

Assessing the Implementation of Junior Secondary School Basic Science and Technology Curriculum in Private Schools in Mangu Local Government Area of Plateau State

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Abstract

This study assessed the implementation of Junior Secondary school basic science and technology curriculum in Private schools in Mangu local government area, Plateau state. The study adopted descriptive survey research design. The population of the study was 2,358 made up of teachers and Junior Secondary school students of basic science and technology. All the basic science teachers were used for the study while a sample of the students was drawn using simple random sampling technique. A total sample of 276 made up of 46 teachers and 230 students was used for the study. The instrument used for collecting data was a questionnaire on implementation of basic science and technology curriculum in private schools. The instrument was developed by the researchers and was validated by three experts. The reliability of the questionnaire was established as 0.78 using Kuder-Richardson (k-20) formula. The data collected were analyzed using mean and simple percentage. The findings showed that there is lack of facilities for the implementation of the basic science and technology curriculum in Private schools. The schools have qualified teachers with five teachers who are specialist in Biology, Chemistry, and Physics education. The methods used by most teachers were lecture and demonstration method among others. It was recommended that proprietors of private schools should provide facilities for effective implementation of basic science and technology curriculum among others.

Keywords: Assessment, implementation, basic science curriculum

Introduction

The introduction of science at all levels of the educational system in Nigeria is for the nurturing and training of learners towards meeting human needs. Science and technology bring about technological development and economic growth of a country or nation. Developed nations such as Asia, USA, China, Europe and

Japan among others are so-called because of their ability to utilize their acquired knowledge in science and technology to meet their individual and societal needs. Basic science and technology as the application of scientific knowledge and research to solve problems of life in order to make life more comfortable. (Adejoh and Ekele 2014).

Basic science and technology curriculum is a product of the integration of primary and junior secondary school science curricular namely; Basic science, basic technology, physical and health and computer studies/information communication technology (ICT). This is aimed at eliminating content repetitions, duplications and curriculum overload and to ensure that learners do well in terms of skills, techniques, knowledge and values and to achieve the goals of both the national economic empowerment and development strategies (NEEDS) and the millennium development goals (MDG). This means that, BEC addresses issues like value re-orientation; poverty eradication critical thinking, entrepreneurship and life skills when basic science curriculum is well implemented (NERDC, 2007).

Curriculum implementation is a process of bringing the designed curriculum in contact with the learners. Dashen, Buhari, Zuhumben and Maikano (2005) see curriculum implementation as a direct interaction the teacher has with the learners in order to effectively present the developed curriculum. This means that curriculum implementation is a process of translating the objective of the National Policy on Education into activities or experiences that will promote students towards learning them. Curriculum implementation in Nigeria is bedeviled by a legion of problems cardinal among them are lack of quality and quantity in teachers supply, poor condition of service, political uncertainties that cause inconsistency in education policies, moral decadence of society, population explosion of students, poor financing, corruption, lack of laboratories, lack of students readiness and so on. (Manja, Usman, and Luka, 2016; Omorogbe and Ewansiha, 2013; Omosewo). The importance of secondary education made the Federal Government to state the broad aims of education as the preparation for useful living within the society and higher education (FRN, 2014). Thus, education at this level is an instrument as well as an investment that can be used to achieve a more rapid political, social, economic, technological, cultural and scientific development in the country. Human and materials resources including the required textbooks that are recommended by government and professional bodies are expected to be used in the implementation of the designed curriculum in both government and private schools, to attain the desired objectives.

Private school refers to schools owned by missionaries, community and or single or group of individuals. The principal through the proprietor manages all the affairs of the school. The resources for financing the school programme are from grants, if teachers are under grant, students' fees, from the proprietor, community, parent teachers association, and old students of the institution. Researchers report that lack of quality teachers, financing, teaching materials, unstable government, laboratories, libraries, lack of students' readiness in learning, lack of monitoring progress has resulted in students' poor academic achievement. Akinmade, (2014); Chollom, (2013) and Chollom and Agbowuro, (2016) observe that, teacher quality, enabling environment that includes good classroom, laboratories, workshops, fields for sports and agriculture, learning facilities and materials are the basic requirements for an effective curriculum implementation. Adequate human and materials resources makes curriculum implementation work not only easier but also more satisfying. It is on the basis of the foregoing that the researchers assessed the implementation of upper basic science and technology curriculum in private schools in Mangu Local Government Area of Plateau State.

