

The Role of Kebbi State Government to the Development of Teaching and Learning of Science Education.

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Abstract

This research work focuses on the role of Kebbi State government to the development of teaching and learning of science education in the state. The population of the study area is 4858 which 357 students were used using Krejcie and Morgan table for determining sample size and 60 teachers were also selected. Base on the findings there is need to improve science education in which has long been felt by all concerned with science education in this country. The researcher concluded that, Current government did not provide good working condition for the Science teachers, present government did not have science center in each emirate, previous government did not organizes seminar and workshop for the science teachers schools .And also the researcher recommended that, Government should provide more science text books that both teachers and students used for effective teaching and learning of science education in the state, more laboratory and materials should also been provides by the government to enhance practical's activities in the schools, Competence laboratory personals should also been provides by the government for the effective running of practical activities in the laboratory, Science and teachers service boards should organize seminars and workshop frequently to keep the teachers up to date, and also send them for in- service training, Incentive bus allowances should be increased to science teachers posted to rural areas.

Keywords: Role, Development, Teaching and learning, Science Education.

Introduction

In Nigeria, science and technology are the foundation of economic development. The current educational development in the nation, as indicated by the federal government, emphasis on all level of education as a strong case is made for the effective teaching and learning of science not only in the urban area but also in the rural area throughout out the country. The need to

implement the primary school core curriculum fully has also been highlighted in the national policy on education 2004. This is because a strong base in science at the primary school level is a pre requisite for the development of science education at the secondary and tertiary level of education and the nation at large.

Both federal and state government have taken steps to improve the teaching and learning of science at secondary level. Some state government have introduced special science secondary school at various localities in their state, and this state government have shown much interest in sponsoring science teacher for science work shop, seminars, short and long conference. The present kebbi state has shown much attention in this area and it has established the science and technical school management board. The same way the federal government established the federal ministry of science technology, and the science equipment centre which concentrate on the production and maintenance of science equipment for the system.

In an attempt to popularise science in the schools, science teachers all over the country met on 30th November, 1957 to inaugurate science teachers association of Nigeria, which is a professional association concerned with the teaching of science in our schools Abdullahi A. (1982).

Various science subject committees were set up and their work include among other things, critical analysis of the science syllabuses, with a view to formulating not only new syllabus but also guidelines for the effective utilisation. Omolewa, (1977) reporting information service of London, further demonstrated the poor state of science education in the country. He revealed that only two out of the candidates who entered for London city and guilds passed the examination in spite of the efforts as financial support for missionary's schools, staffing of schools, and establishing new schools such as Yaba College of technology in 1932 etc.

This development by the federal government and some state government promoted the need to find out the role of kebbi state government to the development of teaching and learning of science education in the state from 2006 to 2014.

Statement of the Problem

In kebbi state there is need to find out the role of the kebbi state government to the development of teaching and learning of science education in the state from 2006 to 2014. Since the origin of kebbi state in 1991 there have been many governors and administration with their divas system of government, but no administration have been given so much emphases on funding of education as the 2006 to 2014. This is why this study considers it necessary to make comprising between 2006 to 2014 government role to the development of teaching and learning of science education in the state and that of current administration (i.e. 2015). The component to be investigated include facilities and equipment, teacher's good working condition, supervision, seminars and workshops as well as the contribution in research and development.

Objectives of the Study

The objectives of this study are as follows:-

1. To find out in what ways the Kebbi state government contributed to the development of science education in state from 2006 to 2014.
2. To find out the level at which teaching and learning of science education has been developed in the state from 2006 to 2014.
3. To examine the level at which the present government (2015) contribute to the development of teaching and learning of science education in the state.

Research Question.

The research questions are as follows:-

1. Is there any relationship between the role of Kebbi state government and the development of science education in the state?
2. Is there any difference in terms of development of teaching and learning of science education from 2006 to 2014 government and the present government?
3. Is there any difference in terms of producing materials that enhance teaching and learning of science education in 2006 to 2014 government and that of current government?

Area of the Study

The scope of this study was focused on the role of Kebbi State government to the development of teaching and learning of science education in the state. The scope and delimitation of this study is only restricted to some selected secondary school in Birnin Kebbi, Zuru. Yauri and Argungu local government and the selected school to be used as a sample includes; Kanta Collage Argungu, Nagari College Birnin Kebbi, Government Girls Science collage Yauri, Government Science Collage Zuru

More ever this research will put more emphasis on teachers, their working condition, instructional materials, teacher's orientation programs and leaning environment.

