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The lack of good governance in Nigeria and its impact on functional science education

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Abstract

The paper reviewed the importance of science education in the development of every nation of the world including Nigeria. However, it argued that the science education in Nigeria as studied in the Universities, Polytechnics, and Colleges of Education could not be functional. It is not functional because it only produced graduates who are not creative. The paper attributed this to the lack of the good governance in the country. The pinnacle of bad governance was summarized to be corruption in the nation. Visionary leaders, total war against corruption, Youth Scientific Collaboration Programme (YSCP) and much more are some of the solutions recommended by the authors.

Keywords: Governance; Science Education; Corruption; Scientific Collaboration

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1. Introduction

The revolution taking place in all spheres of lives in the world today is no doubt be linked to the sound and efficient science education. Science education has its impact in all sectors of the economy. To mention but a few, in agriculture, judiciary, health, transportation, shelter, telecommunication, politics, engineering, science education plays a prominent role. Almost all jobs require advanced skills, demanding that people be able to learn, reason, think creatively, make decisions, and solve problems. Therefore, an understanding of science and the processes of science contributes in significantly to these skills (National Academy of Science). Many developed nations of the world are today successful because of the position they accord the science education (Omosewo, 2009).

Nigeria as a sovereign nation remains a developing nation for over fifty years of independence because of lack of functional science education among many reasons. The country is endowed with abundant natural and human resources which are enough for functional science education (Ogundiya, 2010). Nevertheless, the lack of good governance had been the greatest enemy of functional science education in the country. The Nigerian populace suffered much in the hand of the military for an extended period of their dictatorship. The military regime gave way to a democratic government in 1999, but the suffering was aggravated due to lack of good governance. The worst of the suffering is the lack of quality education from which the functional science education emanated.

The use of 'functional' is important because to a layman government is funding the teaching and learning of science in Nigeria schools. However, the questions are: what is the quality of this science teaching and learning? How functional is this science? What can the graduates of this science do? Can we compare these graduates with graduates in other countries? Are these graduates provided with a job or what can they do by themselves with their science knowledge? The functional science education stems from the answers to these questions by Alberts (1997) that science is not just to produce scientists but to produce citizens who can find jobs and can be effective in their personal lives.

2. The overview of the historical background of science education in Nigeria

Science teaching and learning in Nigeria was dated back to the time of informal education, then it was in form of storytelling and by imitation (Aina and Adedo, 2013). During this time there was no specific method of teaching because the teaching and learning were done outside the four walls of any classroom.

The colonial period is another era in the history of Nigerian educational system. Nigerian colonial master-the British brought education for a religious purpose. The Christian Missionary trained people who served as interpreters for them while preaching to the indigenous population. The aim of British colonial education was to train clerks for interpretation of language, administration, and commercial activities. British colonial education, therefore, inculcated into Nigerians foreign ideologies, culture and values (Okoro, 2011).

Science was introduced into the Nigerian educational system as general science. The general science curriculum was designed to reflect the desire and aspiration of the British government. The curriculum of

schools during the colonial era was not in the balance with the needs and aspirations of the people for decades (Sulaiman, 2012). The wishes of the British was to produce the clerks who were required for the growing administration and expanding commercial enterprise in Nigeria. Besides, they also gave their support to the Missionaries to provide education for the religious purpose.

Science was relatively not seen as a significant part of the country's education system because the motives of the missionaries were mainly for the evangelization and production of clerks that could assist them in their commercial enterprise (Ojebiyi and Sunday, 2014). Thus, the motive of the missionaries was not to develop Nigerian citizens scientifically.

The science content was based on what is obtainable in the British environment. The British have the belief that African are biologically inferior to the Europeans, therefore cannot be taught the specialized vocabulary of science and its mode of inquiry (Ojebiyi and Sunday, 2014). It was apparent that the British were not willing to lose control over the nation because of petroleum. Therefore their objective of teaching science at this time was not to produce engineers, doctors or lecturers among the Nigerian students.