The basic science and technology curriculum is composed of both theory and activities that cannot be taught without the required human and material recourses. In financing education in Nigeria, Obanya as cited by Okafor and Igwe (2016) laments that, Nigeria is backward among the 42 countries in Africa as it spent only 5.3% of her GDP on education and other countries like Zimbabwe, Lesotho and Namibia spent 10.12%, 13.20% and 9.10% respectively in theirs. This explains why most of our schools lack facilities, laboratories, libraries, require textbooks, classroom and furniture for the implementation of basic science curriculum. Njoku (2005) laments that, the Nigerian graduate teachers are deficient in intellect and professional skills due to poor knowledge of the teaching subjects and poor attitude to work. This deficiency in teachers' competence affects the achievement of students in science negatively. The question is, if the Nigerian education system including the government owned schools are facing the above problems, what will be the situation in private schools that are financed and managed by principals through their proprietors? It is against this background that the researchers assessed the implementation of the Junior secondary school Basic Science and Technology curriculum in private schools in Mangu Local Government Area of Plateau State, Nigeria.

Purpose of the Study

The purpose of the study was to assess the implementation of the upper basic

science and technology curriculum in private schools in Mangu local government area. Specifically, it seeks to determine:

1. The availability of facilities for teaching basic science,
2. Teachers qualification in the implementation of basic science and technology curriculum
3. The methods used by private schools teachers in the implementation of basic science and technology curriculum
4. The level of coverage of the basic science and technology curriculum
5. The role of parent as co-implementers of basic science and technology curriculum
6. The challenges faced by teachers in implementing the basic science and technology curriculum
7. The ways of ameliorating the problems of teachers in the implementation of basic science and technology curriculum

Research Questions

1. What facilities are available for the implementation of basic science and technology curriculum in private schools in Mangu LGA of Plateau state?
2. What is the qualification of teachers for the implementation of basic science and technology curriculum in private schools in Mangu LGA of Plateau state?
3. What is the method used by teachers of private schools in the implementation of basic science and technology curriculum in Mangu LGA of Plateau state?
4. What is the level of teachers' contents coverage in private schools in the implementation of basic science and technology curriculum in Mangu LGA of Plateau state?
5. What is the role of parents as co-implementers in private schools in the implementation of basic science and technology curriculum in Mangu LGA of Plateau state?
6. What are the challenges faced by teachers of private schools in the implementation of basic science and technology in Mangu LGA of Plateau state?
7. What are the possible ways of ameliorating the challenges faced by teachers of private schools in the implementation of basic science and technology curriculum in Mangu LGA of Plateau state?

Methodology

A descriptive survey design was used in the study. The 2312 JSS students of basic science in Mangu local government area made up the population for the study.

The local government has 46 private schools and a total of 46 basic science teachers teaching the subjects. The sample comprised of randomly selected 230 students representing 10% of the students' population of 2312 and all the 46 teachers from the 46 private schools in the area.

The instrument used for the study was a questionnaire designed by the researchers for both teachers and students. The questionnaire consisted of two parts. Part one asked for personal data of both teachers and students while part two was on facilities available for teaching basic science, methods used by teachers in teaching the subjects, level of contents covered for the three years, parents role as co-implementations of the basic science curriculum, challenges faced and ways of ameliorating these problems in the teaching of basic science. The instrument was validated by three experts from the Department of Science and Technology Education and Educational Foundation in the University of Jos. The experts' observations were incorporated to improve the final instrument. The items on the questionnaire were weighted as Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. The other aspect for the questionnaire items were weighted as High level (HL) = 3.50 – 4.00, Moderate level (ML) = 2.50 – 3.49, Low level (LL) = 1.50 – 2.49 and No level (NL) = 0.00 – 1.49. The reliability was determined using Cronbach alpha method which gave a coefficient value of 0.77 which was considered appropriate for the items. The instrument was administered and collected immediately by the researchers from the respondents. Data was analyzed using mean and simple percentage and results presented in tables. The result obtained was used to answer the seven research questions

Results

Research Question One

What facilities are available for the implementation of Basic Science and technology curriculum in private schools in Mangu Local Government Area, Plateau state?

Table 1: Responses of students and Teachers on facilities available for Basic Science and Technology curriculum implementation

S/N	ITEM	Students			Teachers		
		X	SD	Dec.	X	SD	Dec
1	My school has no well -equipped Basic Science laboratory	4.15	0.74	A	4.11	0.81	A
2	The school has well -equipped basic science laboratory	1.68	1.08	R	1.82	1.10	R

3	My school has a well -equipped technology workshops laboratory	1.63	0.70	R	1.80	0.90	R
4	The technology workshops laboratory is not well-equipped	4.47	0.65	A	3.58	0.83	A
5	My school has qualified basic science and technology teachers	3.78	0.74	A	3.98	0.75	A
6	The school has no laboratory technicians	4.19	0.77	A	4.17	0.81	A
7	The school has recommended textbooks for basic science	1.69	0.80	A	2.11	0.98	R
8	The school has realia for teaching basic science	1.10	0.69	R	1.91	1.05	R

Key: X = Mean, R = Rejected and A = Accepted

Data in Table 1 show that private schools lack sufficient facilities for the implementation of basic science and technology curriculum as seen in the mean score of items dealing with facilities, but have qualified teachers as seen in item 5.