Significant of the Study

The study will be significant to student who are on the process of learning of science education by given awareness to the government base on the role given by the former administration to the development of teaching and learning of science education in the state so that government will provide necessary material needed by the teachers and student for effective teaching and learning to take place. This study is also important to stakes holders in education by knowing the level in which the government contribute to the development of science education in state so that they design their educational plan base on the materials and recourses available in the state.

Literature Review

The Rise of Modern Science in the World

In Nigeria, science education was not popular in the early century that is in the 1930s. Only few students offered science subjects. Ashby commission on higher education in Nigeria made the same observation in 1960. By 1950 most Nigeria secondary schools were offering general science in one form or another but the general trend was to offer it as a single subject up to the school certificate examination partly because of lack of science teachers in the single subject areas and mostly because of lack of resources needed to teach basic science up to school certificate level. General science in Nigeria schools therefore began to experience a failure as an approach to science teaching.

However, in Kebbi state before 1999 education generally was not given much consideration by previous government let alone science education, with the coming of present government emphasis was placed on education by increasing teacher's salary, allowances, renovation of dilapidated buildings and construction of new school and provision of science facilities and equipment. Therefore the need for this study in order to make comparison.

Development in Teaching and Learning of Science Education in Kebbi State

Successive governments in Kebbi State before Nasamu claimed to have spent colossal sums of money to revamp the near-dead education sector, but to all discernable minds such monies were either misappropriated or they were a fallacious claim from the government, as policies

enshrined by the government aimed at revitalizing education went to the pockets of various committees set up by the government to see to the success of education in Kebbi State thus relegating to the background those with the know-how on education revival. As a result education in Kebbi State is facing at the moment what many describe as financial and policy suffocation, as long as committees leave behind the core professionals and true educationists in favour of mediocrity, the story will remain same in Kebbi State.

The Head Teacher added that in class one alone you can find up to hundred pupils while in class four up to four hundred pupils. He lamented that under-staffing is slowing down their drive to optimum performance in the discharge of their duties as teachers. He then used the medium to appeal to government to recruit and post enough teachers to his school and other schools across Kebbi, adding that structure is no longer their problem but in adequate staff. Hajiya Kubra Model Primary School Illela Yauri has an agonizing story. On visit it was noted that classes are without doors and windows, while some classes do not even have doors not even have cement floors as the pupils sit on bare ground with their uniforms.

The aims and objective of Teaching and Learning of Science Education.

The aims of science education, according to Silber R. L. In the journal of the association for science education (Vol.63, NO 222 September 1981 p.11) should be to inculcate in the students. The acquisition of knowledge and understanding of arranged of scientific concepts, generalization principles and laws through the systematic study and experience of aspects of the body of knowledge called science. The acquisition of arranged of cognitive and psychomotor skills and process a result of direct involvement in scientific activities and procedures in the laboratory and the field.

Furthermore, the major objective of science education is to develop scientifically literate and personally concerned individual with a high competence of rational thought and action. As a result according to the forty-sixth year book of the national society for the study of education entitled 'science education in America schools (1947), after, completing a science course, a student should be better able to achieve the following objectives.

Micheal Martin (1972) stated that it is possible to argue that science education should aim not only at having students acquire knowledge, skill and understanding and also at having students acquire the propensity to use such knowledge, skill and understanding in their lives.

Methodology

Research Design

The research design adopted in this study is descriptive survey. This survey is to put up a theoretical explanation of a particular situation under study by carefully examining the content of the situation in order to figure-out useful information for educational and other related purposes. The method is mainly for obtaining information opinion and views of respondent the role of the kebbi state government to the development of teaching and learning of science education in the state. Qualitative data this method is use to examining contents of the situation in order to find out and obtained information of this research work

Population of the Study

The total population of this study comprise of four thousand eight hundred and fifty eight (4858) students, where Kanta collage Argungu has the total of one thousand five hundred and sixty seven (1,567), Nagari collage Birnin Kebbi has the total of one thousand two hundred and fifty five (1,255), Government Science collage Zuru has the total of one thousand and thirty three (1,033),and Government Girls science Collage Yauri has the total of one thousand and

three (1,003) and total number of fifteen teachers from both four schools selected in the study, both comprise male and female.

