NIGERIAN CONTENT MONITORING AND DEVELOPMENT BOARD AND THE DEVELOPMENT OF SCIENCE EDUCATION IN SECONDARY SCHOOLS IN BAYELSA STATE, NIGERIA

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Abstract
The paper assessed the contributions of the Nigerian Content Monitoring and Development Board towards the development of science education in secondary schools in Bayelsa State, Nigeria. A total of 385 science teachers from the 193 secondary schools in Bayelsa State and staff of NCDMB participated in the study. Descriptive survey design was employed and the instrument for data collection was "Contributions to the Development of Science Education Questionnaire" which was developed by the researcher and validated by experts. The reliability of the instrument was established using Cronbach Alpha and a coefficient of .79 was obtained, which was considered appropriate. The data gathered was analyzed using mean and standard deviation. The findings revealed programs, the extent of utilization, and the factors hindering the successful implementation of NCMDB programs for the development of science education in Bayelsa State. It was recommended that the government and NCMBD should endeavor to invest their resources in science education to help in repositioning for a sustainable local content policy.

Keywords: Contributions, Science Education Programme, Sustainable, Local Content Policy

Introduction

Science Education is a field of study that is concerned with producing learners with the right scientific skills and attitudes needed to pursue science-based disciplines such as engineering, Architecture, computer science, medicine, etc. Bolouga(2015) and Sigrid (2015) independently, submitted that the greatest limitation to the implementation of the local content policy is the lack of indigenous experienced personnel with adequate technical knowledge in the Oil and Gas sector. Gauis-Obaseki (2010) further opined that Local Content Policy works optimally to create value where the necessary scientific and technological skills and knowledge are available and utilized. Without a continuous supply of the right scientific skills and attitudes needed to pursue disciplines such as engineering, computer science, etc., which are the main required manpower in the Oil and Gas industry, the whole idea of Local content is a mirage. That is to say that, since the implementation of the local content policy requires skilled personnel in the oil and gas sector, Science Education on the other hand needs the right collaboration with the oil and gas sector to enable it to produce the required scientific and technical skills and attitudes.

The objective of the Act is to increase indigenous participation in the oil and gas industry. The Act is designed to promote local participation within the industry, that is Nigerian incorporated companies. The Act is framed within the context of the growth of Nigerian entrepreneurship and domestication of assets to fully realize Nigeria's strategic developmental goals. Balouga (2015) reported that the Act has a scheme with the potential to increase the domestic share of the $ 18 billion annual spending on oil and gas from 45% to 70%, in addition to enhancing the multiplier effect on the economy's refining and petrochemicals.

The oil and Gas business requires a high level of technicality and is high-risk prone. As such, for a developing country like Nigeria to exercise greater control of the exploration and

exploitation activities in the Oil and Gas sector, it must have an effective Science and Technology educational system that is tailored towards the human resource needs of the industry and tries to match the resources to meet those needs (Ihua 2010).

Statement of Problem

Despite the Universal recognition of the numerous benefits of science education and the subsequent action of giving it a special place in the schooling process, evidence abounds that it has been plagued with a lot of challenges. Babajide (2015), and Kola(2013), identified poor funding, poor instructional methods lack of basic infrastructure and poor management, security, corruption, bad economy, and poor science teachers as the problems of Science Education in Nigeria. In another vein, Omeodu and Charles-Owaba (2018), reported that a vibrant science education program is a prerequisite for a sustainable local content policy in Nigeria. However, there is scant research evidence on the contribution of Nigeria Content Monitoring Development Board, towards the development of science education in Bayelsa State.

Purpose of Study

The main aim of the study is to assess the contributions of the Nigerian Content Monitoring and Development Board towards the development of science education in secondary schools in Bayelsa State, Nigeria Specifically, the study achieved the following:

1. To determine the programmes of NCMDB that support the development of science education in Bayelsa State.
2. To determine the extent of utilization of the programmes of NCMDB for the development of science education in Bayelsa State.
3. To determine the factors hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State.

Research Questions

The following research questions were formulated to guide the study:

1. What are the programmes of NCMDB that support the development of science education in Bayelsa State?
2. To what extent are the programmes of NCMDB implemented for the development of science education in Bayelsa State?
3. What are the factors hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State?

Literature Review

Concept of Science and Science Education

Ekokotu (2011) defined science as knowledge obtained through observation and analysis of events or natural phenomena that ensure control over the environment. Idoko (2011) defined Science as a body of knowledge arrived at and accumulated following some well-known procedures generally referred to as scientific method.