Research Question Two

What is the qualification of teachers for the implementation of basic science and technology curriculum in private schools in Mangu LGA, Plateau State?

Table 2: Qualifications of Basic Science and Technology teachers

S/N	Qualification	Frequency	Percentage
1	HND(Bio, Chem. or Phy.) with PGDE	2	4.35
2	NCE (Int. Sci.)	33	71.73
3	B.Sc. ED (Int. Sci.)	4	8.69
4	B.Sc (Bio, Chem. or Phy.)with PGDE	3	6.53
5	M.SC. ED (Int. Sci)	2	4.35
6	M.Sc (Bio, Chem. Phy.) with PGDE	2	4.35
Total		46	100

Data in Table 2 shows that the highest qualification of teachers used in the implementation of the Basic Science and Technology curriculum in private schools are NCE with 71.73%, follow by B.Sc. Ed with 8.69%, B.Sc. with PGDE 6.53%. The results showed that all the teachers are qualified except that five of the respondents are specialists of Chemistry, Biology and Physics education respectively.

Research Question Three

What is the method used by teachers in the implementation of the Basic Science

and Technology curriculum in private schools in Mangu local government area, Plateau state?

Table 3: Students and Teachers responses on teaching methods in the implementation of Basic Science and Technology curriculum

S/N	ITEM	X	SD	Dec.	X	SD	Dec.
1	Students are allow to discover learning themselves (discovery method)	1.78	1.08	R	1.89	0.98	R
2	Students do a lot of activities during lesson (activity-base method)	1.78	1.09	R	2.23	0.99	R
3	Students do a lot of laboratory practical (laboratory method)	1.47	1.05	R	2.13	1.01	R
4	Teacher teaches and give note to students (Lecture method)	3.93	0.88	A	3.71	0.78	A
5	Teacher demonstrates learning materials to students (demonstration method)	2.82	0.91	R	4.10	0.81	A
6	All items 1-4 ways are used	1.54	0.85	R	2.58	0.95	R

Key: X= mean, R = Rejected and A = Accepted

Data in Table 3 shows that the widely used teaching method by teachers of private schools is the lecture method where teachers teach and give students note. The teachers themselves also said that they do demonstrations. The remaining methods were indicated as not been sufficiently used.

Research Question Four

What is the level of teachers' contents coverage in private schools in the implementation of Basic Science and Technology curriculum in Mangu LGA, Plateau state?

Table 4: Responses on level of curriculum contents covered.

YR	Level	STUDENTS				Remark	TEACHERS				
		HL 4	ML 3	LL 2	NL 1		HL	ML	LL	NL	Rem
1	JSS 1	0.69	0.39	0.86	0.26	LL	0.43	1.30	0.43	0.23	ML
2	JSS 2	0.69	1.17	0.43	0.21	ML	0.52	1.50	0.43	0.22	ML
3	JSS3	0.52	0.78	0.69	0.26	ML	0.61	1.24	0.39	0.23	ML

Key: HL = High level, ML = Moderate Level, LL = Low level and NL = No Level

Table 4 indicates that the Basic Science and Technology curriculum content were not adequately implemented. Students indicated that the implementation is at low level in JS1 while teachers indicated all levels to be ML.

Research Question Five

What is the role of parents as co-implementers in private schools in the implementation of Basic science and technology curriculum in Mangu local government area, Plateau state?

Table 5: Students responses on their parents' role as co-implementers of Basic science and technology curriculum.

S/N	ITEM	X	SD	DECISION
1	Breakfast is provided to me always by my parents before going to school	4.34	0.83	A
2	No money is given to me by my parents for lunch during break time	3.36	0.79	A
3	My exercise books are checked by my parents when I come home	1.91	0.99	R
4	My parents always my school fees late	3.13	0.92	A
5	My parents provide me with all my writing materials for school	3.26	0.91	A
6	I usually trek to school as my parents cannot provide my transport	3.00	1.00	A

Key: X = Mean, R = Rejection and A = Accepted

Data in Table 8 indicate that parents provides breakfast for them before they go to school, but do not give them money for lunch, nor pay their school fees on time.

Research Question Six

What are the challenges faced by teachers of private schools in the implementation of the Basic science and technology curriculum in Mangu local government area, Plateau state?

