

The Role of Science Based Educators in the Socio-Economic Development in Africa: Nigeria as a Case Study

¹AGBAJE, Rashidat Olusola , ²OWOEYE, Pius Olatunji

³OGUNYEBI, Tunji Henry

¹Department of Integrated Science, College of Education, Ikere- Ekiti, Nigeria

²Department of Biology, College of Education, Ikere-Ekiti

³Department of Integrated Science, College of Education, Ikere- Ekiti, Nigeria

Received June 10, 2016

Accepted June 14, 2016

ABSTRACT

Education remained a bed rock of improvement in the lives of citizens of any human entity. For such entities to thrive with little societal disturbance, such enclaves must give credit to quality conceptualization, planning and dissemination of educational policies. In Africa, education begins at home where parents instill in their wards through stories on what to say, how to say and for whom to say. Nowadays, education in Africa has gone many steps forward in addressing societal value and economic standings of its populace. Science education taught by science based educators remained a cornerstone of rapid development seen in many African societies today. Development and implementation of science curriculum within the national educational structure of each member country is a crucial step to further deepen science education groundings of pupils and students and this remained the primary role of science educators. The implications of dwindling fortunes of accurate and outcome based education in several African communities makes effective and active learning of science subjects a difficult terrain. Contextually, African science educators and especially Nigerian science based educators must improve their societal standing by serving as vanguards of change from social ill based scientific front to a more robust approach where scientific terms and understanding will be a cornerstone in changing social paucity currently witnessed in the society. This paper examined reforms in Science Education sector and the roles of Science Educators in Economic Progress of Nigeria. It is recommended that science based educators within Nigeria be retrained for better dissemination of valuable education.

Key Words: Education, Science, African and Socio-Economic implementation

Introduction

The continent of Africa remained the only enclave around the world where archaic traditional understanding enjoyed absolute patronage. This development in a way was caused by long term colonization by western powers, protracted civil war and uneven distribution of educational development by policies that serve only a minute member of the citizen. Similarly, a long term departure from accurate recording of African based scientific discoveries really impeded the egoism of an average African in the past. However, after the independence of many African countries, the needed for social economic development was down on us and this has remained a challenge for several African countries up till today.

Nigeria as a country under focus has over the years evolved several educational policies which were aimed at speeding up the rate of

dissemination of basic education which will liberate the mind of the people. These educational policies were spurred out of developments that happened in many developed nations shortly before Nigerian independence. The most important of them is the "Sputnik" by the defunct Soviet Union in 1957. In that year the great enclave of socialist economy launched into space the first satellite at a time when virtually all African countries are agitating for independence from European colonialists. The event also ginger many other seemingly developed nation into reassessing their educational sector vis-à-vis planning, development and dissemination of accurate methodologies that will bring about speedy innovation for growth and development (Ojimba, 2013). Nigeria also set the ball rolling by developing its own curriculum in piece meal especially its science educational curriculum development. The first effort was the birth of

Basic Science for Nigerian Secondary Schools (BSNSS) commenced in 1962 at the Comprehensive High School, Aiyetoro. This was followed by the Nigerian Integrated Science Project (NISP) in 1971 which was fathered by Science Teachers Association of Nigeria (STAN). Furthermore, in 1969, the all-inclusive and remarkable national curriculum conference further paved way for the involvement of some government agencies such as the defunct Comparative Education Study and Adaptation Centre (CESAC), the Nigerian Educational Research Council (NERC), which later merged to become the Nigerian Educational Research and Development Council (NERDC). The draft report of the conference produced curriculum covering basic scientific educational dissemination in primary and secondary schools across Nigeria (Ojimba, 2013).

Science educators therefore have performed well in conceptualization and documentation of modalities that will lead to proper dissemination of science based education to the least of students in the country. However, the curriculum developed has not addressed social ills and economic backwardness currently witnessed in the country. This inability by the science educators to perform above average in the subject matter is evident in many ways; such as low infrastructural development, acute shortage of science educators at all levels of the Nigerian educational level, low understanding acumen and existence of non- pragmatic science curriculum. Therefore, this paper seeks to document the roles of science based educationists in socio economic standing of Nigeria.