Sample and Sampling Techniques

The samples, to be used in this research work consist of four selected secondary schools in Birnin Kebbi Argungu, Yauri and Zuru local government. This is due to number of limitations such as shortage of time and financial problems. The selected schools are all government owned and will represent all the schools that are in four different emirates in the state. Purposive sampling technique was used in this research and Krejcie and Morgan (1970) method will be applied to draw the representative of the population of which the questionnaires can be administered.

The sample of this study is three hundred and fifty seven (357) students drawn from the study area, by Krejcie and Morgan (1970). Ninety (90) students from Nagai College Birnin Kebbi, ninety two (92) students from Kanta Unity College Argungu, eighty-nine (89) students from Government Science Collage Zuru, eighty six (86) students from Government Girls Collage Yauri. Also 60 teachers was drawn from the study 15 from each school.

Table 1: Number of Students Selected From Various Schools

S/NO	SCHOOLS	TOTAL NO. OF STUDENTS	N0. OF STUDENTS SELECTED	PERCENTAGE
1	Kanta Unity Collage Argungu	1,567	92	26%
2	Nagari collage Birnin Kebbi	1,255	90	25%
3	Government Science Collage Zuru	1,033	89	25%
4	Government Girls Science Collage Yauri	1,003	86	24%
	TOTAL	4858	357	100%

Table 2: Number of Teachers Selected From Various Schools

S/NO	SCHOOLS	TOTAL NO. OF SCIENCE TEACHERS	N0. OF TEACHERS SELECTED	PERCENTAGE
1	Kanta Unity Collage Argungu	32	15	25%
2	Nagari collage Birnin Kebbi	29	15	35%
3	Government Science Collage Zuru	26	15	25%
4	Government Girls Science Collage Yauri	25	15	25%
	TOTAL	112	60	100%

Instrumentation Questionnaire

Two sets of Questionnaires title “Questionnaire for teachers” and Questionnaire for students were used. The questionnaires contained nine (9) items for students and nine (9) items for teachers respectively. The questions in the questionnaires are framed so as to be able to answer the objectives and research questions of the study. The questionnaire is in two part, part (A) containing personal data and part B containing research questions. The questionnaire is to be structured along with the Yes or No response.

Reliability of the Instrument

To establish the reliability of this research instrument (questionnaire) the researcher conducted a pilot study (test-retest method) with a group of 10 students 10 teachers who are not part of the sample of study after two to three weeks the same instrument was administered to the same group the result is split into product moment correlation coefficient formula. The correlation coefficient obtained was 0.75 which is adjudged to be highly reliable of the instruments.

Results

Sixty (60) questionnaires were distributed to the teachers within the four (4) selected Science secondary schools which are Zuru, Yauri, Birnin Kebbi and Argungu Local government area, and fifteen (15) questionnaires were distributed to each of the school science teacher’s currently teaching science subject in the schools .However, forty five (45) questionnaires were completed and returned to the researcher. The analysis is based on the response of these 45 teachers from those various schools. Also three hundred and fifty seven (357) questionnaires were distributed to students in the same selected Science secondary schools, however, two hundred and ninety three (293) questionnaires were completed and returned to the researcher. The analysis is based on the response of these two hundred and ninety three (293) students from those various schools. Before the analysis of student’s questionnaire begin with analysis of teacher’s questionnaire.

Demographic Characteristics of Teacher’s Responses

Table 1: Showing Demographic Characteristic of Teachers

S/N	Category	20-29years	%	30-49years	%	40 & above	%	Total		
								Resp.	%	
1	Age distribution									
I	Nagari College Birnin Kebbi	0	0	4	33	8	67	12	100	
ii	Kanta collage Argungu	1	8	8	61	1	31	13	100	
iii	Government science collage yauri	1	10	8	80	1	10	10	100	
iv	Government science collage zuru	0	0	4	40	6	60	10	100	
	Total	2	18	24	214	16	168	45	400	
2	Gender	Frequency					%			
i	Male	35					(309 %)			
ii	Female	10					(151%)			
	Total	45					400			

