently, science is treated as a tool for improving human welfare and of caring and protecting the environment. This goes a long way to agree with the principles of sustainable development. Hence, the kind of science education so dispensed in such schools, which is efficient and functional, can be regarded as sustainable science education.

The Challenges of Developing Sustainable Schools in Nigeria

Central to the discussion on the challenges of developing sustainable schools in Nigeria is attitudinal change. The attitudes of managers of the education sector, policy makers, funding agencies have always influenced the quality of education in the country.

We shall at this point consider challenges relating to the following:

1. Conflicting/Proliferation of Government Policies

In our country, before a policy would mature and produce effects, it is been replaced by a new one. Several of such policies even run counter to their actual implementation (Udofot, 2008). These have unpleasant effects on the development of education. In line with the above Aer and Ador (2010) concluded that this inconsistency and confused nature of the Nigeria education reforms/policies do not provide suitable ground for skills acquisition. This situation will affect development of sustainable schools in the usual way it affects other educational programmes and project if not reoriented.

2. Budgetary Allocation to Education

The annual budget for education in the country have always been low. The result of which is the inability to provide functional education in the country. Fiase (2008) observed that for a country to advance in Science and Technology she must have clear policy, and the key factor in these is funding. Developing sustainable schools will require sufficient funding to work out successfully.

3. Value Re-orientation

This means getting especially youths to reorganize their perceptions, feelings and value judgment on phenomena that occurs in society. Acquiring and developing desirable behaviours/values require use of appropriate models. According to Ifelunni and Onuoha (2006) such models are either persons, films and artifacts that exhibit a desired behaviour that is needed for imitation given some amount of reinforcement.

In Nigeria, today, value is attached to accumulation of material wealth not minding the means by which it is acquired. Lamenting, Mamadu (2006) stated; 'the whole land is corrupt, our teenagers are losing sight of morality. There is a complete moral degradation, moral decay and moral depreciation in the society'.

As a result of the above, it is also common that even in education industry; all forms of malpractice have been developed in quest for certification. This is because value is attached to obtaining certificates more than meritocracy. Our leaders, parents and the types of movies we produce and or watch have either little or nothing worthy of emulation.

The 'wrongs' are accepted as 'normal' while normal behaviour is considered impediments to progress. Under this condition, it will be very impossible to think of developing strategies which may require people to genuinely acquire and develop skills and instantly put same into practice for self benefit and that of society.

4. Accountability

As rightly observed by Mamadu (2006) Nigerian leaders lacked accountability. That is to say they are not responsible to their subjects or action. Most of the Nigerian leaders have forgotten their patriotic services. They make budgets which are ill-implemented; they award contracts which are in most cases abandoned. They embark on struggles for subsequent tenures when they should devote their energy and resources to the welfare of the ruled. Could such crop of leaders be sincere and committed to developing sustainable schools which of course, place some demand on government in terms of finance, monitoring and evaluation. Akpan (2008) regretted education not being a priority of government in Nigeria and this explains why it is in a dilapidated conditions. Government is expected to invest in education and also ensure accountability of finances released for educational development.

5. Managers of Educational System

A good percentage of people who are Managers/Administrators of our educational system are products of the colonial system their powers and influences on the system is highly felt even as they are the minority in the system. The implication is that because these groups are products of colonial system, they would always prefer giving literary kind of education they received to their children against vocational and technical skills based education. This explains why reforms and innovations in Nigeria education always produce no meaningful impact. If the development of sustainable schools should work for the country there must be the need for the managers' of the education system to change that attitudes; to see education in new ways that would make it more relevant to the needs of the individual and society.

Conclusion

From the discussions so far developing sustainable schools is presented as an innovative strategy to be adopted in Nigeria educational system. Elsewhere in the world, like in United Kingdom and Australia, Governments have initiated and implemented projects/programmes to help schools, attain sustainable status. It is the hope of the writers that developing sustainable schools will in effect make our science learning most effective in developing the skills of the youth for sustainable development. This requires attitudinal change by all stakeholders in the education industry.

Recommendations

1. Educational policies should be allowed to stand a test of time before they are revised. This will make assessment of such policies better, and hence provide a better focus for developing a new one.
2. Budgetary allocation to education sector should be increased so that it will sufficiently cater for the needs of providing sustainable education.
3. Science and technology in particular should be funded based on a clear policy of governments and other stakeholders.
4. Political leaders, educational administrators and society in general should develop behaviours and values that will make them models worthy of emulation. This will go a long way to reverse moral degradation, moral decay and moral depreciation abundant in the society today and thus produce people who have respect for societal values.

References

- Adediran, A. A. & Atanda, J. O. (2010). Religion: A panacea for women education and sustainable development. In Adesewo, M. A. Falako, F. O. & Adebayo, R. I. (2010) Ed. *Religion and Sustainable Development* Ilorin: NASRED.
- Adelowo, E. D. (2010). Religion and sustainable development. In Adesewo, M. A. Falako, F. O. & Adebayo, R. I. (2010) Ed. *Religion and Sustainable Development*. Ilorin: NASRED.
- Aer, I. & Ador, S. I. (2010). Unresolved issues in secondary school science teaching for skills acquisition in Nigeria. *Journal of Qualitative Education*, 6 (2), 127-132.
- Akpama, E. G. (2007). Educational reforms for sustainable development in Nigeria. *Journal for Nigerian Educational Philosophy*, 20 (2), 20-27.

- Akpan, O. (2008). *Recreating education for national building*. A lead paper presented at the annual national conference of ASSEQEN held in COE Afaha-Nsit, Akwa Ibom, May 12-16, 2008.
- Australian Sustainable School Initiative (AuSSI, 2009). *Sustainable Schools*. Retrieved from <http://www.environment.act.gov.au/>
- Basset, P. A. (2005). *Developing sustainable schools*. Retrieved from <http://www.nais.org/publications/ismagazinearticle.cfm.itemnumber-14159>.
- Federal Republic of Nigeria (2004). *National Policy on Education*. 4th Edition Lagos: NERDC Press.
- Fiase, J. O. (2008). The role of science and technology in national development. In Eriba, J. O. & Achu, E. E. (2008) Ed. *Position of science and science education in the current state of technology in Nigeria*. Katsina-Ala: School of Sciences, College of Education, Katsina-Ala.
- Ifelunni, L. C. S. & Onuoha, J. I. (2006). Ethnic militia and democratic consolidation: Implications for value reorientation and role modelling in the Niger Delta. *International Journal of Educational Research*, 1 (1), 66-72.
- Jegede, O. (2002). *Skewed, static and insensate science education: What went wrong?* Memorial lecture 43rd annual conference of STAN And CASTME, Africa, Port Harcourt, 2002.
- Mamadu, T. T. (2006). *Corruption in the leadership structure of Nigerian polity*. Lagos: Theomodex Ventures.
- Marharjan, S. D. & Whittle, P. A. (2000). *Promoting students' science and technological thinking: Developing attitudes concerning our environment*. Katmoudu (ER II0).
- Udofot, M. A. (2008). *Functional education for Nigeria: What challenges?* A lead paper presented at the annual national conference of ASSEQEN held in COE Afaha-Nsit, Akwa Ibom, May 12-16, 2008.
- World Council for Environment and Development (WCED (1987). *Our common future*. Oxford: Oxford University Press.
- Yero, H. I. & Saleh, B. G. (2002). *Scientific and technological literacy*. Proceedings of the 43rd annual conference of STAN and inaugural conference of CASTME, Africa, Port Harcourt, 2002.