Teaching and learning of general science at this period were purely based on examples of what obtains in the British environment. For instance, the teaching of the Melting point was very strange to the Nigerian students because many students had never seen ice before. The Nigerian climatic condition does not warrant the formation of ice; also only a few people had refrigerators. The general science contents were both foreign to the Nigerian students and the teachers because it was heavily dependent on the British curriculum. British authors write in English and not in the Nigerian vernacular with illustrations and examples based on phenomena of relevance to the British environment. Given this, learning science was by reading directly from the textbook with the pupils relying on rote learning and memorization. The Nigerian pupils were thus denied skills and practice on how to solve real-world problems in science. According to Adeyemo (2010), no meaningful science was taught in Nigerian schools. Curriculum conferences and workshops were held between 1969 and 1975 after Nigerian independence. These conferences and workshops produced a science curriculum for both the primary and secondary school as is presently encapsulated in the National Policy on Education (NPE) (FRN, 2004).

Before 1960, the schools in Nigeria depended heavily on staffs of expatriate teachers and the Missionaries. According to Akindutire and Ekundayo (2012), most of these expatriates had no teaching qualifications. There was, however, an increase in pupil enrollment resulting in more schools being established immediately after independence. The inauguration of both West African Examination Council (WAEC) and the Science Teacher Association of Nigeria (STAN) in 1952 and 1957 respectively brought notable changes to science education in the country. The collaboration between STAN, the Ministry of Education and Comparative Education Study and Adaptation Centre (CESAC) in 1968 introduced Biology, Chemistry, and Physics into Nigerian schools (Aina and Adedo, 2013). However, there was a serious problem of shortage of qualified teachers to teach these subjects.

As part of the effort to develop science education in Nigeria, the Nigerian Secondary School Science Project (NSSSP) was drawn up by CESAC between 1970 and 1972. According to Awolola (2004), the NSSSP was trial tested up to 1978 and the first revised edition of the project instructional materials properly

published in 1980, after that integrated into the secondary school system. The development, implementation, and evaluation of the NSSSP yielded encouraging results. These results apparently caused changes in the organization of science content at the secondary school level. The NSSSP was developed for Biology, Chemistry, and Physics which formed the foundation of science education in the Nigerian schools today.

Another area where there seems to be a significant development is the attempt to produce qualified science teachers at all level of education. In an attempt to develop Nigerian education after the independence, teacher training institutions were established. The main objective of these institutions was to train qualified teachers for the burgeoning Nigerian economy. However, teacher education in Nigeria is yet to experience much different from what obtains during the military regime. According to Obi (2010), teacher education suffers a lot under the military rule. Adelowokan and Makinde (2010) asserted with regret that the Nigerian government placed a lesser priority on teacher education.

Given this background, it is worrisome that the science education in Nigeria remained laggard due to lack of good governance. This article is necessary to rescue science education from total collapse in Nigeria. Therefore, the paper focused on the failure of the Nigeria government to provide the citizens with functional science education that can give jobs to its graduates.

3. Conceptual clarification

Governance is the way in which governments exercised power for the management and distribution of a country's social and economic resources (Ogundiya, 2010). It is the process by which a state's affairs are managed effectively in the areas of public accountability, fiscal responsibility, administrative and the political responsibility, responsiveness, and transparency, all of which must show the interest of the governed and the leaders. The basic features of good governance include the conduct of a comprehensive management wherein all the critical stakeholders are allowed to have a say in the decision-making process (Odo, 2015).

The scope of governance is wide as it includes all the day-to-day activities of the government, such as the exercise of authority on the economic, political and administrative in all level in the nation. According to Odo, institutional and structural arrangement, decision-making processes, policy formulation and implementation capacity, development of personnel, information flow and the nature and style of leadership within a political system part of the governance.