Source: Field Survey, 2016

On the **age** distribution on the table 1 above indicates that out of 12 respondents from Nagari College Birnin Kebbi, 8 respondents (67%) are of age from 40 and above. 0 respondents (0%) are from 20-29 and 4 respondents (33%) are 30-39, Out of 13 respondents from kanta collage Argungu 1 respondents (8%) are of ages from 20-29years, 8 teachers are from age of 30-39, and 4 teachers are from age of 40 to above. Out of 10 respondents from science Yauri 1 respondents (10%) are of ages from 20-29years, 8 teachers (80%) are from age of 30-39, and 1 teachers (10%) are from age of 40 to above .and Out of 10 respondents from science zuru 0 respondents (0%) are of ages from 20-29years, 4 teachers (40%) are from age of 30-39, and 6 teachers (60%) are from age of 40 to above . this imply that majority of the respondents which are 24 (214%) are from the age of 30-39.

Also on **gender** distribution on the table above indicates that, out of 45 respondents 35 (309%) age are male teachers and 10 respondents (151%) age are female teachers. This implies that majority of the respondents are male teachers.

Table 2 Demographic Characteristics of Students

S/N	Category	Frequency	Percentage
1	Gender		
	Male	231	300%
	Female	62	100%
	Total	293	400
2	CLASS LEVEL		
	SS1	22	32%
	SS2	90	116%
	SS3	181	252%
	Total	293	400

Source: Field Survey, 2016

On **gender** distribution in the table 2 above, indicate that, out of 293 respondents 231 (300%) respondents are male students while 62 (100%) respondents are female students this implies that majority of the respondents are male students. Also on class level distributions in the table above indicate that out of 293 respondents 22 (32%) respondents are from SS1 90 (116%) respondents are from SS2 and 181 (252%) respondents are from SS3 students. This implies that majority of the respondents are from SS3 students.

Analysis of Teacher's Questionnaire

Table 1: Does Current government provide good working condition for the Science teachers?

S/N	Schools	Freq. of Yes	% of Yes	Freq. of No	% of No	Total
1	Nagari collage Birnin kebbi	8	67%	4	33%	12
2	Kanta Collage Argungu	3	23%	10	77%	13
3	Govt. Science Collage Yauri	3	30%	7	70%	10
4	Govt. Science Collage Zuru	3	30%	7	70%	10
Total		17	150	28	250	45
Mean(\bar{X})		4.25	97.75	7.00	62.5	11.25

Source: Survey Record, (2016)

The table 1 above indicate that, out of 12 respondents from Nagari collage 8 respondents (67%) said that Current government provides good working condition for the Science teachers and 4 respondents (33%) said that Current government did not provides good working condition for the Science teachers, out of 13 respondents from kanta collage 3 respondents (23%) said that, Current government provide good working condition for the Science teachers and 10 respond (77%) said that Current government did not provides good working condition for the Science teachers, out of 10 respondents from, Government science collage Yauri,3 respondents (30%) said that Current government provide good working condition for the Science teachers and 7 respondents (70%) said that Current government did not provides good working condition for the Science teachers, out of 10 respondents from Government science collage zuru 3 respondents (30%) said that Current government provide good working condition for the Science teachers and 7 respondents (70%) said that Current government did not provides good working condition for the Science teachers'. This implies that majority of the respondents said that Current government did not provides good working condition for the Science teachers.

Table 2: Does the state government have science centre in your emirate?

S/N	Schools	Freq. of Yes	% of Yes	Freq. of No	% of No	Total
1	Nagari collage Kebbi	3	25%	9	75%	12
2	Kanta Collage Argungu	1	8%	12	92%	13
3	Govt. Science Collage Yauri	3	30%	7	70%	10
4	Govt. Science Collage Zuru	2	20%	8	80%	10
Total		9	83	36	317	45
Mean(\bar{X})		2.25	20.75	9.00	79.25	11.25

Source: Survey Record, (2016)

The table 2 above indicate that, out of 12 respondents from Nagari collage 3 respondents (25%) said that state government have science centre in their emirate and 9 respondents (75%) said that state government did not have science centre in their emirate, out of 13 respondents from kanta collage 1 respondents (8%) said that state government have science centre in their emirate, and 12 respondents (92%) said that state government did not have science centre in their emirate, out of 10 respondents from, Government science collage Yauri,3 respondents (30%) said that state government have science centre in their emirate and 7 respondents (70%) said that state government did not have science centre in their emirate, out of 10 respondent from Government science collage zuru 2 respondents (20%) said that state government have science centre in their emirate and 7 respondents (80%) said that state government did not have science centre in their emirate'. This imply that majority of the respondents said that state government did not have science centre in their emirate.