Reforms in Science Education Sector

In Nigerian educational sector, science education remained a cornerstone as there could be no meaningful national development without a vibrant and flexible science education taught by passionate educators. Picking a cue from the above assertion, the science educators in Nigeria took the giant step in advancing curriculum planning and execution by aligning it with what obtains in the developed nations. A summary of the current approach to science education dissemination by Nigerian science educators

which promises to foster improved understanding by students was agreed to constitute all or some of the positions described below:

- i. Science education must seek to achieve scientific literacy as the central goal of science education. This means that science education should most importantly focus on students understanding of the nature of science, through the study of other subjects such as history and philosophy.
- ii. That scientific education should relate an understanding of major concepts, principles and habits of thinking in science, mathematics, technology to events/activities in the society.
- iii. That science education must achieve science standard for all students including girls, language, ethnic minorities and all ability groups in an attempt to encourage all students to succeed and to embrace excellence and equity.
- iv. To design science education to reflect that science is an active process, so that both “hands-on” as well as “minds-on” activities should constitute the core of the education process. Thus, emphasis on content with greater depth of understanding (more of practical based than theoretical approach).
- v. Scientific inquiry has to be a central element of the curriculum to promote students active participation which may develop their understanding of scientific concepts; with reasoning and thinking skills; through group based approaches for greater cooperation among science teachers and students while de-emphasizing competition in the classrooms.
- vi. That alternative assessment procedures to different from the usual paper and pencil test should be adopted for improved worldview if pupils.

A very close example can be seen in the United Kingdom where science educators were able to assess current plight of curriculum suitability and dissemination. After intensive deliberations, they were able to come up with “Science Education Beyond 2000” report, which gave rise to a new GCE syllabus which was introduced in Britain under the name “Science for

Public Understanding (NEAB, 1998). This new syllabus aims to increase students

- i. Understanding of everyday science
- ii. Confidence in reading and discussing media reports of issues concerning science and technology
- iii. Appreciation of the impact of science on how we think or act.

However, similar science education objectives can also be found in documents issued at the end of educational summits in many countries. Representative examples include the implementation of a new science curriculum in Australia (Aderson and Mitchener, 1994), Science Technology and Society in Canada (Aikenhead and Ryan, 1992), introduction of Public Understanding of Science in the Netherlands (Devos and Reading, 1999). Therefore, reforms in science education must highlight important aspects of scientific literacy, understanding and usage for all students. Importantly, such educational dissemination must be accessible across gender and ethnic nationalities that may have been overlooked in the past curriculum.

Incidentally, with all these issues documented in the curriculum, many science educators in Nigeria either fall short of its clear understanding in address social ills and humanity degradation currently being witnessed across board in the country. Therefore, one may say that on paper, Nigerian science educators are trying in disseminating a socially balanced education but this has not been evident in its implementation. Today, many of Nigerian educators fall short of needed passion which is necessary in driving home the understanding behind basic scientific principle effectively on and off the class. It is then right to say that Nigerian science educators are fast becoming facilitators as many pupils and students rather prefer home tutors, home schooling and even personal study which in most case led to several scientific misconceptions.

Assuming that the current reforms are practically implemented, from a teaching perspective, these reform efforts may abhor some implications for teaching science. Some

researchers opined that instead of transmitting content knowledge in a rigid manner, the emphasis in teaching will be on designing situations and a variety of activities which enable students to learn actively. In this respect, the teacher needs to investigate what the students already know, identify possible misconception then design an appropriate educational setting. Again, this is an area where a typical Nigerian educator fall short of understanding; because often times they don't really understand the social importance of science education as it affects peoples togetherness, support and mutual understanding. So, current science education dissemination has been built such that teachers will impact social understanding passively through adherence to the rules guiding implementation of their curriculum.

In their views, Osborne (1998) opined, a shift toward reflection on science rather focusing solely on the content of scientific ideas is implied. Therefore, teachers will be asked to pay more attention to aspects of science they usually ignore or do not feel very comfortable with. Such aspects include philosophy of science, or the relation between science and societal issues. In general, teachers will be confronted with the challenges of teaching science in a way which appeals to all students both from a cognitive and affective perspective and not just students with high abilities or high motivation for science. There is also the shift towards the teaching of inquiry skills, which is definitely more complex than the traditional training of practical skills. A clear understanding of the above assertion will tell that science educators are meant to be embodiment of moral and social values. Although, it may appear passive within the curriculum but a habitual compliance with such provisions of the curriculum will bring out the best social practice from the teacher to the learner who will in turn inculcate such in his/her daily activities. Unfortunately, many Nigerian educators especially at upper secondary and tertiary levels are not doing much in disseminating a moralistic scientific education rather they enjoy demonizing core sciences which eventually rattle their social standard and that of the students.