Good governance by implication is when the government can carry out the activities mentioned above for the good of all the citizens. Good governance is integral to economic growth, the eradication of poverty and hunger, quality education and sustainable development. The issue of good governance is a problem that has crippled the growth of many countries in the world particularly, Nigeria. Good governance is, among other things, about being participatory, transparent and accountable. Good governance is described as the government of the society. Good governance is the rightly exercising of authority, the ability to problem-solving and conflict resolution, the capacity to manage resources efficiently for development, and high level of responsiveness to the needs and the interest of the citizens (Otoghile et al., 2014). Good governance is the ability to be able to provide quality education to the children and youths that can get them gainfully

employed after graduation. The education that is not only in theory but the one that can transfer theory to practice. This type of education required the pupils and the students to have an authentic learning experience.

Authentic learning is learning by doing. It is active learning, where students are not passive. It is an inquiry method of learning. This is a process of asking meaningful questions, finding information, drawing conclusions, and reflecting on possible solutions (Milson, 2002). It has been observed that students' learning must be made real before such learning could be useful in the real-life situation. For learning to be real, it must be student-centred: where students determine and direct the learning by themselves. The role of the teacher in such learning is to guide and not to control the learning. This is where authentic learning come to fore. Nine elements of authentic learning were identified by Herrington and Kelvin (2007). Authentic learning typically focuses on real-world, complex problems and their solutions (Lombardi and Oblinger, 2007). Authentic learning activities are designed to give the students 'real-world' experiences. According to Lombardi and Oblinger, educational researchers have found that students involved in authentic learning are motivated to persevere despite initial disorientation or frustration.

Herrington and Kelvin (2007) contended that much of the abstract knowledge taught in most schools is not retrievable in real-life because it ignores the interdependence of situation and cognition. For this knowledge to be relevant and retrievable in real-life, the authors advocated for an authentic learning with the nine fundamental elements. The elements are authentic contexts, authentic activities, expert performances, multiple roles and perspectives, collaborative construction of knowledge, reflection, articulation, coaching and scaffolding, and authentic assessment. Research studies show that students who had an authentic learning experience in science are those that have a functional science education. These students can face life challenges with their science education experience. Such students are often job provider, not job seeker; they do not only rely on the government for the job but are critical thinkers who create one for themselves. The government has a significant influence in providing our students with the type of learning in science education.

4. The impact of governance on the science education in Nigeria

There is a linear relationship between good governance and a functional science education. There cannot be a functional science education where country's resources and power are not well utilized for the citizen of the nation. Florence et al. (2015) viewed governance as the use of State resources and power in an accountable way to achieve and promote the well-being of the citizenry. It, therefore, implies that when the power and resources are not well managed for the welfare of the citizen, there is bound to be a problem. The power and resources in Nigeria are not well utilized by the people.

There has not been good governance in Nigeria in the past 50 years. The worst has been from 1999 when the country changed from the military dictatorship to the democratic rule. However, there is that belief that good governance thrives in a democratic government. According to Odo (2015), good governance thrives in a democratic setting. The author averred where there is no democratic government there can be no good

governance. This author's submission is not true for Nigeria as a sovereign nation. There are many indicators to reveal the lack of good governance in Nigeria which is discussed in this paper. Many of these crippled our education and affected science education badly more than any disciplines. The indicators are interwoven that they have multiple effects on the Nigeria populace.

The primordial cause of lack of good governance in Nigeria is the absence of visionary leader to lead the country. Most of the leaders Nigeria ever had since the return of democracy in 1999 has been in power to pursue personal, ethnic and religious ambitions. These leaders had no vision for the good of the nation. Most of the developmental challenges Nigerian had today is attributed to these leaders who lacked good vision for the nation (Odo, 2015). This author explained further that these leaders lacked commitment for true nationhood and allowed personal ambitions and ethnic, regional as well as religious persuasions to override national considerations. Good governance requires responsible and responsive political leaders at all level (Belfut et al., 2012).