Science is central to the developmental prospects of a nation; it provides a tool that helps to alleviate specific problems that afflict the nation and impede its development prospects such as disease, infrastructural decay, and environmental degradation. Science is also central to the dynamics of a nation's economic growth; through the provision of marketable labor supply, reduction of unemployment and underemployment, infuse technical knowledge, and the reduction of poverty. Thus, Olukayode and Dahud (2011) reported that economically, successful countries are those that have given science the right position in their quest to foster indigenous innovation capacity.

Education is the total process of human learning by which knowledge is total process of human learning by which knowledge is imparted, faculties trained, and skills developed" (Urevbu, 2001). Science education is a field of study that acquaints learners with certain basic knowledge, skills, and attitudes needed for future work in science and science-related fields.

Ayonmike and Okeke (2015) saw science education as a systematic and orderly transmission of knowledge, skills, and values to develop a workforce that can enhance productivity and sustain competitiveness in the global economy. Science education is a process of inculcating science, which means science

education prepares individuals for the world of work and is also a viable tool for sustainable development. The Nigerian government like all other governments in the world realizes the role of science and its by-product-technology in issues of national development. It is for this reason that its promotion is enshrined in section 18(2) of the 1999 constitution of the Federal Republic of Nigeria.

The goals of science education in Nigeria according to the National Policy of Education (FNR; 2014) are to:

i. *Cultivate inquiring, knowing, and rational minds for the conduct of a good life and democracy.*
ii. *Produce Scientists for National development.*
iii. *Services Studies in technology and the cause of technological development.*
iv. *Provide knowledge and understanding of the complexity of the physical world, the forms and the conduct of life.*

Local Content and Nigeria Local Content Act

Local content is defined by different authorities in different ways (Gbegi& Adebisi, 2013).

World Bank (2013) defined local content as a policy that evolved from creating background linkages by supplying input to the local economy through the transfer of technology, the creation of local employment opportunities, and increasing local ownership and control.

International Petroleum Industry Environmental Conservation Association; (IPIECA, 2011) defined local content as the added value brought to a host nation (National, Regional, and Local areas in that country including communities) through the activities of the oil and gas industry. To IPIECA, local content includes all activities that are mainly workforce development (employment and training of local workforce) and investments in supplier development (developing and procuring supplies and services locally).

The Nigeria Oil and Gas Industry Content Development Act (2010) defines local content as: the quantum of composite value added or created in Nigeria through utilization of Nigerian resources and services in the petroleum industry resulting in the development of indigenous capability without compromising quality, health, safety and environmental standards.

Ayonmike and Okeke (2015) observed that local content is standard practice undertaken by resource-rich countries of the world. They further stated that while some countries approach it from the point of view of an economic tool which will ultimately create local capacity and capabilities that can compete with foreign companies and in the process develop their economies, other view it as a protectionist measure to protect their local technology and services from misappropriated foreign competition as a result of globalization, thereby retaining the value of their local technology and services within the borders of their countries.

Thus, the definition of local content from the Nigerian context is mainly concerned with the creation of local capacities and capabilities that can add value to the oil and gas sector for the overall benefits of the economy (Obasa, 2011).

Nigeria Local Content Act

The first move to create a local content policy in Nigeria was in 1969, through the enactment of 1969 Petroleum Act. The local content policy was enshrined in Article 26. The Petroleum Act was a mere paper work (Ayonmike and Okeke, 2015). The second move to enact the policy started in 1971, with the establishment of the Nigerian National Oil Corporation (NOC). The NOC was the vehicle for the promotion of Nigeria's indigenization policy in the oil and gas sector. In 1977, the Petroleum Ministry was merged to the NOC to form the present day Nigerian National Petroleum Corporation (NNPC). Finally, in 2010, the Nigerian Local Content Act was signed into law as Nigeria Oil and Gas Industry Content Development Law.

Nigeria Content Development and Monitoring Board (NCDMB)

The Nigeria Content Development and Monitoring Board is the Board (NCDMB) responsible for the implementation of the Nigeria Oil and Gas Industry Content Development (NOGIC) Act of 2010. It was created in line with section 55 of the NOGIC Act which states that the Board shall establish, maintain, and operate a joint qualification system (JQS) in consultation in accordance of

the provision of this Act. One of the key functions of the Board is to engage in targeted capacity-building interventions that would deepen indigenous capabilities and Capital Development in the oil and Gas industry. The Board is headed by a Chairman who is the Minister of Petroleum Resources and an Executive Secretary who is the secretary of the Council. The Board have 4 directors in charge of finance, planning and research, monitoring and evaluation and legal services (NOGIC ACT 2010). Its cooperate headquarters is at NCDMB House, Isaac Boro Expressway, Opolo, Yenagoa, Bayelsa State.