Table 3: Does previous government organizes seminar and workshop for the science teachers?

S/N	Schools	Freq. of Yes	% of Yes	Freq. of No	% of No	Total
1	Nagari collage Birnin kebbi	5	42%	7	58%	12
2	Kanta Collage Argungu	7	54%	6	46%	13
3	Govt. Science Collage Yauri	3	30%	7	70%	10
4	Govt. Science Collage Zuru	5	50%	5	50%	10
Total		20	176	25	224	45
Mean(\bar{X})		5.00	44.00	6.25	56.00	11.25

Source: Survey Record, (2016)

The table 3 above indicate that, out of 12 respondents from Nagari collage 5 respondents (42%) said that previous government organizes seminar and workshop for the science teachers and 7 respondents (58%) said that previous government did not organizes seminar and workshop for the science teachers, out of 13 respondents from kanta collage 7 respondents (54%) said that previous government organizes seminar and workshop for the science teachers, and 6 respondents (46%) said that previous government did not organizes seminar and workshop for the science teachers, out of 10 respondents from, Government science collage Yauri,3 respondents (30%) said that previous government organizes seminar and workshop for the science teachers and 7 respondents (70%) said that previous government did not organizes seminar and workshop for the science teachers, out of 10 respondents from Government science collage zuru 5 respondents (50%) said that previous government organizes seminar and workshop for the science teachers and 5 respondents (50%) said that previous government did not organizes seminar and workshop for the science teachers'. This imply that majority of the respondents say that previous government did not organizes seminar and workshop for the science teachers

Analysis of Student' Questionnaire

Table 1: Do you have Science Laboratory in your School?

S/N	Schools	Freq. of Yes	% of Yes	Freq. of No	% of No	Total
1	Nagari collage Birnin kebbi	75	100%	0	0%	75
2	Kanta Collage Argungu	81	100%	0	0%	81
3	Govt. Science Collage Yauri	56	90%	6	10%	62
4	Govt. Science Collage Zuru	75	100%	0	0%	75
Total		288	390	6	10	293
Mean(\bar{X})		72.00	97.5	1.5	2.5	73.25

Source: Survey Record, (2016)

The table above indicates that, out of 75 respondents from Nagari collage 75 respondents (100%) said that they have Science Laboratory in their school and 0 respondents (0%) said that they do not have Science Laboratory in their school , out of 81 respondents from kanta collage 81 number of respondents (100%) said that they have Science Laboratory in their school and 0 respondent (0%) said that they do not have Science Laboratory in their school . out of 62 respondents from, Government science collage Yauri,56 respondents (90%) said that they have Science Laboratory in their school and 6 respondents (10%) said that they do not have Science Laboratory in their school. Out of 75 respondents from Government science collage zuru 75 respondents (100%) said that they have Science Laboratory in their school and 0 respondents (0%) said that they do not have Science Laboratory in their school. This implies that majority of the respondents said that they have Science Laboratory in their school

Table 2: Have you ever go for excursion where the knowledge of Science is applied?

S/N	Schools	Freq. of Yes	% of Yes	Freq. of No	% of No	Total
1	Nagari collage Birnin kebbi	56	75%	17	25%	75
2	Kanta Collage Argungu	52	64%	29	36%	81
3	Govt. Science Collage Yauri	25	40%	37	60%	62
4	Govt. Science Collage Zuru	8	11%	67	89%	75
Total		141	190	150	210	293
Mean(\bar{X})		35.25	47.5	37.5	52.5	73.25

Source: Survey Record, (2016)