These leaders as political and public office holders see their positions as a means for illegal wealth accumulation to the detriment of the common Nigerian (Otoghile et al., 2014). The leaders give privileges and undue advantage to their family members, friends, and associates, in the distribution of public resources (Adeosun, 2012). Nigeria state is corrupt, managed by corrupt leaders who have made the state an instrument of capital accumulation, rather than using it to project the interest of the citizenry (Belfut et al., 2012, p. 52). These leaders make democracy a curse for the nation because of the abuse of it. When democracy is abused, good governance becomes an illusion (Arowolo and Aluko, 2012). The authors argue further that governance is good when it is not discriminatory, and every member of the society are treated according to the established laws.

The leadership position is essential in every establishment that is why there is a truism in the axiom "A leader sin is a leading sin". Consequent upon the act of impunity seen in our political leaders, the heads of the executive, legislature, and the judiciary every other leader in public and private institutions are lawless. The Nigeria legislators are reckless and not effective in discharging their duty. For Ogundiya (2010) the Nigeria legislators that would have provided adequate checks on abuses of power by the executive and recklessness of the opportunistic politicians are also inefficient and ineffective. Adeosun (2012) posits that the Nigeria legislators have failed to utilize its enormous power to ease the economic and social hardship confronting the people of the nation. According to Odisu (2016), Nigerians are increasingly losing hope and confidence in the nation's judiciary due to the unethical conduct of some judicial rascals. The author further confirmed clear cases of judicial misconduct in the Nigerian Judiciary which has been militating against the rule of law. Therefore, as a result of the lapses in all the three arms of the Nigeria government corruption is inevitable.

Corruption is the abuse of public office for private gain, and it is an aspect of bad governance (Ogundiya, 2014). The author averred corruption is rampant at all levels of government, crippling basic health and education services and other social infrastructures (p.207). Good governance cannot be possible in a state where corruption is gaining a foothold.

Corruption is evil, and it affects all areas of human lives. According to Otoghile et al. (2015), corruption increases poverty and disproportionately affects those in the low-income group because it pulls resources

from the national treasury into the hands of a few individuals who are politically powerful (p.183). The problem of Nigeria is not that of lack of resources, but of corruption and hence the high cost of governance (Gberevbie and Iyoha, 2007) as a result of greediness of the leaders. Corruption has become the way of life in Nigeria the case is worrisome in educational institutions. Corruption is the anchor for all other problem bedeviling Nigeria as a nation. The insecurity, unemployment, kidnapping, poverty, divorce, hunger and deprivation, injustice and others, are some of the problem corruption is breeding in Nigeria. Given the above review as an evidence of lack of good governance in Nigeria, it is, therefore, germane at this juncture to examine the nexus of the lack of good governance and functional science education in Nigeria.

5. Careers opportunities in the science education

The introduction of entrepreneurship education in Nigerian tertiary institution is a good initiative. However, the lack of good governance has made the programme not useful in the nation. Many of the Nigerian youths have become criminals from the university because they are not empowered. If entrepreneurship education programme is well-funded, it would have been a tool for science education to empower our youth for the national development. Science education had been described as a strong tool in empowering youth for a national development (Aina et al., 2014).

The study of Biology in school could assist the students to achieve many things that will help the students and the nation. In Nigeria, many people believe that once a student studies Biology, he or she ends up as a teacher. The reason for this erroneous belief is because of lack of good governance. A Biology graduate has many prospects if trained and with the aid of the entrepreneurship education. A Biology graduate can establish a fish farm or fishery after graduation. Additionally, they can be engaged in Snail farming as well as bee keeping for the production of honey in a large scale. All these are within the purview of Biology education either in the university, polytechnics, and college of education. Chemistry education can help students to be self-employed after graduation in areas like Soap making, production of Chalk, Insecticides, Dye production for the textile industry and Water factory. These are common products that everybody uses every day in Nigeria. A career both in Biology or Chemistry includes Forensic Scientist. This would be a good job in the present Nigeria where there is crime everywhere.