Methodology:

The descriptive survey research design was adopted for the study. Descriptive survey research design, according to Charles-Owaba (2019), is the one in which a group of people or items is studied by collecting and analyzing data from only a few individuals or items considered to be representatives of the entire group. This design is appropriate for this study since information will be gathered from a sample of the population who are familiar with the ideas relating to the purpose of the study to generalize the results for the entire population. The population of the study comprised all science teachers from the 217 secondary schools in Bayelsa State and all staff of the Capacity Building Unit of Nigeria Content Development and Monitoring Board (NCDMB), Co-operate Headquarters Yenagoa, Bayelsa State. A proportionate stratified random sampling technique was used to select 385 science teachers from the 217 secondary schools in Bayelsa State and 25 staff of the Nigeria Content Monitoring and Development Board using systematic sampling with a selection interval of 5. A researcher–developed structured instrument tagged: "Contributions to the Development of Science Education Questionnaire" formatted in a four-point rating scale was used for data collection. It consists of two (2) parts, namely; part I and II. Part I measured the demographic variables of the respondents, while Part II is further divided into: Sections A, B, and C. Section A, consists of a 6-item on the use of the programs of NCDMB, B consist of 6 items on the extent of utilization of the programmes and section C consist of 6-items which measured the factors affecting the implementation of the programmes. The instrument was validated bya specialist in Tests and Measurement and Science Education. Their corrections and suggestions resulted to the final draft used in the study. The instrument was trial tested using twenty(20) other science teachers and ten(10) staff of the Nigeria Content Monitoring Development Board who did not participate in the study but possess the same characteristics as the population of interest. The reliability of the instrument was established using the Cronbach Alpha Formula. A calculated reliability coefficient of .79 was achieved and was considered appropriate. The researchers administered the instruments to the respondents by direct contact and a 100% return rate was achieved. Mean and Standard deviation were used to analyze the research question. Items with a mean value of 2.50 and above were agreed, while those with a mean value below 2.50 were termed to disagree.

Results and Findings

Research Question 1

What are the programmes of NCMDB that support the development of science education in Bayelsa State?

Table 1: Respondent's mean and standard deviation on the programs of NCMDB that support the development of science education in Bayelsa State.

S/N	ITEM	N	x	S.D.	Remark
1.	Building of Science Laboratory	410	2.57	0.61	major
2.	Building ICT infrastructures	410	3.34	0.61	major
3.	Training of Science teachers	410	3.23	0.57	major
4.	Awarding of Scholarships to science students	410	3.31	0.59	major
5.	Building of Library	410	3.34	0.60	major
6.	Organizing of Science Quiz, debates, etc.	410	3.23	0.63	major
7.	Donation of science books and other printed materials	410	3.17	0.65	major
	Grand Mean		3.33	0.62	Major

Source: Fieldwork (2023)

Table 1 above shows the mean and standard deviation of the programmes of NCMDB that supports the development of science education in Bayelsa State. The table revealed that the grand mean value is 3.33, which is higher than the criterion mean value of 2.50, indicating that the items are major programmes of NCMDB that support the development of science education in Bayelsa State.

Research Question 2

To what extent are the programmes of NCMDB implemented for the development of science education in Bayelsa State?

Table 2: Respondent's mean and standard deviation on the extent to which programmes of NCMDB that support the development of science education in Bayelsa State are implemented.

S/N	Item	N	x	S.D.	Remark
8.	Building of Science Laboratory	410	1.57	0.81	Low
9.	Building ICT infrastructures	410	1.34	0.81	Low
10.	Training of Science teachers	410	1.23	0.77	Low
11.	Awarding of Scholarship to science students	410	1.31	0.79	Low
12.	Building of Library	410	1.34	0.70	Low
13.	Organizing of Science Quiz, debates, etc.	410	1.23	0.73	Low
14.	Donation of science books and other printed materials	410	1.17	0.75	Low
	Grand Mean		1.33	0.62	Low

Source: Fieldwork (2023)

Table 2 above shows the extent to which the programmes of NCMDB are implemented for the development of science education in Bayelsa State. The table revealed that the grand mean value was 1.33 which was lower than the criterion mean value of 2.50, indicating the extent of implementation was low.

Research Question 3:

What are the factors hindering the successful implementation of the programmes of NCMDB toward the development of science education in Bayelsa State?

Table 3: Respondent's mean and stand and deviation on factors hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State.