The table 2 above indicates that out of 75 respondents from Nagari collage 56 respondents (75%) said that they went for excursion where the knowledge of Science is applied while 17 respondents (25%) said that they do not go for excursion where the knowledge of Science is applied . out of 81 respondents from kanta collage 52 respondents (64%) said that they went for excursion where the knowledge of Science is applied and 29 respondents (36%) said that they do not go for excursion where the knowledge of Science is applied t, out of 62 respondents from, Government science collage Yauri,25 respondents (40%) said that they went for excursion where the knowledge of Science is applied and 37 respondents(60%) said that they do not go for excursion where the knowledge of Science is applied , and out of 75 respondents from Government science collage zuru 8 respondents (11%) said that they went for excursion where the knowledge of Science is applied. While 67 respondents, (89%) said that. they do not go for excursion where the knowledge of Science is applied. This these implies that majority of the respondents said that they went for excursion where the knowledge of Science is applied

Conclusion

From the finding of the study and discussed above the researcher conclude that: However 36 (317%) teachers said that government did not have science centre in their emirate as shown in table 2 therefore there is needs for the government to provides science orientation centre in each emirate where science teachers will be oriented

Since 20 (176%) teachers said that previous government did organizes seminars and workshop for the science teachers as shown in table 3 then there is needs for the government to organizes seminars and workshop for the science teachers for the development of teaching and learning

of science education in the state science orientation centre in each emirate where science teachers will be oriented.

Recommendations

From the finding of the study and the conclusions reached on the basis problems observe in the course of this study the researcher made some recommendations of a number of ways by which state government could play vital role in the development of teaching and learning of science education in the state. The flowing recommendations are made by the researcher:

1. Government should provide more laboratory and materials to enhance practical's activities in the schools Competence laboratory personals should also been provides by the government for the effective running of practical activities in the laboratory.
2. Science and teachers service boards should organize seminars and workshop frequently to keep the teachers up to date, and also send them for in- service training. Incentive bus allowances should be increased to science teachers posted to rural areas.
3. Government should provide science orientation centre in each emirate within the state for regular orientation of science teachers. Supervision should be intensified for effectiveness.

References

- Abdullahi A. (1982) science teaching in Nigeria.
- Abdullahi, A. (1982). Science Teaching in Nigeria: Effect of Instruction on Science Students Altoto Press Ltd, Ilorin, Nigeria.
- Adeniyi, E.O. (2007). 9 year Basic Science and Technology Curriculum. The Curriculum for Basic Science Curriculum Development Centre, NERDC, Abuja
- Aliyu, U.D. (2006). Issues and Insight in the Universal Basic Education: The Case of Jigawa State. A paper presented at 8th annual National Conference of Nafak held at College of Education Ekiadolor, Benin
- Bakie, A. (2002). Recurrent Issues in Nigeria Education. Basic Science and technology: Tamaza Publications Ltd, Zaria, Nigeria.
- Cyril, M. (2011). Unpublished Lecture Noe on Edu 307: Educational research and Statistics (2010/11). Department of Science and Vocational Education. Usmanu Danfodiyo University, Sokoto, Nigeria.
- Edho, O.G. (2009). The Challenges Affecting the Implementation of the Universal Education in Delta State, Nigeria. Journal of Social science. Vol. 20, No. 3, Pp. 183-187.
- Fafunwa A.B (1974) History of education in Nigeria.
- Federal Republic of Nigeria (1981), National policy on education Lagos Federal
- Federal Republic of Nigeria (2004). National Policy on Education, 4th Edition Lagos NERDC Press.
- Galadima, I. (2009). Unpublished Lecture Noe on Edu 307: Educational research and Statistics (2009/2010). Department of Science and Vocational Education, Usmanu Danfodiyo University, Sokoto, Nigeria.
- Gara, W. (1987). Problems of Teaching Integrated Science in Secondary Schools in Niger State. A case study of Minna Municipal Council, Gbako and Mariga Local Government Areas. Unpublished BSc. Ed. Project Submitted to Faculty of Education and Extension Services, Usman Danfodiyo University, Sokoto.
- Government Press.
- Hamza, F.M. (2007). Problems of Realization of Integrated Science Objective in Nigeria\ Secondary Schools. The Nigerian Journal of Education Review, Vol. 6, No. 3 & 4, Pp. 98.
- Kano Journal of education (2002) Vol. 6
- Lux, A. (1972). Psychology Applied to Teaching, 5th Edition University of Ilorin Press.

McDowell, D.W. (200). Science Teaching in Nigeria Secondary Grammar School.A Guide to the science Teachers. Longman Publications (Nig.) Ltd