In the case of Physics, a Physics graduate can specialize in Ceramic production and can establish electronic firm. Additionally, there is Physics career in law, telecommunication, health care and many others. These are many of what the Physics education can offer if we have visionary leaders in all our educational institutions. The practical knowledge has become impossible because the fund to be used to train these students in school practically was not made available. Where the government released meager amount for the students training, the institutions (university, polytechnics, college of education) heads mismanaged, misappropriated or even embezzled the money with impunity. The funds that were supposed to be used for the construction of the fish pond for students practical are often used for non-academic purposes. No practical experience in the fishery but only theory and that is why most of them prefer roaming about looking for a teaching job. Many Chemistry and Physics laboratories are empty without chemical, reagent, and equipment for practical.

Semiconductor and electronics materials are not available in many universities, polytechnics, and colleges of education Physics laboratories. Students who passed through these institutions will find it impossible to do anything on ceramic and electronic practically. Many of the other careers mentioned above are not possible because of lack of experts and resources for practical experiences. The fund that is not available for science learning is provided for the government official overseas trips and other non-essential matter. The lack of good governance is affecting science education in the Nigerian institutions (university, polytechnics, and colleges of education).

6. Major areas of influence of bad governance on science education

The lack of good governance is impacting Nigeria educational system badly in all areas. However, there are specific areas it seriously affects science education. The paper considers three critical areas. These are Research, Teacher Education, and Infrastructure.

6.1. Research

Research in the Nigerian universities has been rendered useless because of the paucity of fund. The government has money to build personal houses for the government officials but no money for research. They also have money to sponsor political party campaign and rally. Many of them are so naïve to have gone as far as buying properties in the developed countries and had bank accounts in foreign countries but no money for educational research. Most educational research institutes are mere names but can do nothing.

Corruption of our government officials had killed and buried research in science education for decades. Science education is evolving all over the world which should include Nigeria. In Nigeria, there is no new thing in science education; it remains as it was for decades ago. Teachers and Lecturers are not innovative: they read and teaches what others discovered and invented while themselves do not bring new knowledge. It was not their fault but because the government had not encouraged credible science education as a result of corruption. Because of corruption resources from the national treasury meant for research are in the hands of a few individuals who are politically powerful (Otoghile et al., 2014).

6.2. Teachers education and training

Teachers Education and Training in Nigeria is very poor when compared with other developing countries in Africa. Due to the lack of sound teacher education and training in Nigeria, the teaching and learning of science are perceived difficult by both the teachers and the students. Most teachers lack adequate pedagogical content knowledge (PCK) for science teaching. Alberts (1997) had once queried that science and mathematics teacher need a pedagogy that is subject matter specific, and not as it is presently in Nigeria. Many students at the end of their Junior Secondary School (JSS) preferred Art and Humanities courses to Science. Anecdote reveals that more than eighty percent of the Nigerian students are in the Arts and Humanities. Consequently, many of these graduates are jobless after graduation. Some decades ago we

believed those who are in the Arts courses are an idle mind that is used as political thugs, and criminals in the villages. In the present Nigeria, students who are supposed to be “idle mind” are on the increase because students do not want to do science believing it is hard due to bad teacher education. Consequent upon this, political thugs, hoodlum, kidnappers, arm robbers, and other criminals are on the increase in the nation. Therefore, the truism in the credo that “an idle hand is the workshop of the Devil”.

Given the havoc the insurgency had caused to the Nigerian socio-economic development in the recent time by our youth, lack of governance is a menace in the nation. Many of these insurgents are science oriented that could be useful to this nation, but we lost them to the insurgency. These youth used improvised materials, and other complex weapon produced by themselves: these are great scientists.

The curriculum of teacher education in Nigeria cannot meet the present needs of the Nigerian youths. Many teachers teach with the teaching methods he or she learned decade ago that cannot produce authentic learning experience in schools. The teachers need to update their knowledge through conferences, seminars, and workshops. Funds are not made available for functional science education because our leaders and the government officials lack vision for it. Moreover, funds are made available for overseas trips, for buy properties within and outside the country. Besides, many teachers who are politically minded are getting funds to attend non-academic conferences, seminars, and workshops. A Physics lecturer was deprived of forty thousand naira for a year training in a Nigerian university by a college of education provost. The same provost who is an Engineer approved the sum of forty thousand naira for his Typist to attend the non-existing workshop; this Typist knew little or nothing about science.