S/N	**ITEM**	**N**	**x**	**S.D.**	**Remark**
1.	Ignorance of the roles of NCDMB in the development of science education	410	2.30	0.91	Minor
2.	Lack of synergy between the state government and the board.	410	3.35	0.83	Major
3.	Corruption on the part of officers in charge	410	2.75	0.79	Minor
4.	Differences in political affiliations between the state Government and the head of the board.	410	2.89	0.80	Major
5.	Lack of funds in the board.	410	2.35	0.81	Minor
6.	Deliberate negligence from the board	410	2.59	0.81	Major
7.	The bureaucratic process involved in the approval of contracts	410	3.09	0.83	Major
	Grand Mean		2.76	0.82	

Source: Fieldwork (2023)

Table 3 shows the factors hindering the successful implementation of the programmes of NCMDB toward the development of science education in Bayelsa State. The result revealed that lack of synergy between the state government and the board, differences in political affiliations between the state Government and the head of the board, the bureaucratic process involved in the approval of contracts, and deliberate negligence from the board, are major factors hindering the successful implementation of the programmes

of NCMDB towards the development of science education in Bayelsa State. Corruption on the part of officers in charge, ignorance of the roles of NCDMB in the development of science education, and corruption on the part of officers in charge are minor hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State.

Discussion of Findings

The study revealed that, the building of the Science Laboratory, library, ICT infrastructure, awarding of scholarships to science students, donation of science books, and training of science teachers are programmes of NCMDB that support the development of science education in Bayelsa State.This finding is consistent with the findings of Charles-Owaba and Omeodu (2019), who submitted that the NOGIC Act supports activities that will develop science and technical education in Nigeria for sustainable Local Content Policy.

The finding in research question 2 revealed that the extent to which the programmes of NCMDB are implemented for the development of science education in Bayelsa State is low. This implies that the extent to which NCDMB is involved in building of Science Laboratory, library, ICT infrastructure, awarding of scholarships to science students, donation of science books, and training of science teachers as part of their efforts to improve scientific and technical content which in turn will sustain local content policy in Bayelsa State is low. Both science teachers and staff of the social corporate unit of NCDMB agreed with the items which indicated low extent of implementation. These findings is in agreement with the findings of Omeodu and Charles-Owaba (2019), Charles-Owaba and Moses (2018), Ihua (2010), who submitted that only an effective educational system that understands the human resource needs of the industry can enhance the prospects of higher local content.

Finally, the study revealed that lack of synergy between the state government and the board, differences in political affiliations between the state Government and the head of the board, the bureaucratic process involved in the approval of contracts, and deliberate negligence from the board, are major factors hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State. Corruption on the part of officers in charge, and ignorance of the roles of NCDMB in the development of science education, and corruption on the part of officers in charge are minor barriers to the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State. This is consistent with the finding Ihua (2010) who reported that synergy between the board and the state government will enhance the improvement of local content.This is consistent with the findings of Gbesi and Adebisi (2013), Omeodu and Charles-Owaba (2018), Charles–Owaba and Moses (2018), Omeodu and Charles-Owaba (2019), who submitted that the NCDMB can help improve and sustain the local content policy if they do all within their reach to contribute to the development of science and technical education in Nigeria, not minding political affiliations.

Conclusion

This Study has established that the building of Science laboratories, library, ICT infrastructure, awarding of scholarships to science students, donation of science books, and training of science teachers are programmes of NCMDB that support the development of science education in Bayelsa State. The extent to which the programmes of NCMDB are implemented for the development of science education in Bayelsa State is low. Also, the study has affirmed that lack of synergy between the state government and the board, differences in political affiliations between the state Government and the head of the board, the bureaucratic process involved in the approval of contracts, deliberate negligence from the board, are major factors hindering the successful implementation of the programs of NCMDB towards the development of science education in Bayelsa State. Corruption on the part of officers in charge, ignorance of the roles of NCDMB in the development of science education, and corruption on the part of officers in charge are minor hindering the successful implementation of the programmes of NCMDB towards the development of science education in Bayelsa State.

Recommendations

Based on the findings of this research, the following recommendations were made:

1. The government, Nigeria Content Monitoring Development Board, and other stakeholders should endeavor to invest resources (both financially and otherwise). To help reposition the science Education programme from its current state of utter starvation to a state of abundant resources.
2. The Nigeria Content Monitoring and Development Board should continue to sponsor science based programme that will create the required awareness on the need for indigenous domination of the Oil and Gas Industry
3. Science teachers and school administrators should ensure that students are exposed to the needed skills in science and technological advancement, connecting what is taught in class and that which is obtained in real world context.

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