Role of Science Educators in Economic Progress of Nigeria

As much as the curriculum planning and execution dealt with social status, its result brings about economic changes within the polity. Nigerian science educators may have made giant strides in setting straight the foot of science graduates in actualizing their life-long ambitions but quite a lot still have to be done. For instance, within the science curriculum, there are provisions for students who are very good in scientific technicalities of various topics. Therefore, such students who may be weak academically in many instances are provided with technical colleges which form an extension of middle school curriculum. The question here is; did the technical education bring economic safety to such students? Picking from the words of Fafunwa (2003) who opined that the standard of education is not what is at issue, "what is actually falling is our ability to meet the set standards". The implication and challenges of this statement is that, good standards have been set for education sector but we have not often succeeded in ensuring that such standards can be attained or maintained (Olubadewo, 2007).

Furthermore, science based educators appeared impeded in disseminating education that can propel economic development of students and the country in particular due to several factors. Firstly, many science educators lack the basic qualification necessary to impart knowledge in the pupils and students alike. In the past the basic academic qualification to teach in primary school was grade II and recently upgraded to National Certificate of Education (NCE). However, what is noticeable within schools is that even NCE teachers are so substandard that many of them cannot teach primary school pupils successfully. The same can trend in obtainable in technical colleges, polytechnics, colleges of education and universities; persistence of such decay in teachers' prowess in accurate dissemination of core scientific education will definitely retard economic growth of the nation.

One factor to predispose the nation to such decadence is evident in the manner of student selection, recruitment of staff and

remuneration of science based educators. To start with student selection, today the best of our students are those attending universities where they study medical, engineering, science and technology. Sadly, those falling behind will probably attend monotechnics (colleges of health, agriculture and education) and these set of students now revolve as teachers. So, it is almost impossible for many of them to have a clear grasp of the curriculum talk less of methodologies needed to accurately disseminate the subject matter (Olorundare and Omosewo, 2011). Similarly, the procedure whereby science teachers are recruited nowadays is a major concern; many of the methods used are cumbersome, fraudulent and unprofessional. Hence, poor delivery of syllabus, extortion of students, absenteeism on the part of the educators and a host of other ill values pre-domesticate science education dissemination. Finally, science educators are not reasonably remunerated for their activity in ensuring teaching and learning by the students. In many advance countries of the world, science based educators most especially mathematics and basic science teachers are well paid and motivated for better delivery of service.

Therefore, it is difficult for Nigerian science teachers to inculcate economic value based science education from grassroots. Rather, students tend to pick up economic values outside school where competition is stiff.

Recommendations

Having said all of the above, it will be fair enough to say that Nigerian science educators have contributed immensely to social economic standing of Nigeria within their capacity. However, quite a lot has to be done if Nigerian socio economic standing must improve on the global scale. Therefore, science educators must as a matter of urgency do more by imbibing social ethics in their job to further build a virile society. Similarly, correct economic understanding should be learning through practical use of scientific theories present within the curriculum.

References

1. Anderson, R.D. and Mitchener, C.P. (1994). Research on Science teacher Education in D. C.

- Gabel (ed). Handbook of research in science teaching and learning New York, Macmillan.
2. Aikenhead, G.S. and Ryan, A.G. (1992). The development of a new instrument views on science –Tech. – Soc. (VOSTS) Sci. Edu. 76 (1):77 – 91.
3. Ojimba, D.P. (2013). Science education reforms in Nigeria (2013). Implications for science teachers. *Global Advanced Research Journal of Peace, Gender and Development Studies*. 2 (5): 86-90.
4. Devos, W. and Reiding, J. (1999). Understanding of Science as a separate subject in secondary schools in the Netherlands. *International J. Sci. Edu.* 21:711 – 719.
5. Fafunwa, Babs (2003). Falling standard of education in Nigeria. Ibadan: National Association for Educational Administration and Planning.
6. NEAB (1998). Northern Examinations and Assessment Board. Science for Public understanding (syllabus) Hanogate, U. K.
7. Olorundare, A.S. and Omoseewo, E.O. (2011). Trends and issues in science teacher education in Nigeria and the way forward. *International Conference of the Collaboration of Education Faculties in West Africa*. October 2011. Lagos Nigeria.
8. Olubadewo, S.O. (2007). Contemporary issues in Nigerian Education. *Multidisciplinary Journal of Research Development*. 8(1): 1-8.
9. Osborne, M.D. (1998). Teachers as Knower and Learner. Reflection on situated knowledge in science teaching. *Journal of Research in Science Teaching*. 35 :437 – 439.

Many of life's failures are experienced by people who did not realize how close they were to success when they gave up.

~ Thomas Alva Edison