Table 6: Students and Teachers responses on challenges faced by teachers in private schools

S/N	ITEM	STUDENTS			TEACHERS		
		X	SD	Dec.	X	SD	Dec.
1	Teachers are not promptly paid	4.43	0.63	A	4.69	0.88	A
2	Government grant to private schools are not released	4.56	0.62	A	4.47	0.89	A
3	Facilities provided to private schools are difficult to use by teachers	2.13	0.98	R	1.65	0.90	R
4	Seminars and workshops are not organized for private school teachers	1.98	1.02	R	1.72	0.91	R
5	Teachers are stable in private schools	2.13	0.99	R	2.02	1.00	R

6	Incentives are not provided for hard working staff	4.21	0.68	A	4.58	0.87	A
7	High enrolment of students in private schools	1.87	1.10	R	1.54	1.00	R

Key: X = Mean, R = Rejected and A = Accepted

Data in Table 6 reveal that even students know that teachers are not promptly paid, and that government does not release grants regularly. Both groups indicated that no seminars and workshops are held for teachers. This implies that all the items mentioned are challenges faced by teachers of private schools in the study area

Research Question Seven

What are the possible ways of ameliorating the challenges faced by teachers of private schools in the implementation of basic science and technology curriculum in Mangu local government area, Plateau state?

Table 7: Responses of students and teachers on ways of ameliorating challenges faced by teachers in private schools

S/N	ITEM	Students			Teachers		
		X	SD	Dec.	X	SD	Dec.
1	Government to pay grant aided teachers along -side with public schools teachers	4.86	0.76	A	5.00	0.00	A
2	Government to release grand promptly to private schools to pay their teachers	4.56	0.72	A	4.87	0.10	A
3	Government to close down illegal schools to give attention to legal ones	4.52	0.69	A	4.65	0.12	A
4	Incentives to be provided to hardworking teachers in private schools by government	4.56	0.71	A	5.00	0.00	A
5	Government to supervise private schools promptly	4.43	0.75	A	4.43	0.14	A

Key: X = Mean and A = Accepted

Data in table 7 reveal that the respondents agree that the five suggested measures are appropriate ways of tackling the problems faced by teachers of private schools to enable them be effective in the implementation of the basic science and technology curriculum. Government and private school proprietors has a major role to play in this.

Discussion

Analysis of research question one revealed inadequate facilities for the implementation of basic science and technology curriculum. Teachers are however available and well trained as indicated by both students and teachers respond. This lack of facilities can affect students' achievement in the subject. This study is in tandem with Bash, Kabang, Keswet and Jimwan (2016) who lament that there would be no meaningful teaching and learning of basic science and technology without facilities and a properly equipped laboratory. The findings also revealed that the common methods used by private schools teachers in the implementation of the basic science and technology curriculum was the lecture and demonstration methods. The use of these methods could be due to insufficient materials for students to carry out science activities. These methods are however not enough to bring up the students of the future.

The study also revealed that the curriculum for basic science and technology was not fully covered as observed from both students and teachers responses. This problem could be the cause of the decline in students' performance in the subject as teachers were not able to teach all the basic science and technology curriculum content. This study is agrees with the findings of Obasi (2009) who noted that most teachers are not adequately trained and do not effectively cover the curriculum content of their respective subjects due to lack of knowledge in both pedagogy and skills needed to effectively plan and execute such plan.

Furthermore, the findings also reveal that parents as co-implementers of the subject curriculum contents are not meeting all the needs of their wards such as checking their exercise books when they come back from school, giving them transport money to school, and do not pay their school fees promptly. This scenario can equally affect students' concentration and achievement. This finding is in line with Akinmade (2014), Chollom and Agbowuro (2016) who lament that lack of monitoring learners' progress by parents resulted in their poor academic achievement.

The constraints teachers of private schools face in the area of study are; lack of prompt payment of their salaries, non-release of grant to grant aided schools by government, inadequate facilities, lack of seminars and workshops to teachers, instability of teachers, lack of incentives to teachers and low enrolment of students into the private schools in the area. The lack of payment of teachers' salaries and other incentives could constitute major disadvantages to teachers' effort in implementing the subject curriculum contents thereby affecting the students' achievement in the subject.

Recommendations

1. Private schools proprietors should provide basic science and technology laboratories and workshops for effective teaching and learning of the subject.
2. Incentives should be given by schools management to hardworking and dedicated teachers who devote their time in doing their job. This will encourage them to do more.
3. Government should be punctual in the release of grants to private schools that are grant-aided and support schools that are legally established
4. Government should harmonize teachers' salaries in private and public schools to serve as a motivation to them.

Conclusion

The study assessed the implementation of junior secondary school basic science and technology curriculum in private schools in Mangu local government area of Plateau state. It was discovered that most schools lack facilities and equipped laboratories for basic science and technology activities. Teachers' salaries are not promptly paid and grant-aided private schools do not get the promised grant. It is hoped that the availability of laboratories, equipment and materials will enhance teaching and learning activities. If teachers are promptly paid and motivated by government or proprietors of schools so that the poor achievement of students in the subject can be a thing of the past.

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