Recently, the Nigeria TETFUND approved millions of naira for the lecturers of a College Education Technical to attend conferences. However, the college management headed by a Biology graduate approved the money be shared among the top management members without attending any conference. Thus, these science and technology lecturers were deprived of attending these academic conferences that would have been benefits to the students and the nation.

6.3. Infrastructure

Infrastructure in the Nigerian educational institutions is in a terrible condition. It is worrisome and nasty for students to learn science under the tree in some part of the nation today. This is a reflection of the poor budgetary allocation to education by the government. Good governance requires that enough funds be made available for all educational programmes. The Nigeria experience shows that poor budgetary allocation to education is meager, and this against the UNESCO recommendations of 26% of the total allocation to the education sector (Akindutire and Ekundayo, 2010, p. 120).

A visit to some of the Nigerian universities, polytechnics, and colleges of education reveals that the Nigerian government is not serious about education. There are poor office accommodations for lecturers and working conditions. Science is a cognitive course that requires a conducive environment for its teaching and learning. Many lecturers cannot spend thirty minutes in his or her offices for reading and preparation for students teaching because of the hostile nature of the offices. Most offices do not have good furniture, lighting system, and air conditional conversely, the offices of the Vice- Chancellors, the Rectors and the Provost

including other management staff are well equipped. Science laboratories are built with inferior materials. A part of Physics laboratory collapsed during the construction at a college of education, but surprisingly, this collapsed building was rebuilt before the twilight and painted. The reason for this poor work was that the contractor is the chairman Governing Council of the college.

The result of the preceding is what we are witnessing today in the country, high rate of unemployment among our youths; insecurity everywhere, hunger and deprivation. Something must be done to improve our science education. Otherwise, the situation may not be better in the nearest future. This brings the paper to the next subtitle, the solution.

7. The way forward

The solution is in the hand of every Nigerian because good governance according to Otohile et al. (2014), should be participatory and transparent. However, it must start from the leaders. The paper suggests the following but not limited to these:

- Everyone who aspires to rule as the president of the nation should determine to rule transparently and by example. Such leader must be ready to be a father to all ethnic groups and religions. Good governance cannot be promoted as seen presently in Nigeria where some ethnic groups and religion consider themselves as above law because their man is the president.
- We must all fight corruption until it is completely obliterated in all sphere of our nation. The law must take its course on any corrupt citizen not minding his or status in the society. Everybody must follow the rule of law.
- Every government must make education a priority in the national agenda. More money must be allocated to science education for research, teacher education and infrastructure in all our institutions.
- The present science education curriculum should be changed to accommodate the needs of our youth. The curriculum should accommodate the authentic learning experience where the students control their learning by themselves. This will make them functional after graduation and reduce the rate of which graduates depend on the government for jobs and reduce unemployment.
- Teacher education is important, and the government should accord it the desired recognition. There are innovations in science teacher education that can be brought to the teacher through science teacher professional development. Science teacher should be given full support for research within and outside the country.
- The government should empower our youths who are innovative and willing to establish a venture that will provide them a job. Through this, most youth will prefer starting a private business without depending on government for a job. This will reduce the crime rate and also unemployment.

- Every institution (University, Polytechnics, Colleges of Educations, and others) should establish a Youth Scientific Collaborative Programme (YSCP) with the developed countries of the world. The aim of this programme should be to send all youths who graduate in science related courses with an outstanding result to go for practical experience in science for given period. The youths will be made to choose an area of interest related to their course where they could specialize. The government should make the fund available to establish these youths and buy equipment to start after the programme. This will reduce the rate at which the science education graduates seek jobs and encourage more students to enroll in science education. Besides, it will reduce the crime rate and improve the economic growth of the country.

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