Evaluation of Upper Basic Science Curriculum Programme for a Sustainable Community Development in Plateau State Nigeria

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Abstract - *The study sets out to evaluate the upper basic Science curriculum programme (UBSC) for a sustainable community development in Plateau State, Nigeria. Five research questions guided the study. A rating scale was administered to respondents. The study employed the descriptive survey design. The population of the study consisted of 60 Basic science teachers from 20 schools. The sample comprised 20 junior secondary school from five upper basic secondary schools from the three senatorial zones in Plateau state was drawn using purposive sampling technique. The instrument used for data collection was the Basic Science Teachers Questionnaire (BSTQ) with reliability coefficient of 0.72. The general objectives, structure of the UBSC, subjects offered for UBSc and the delivery of measurable objectives to achieve goals were analyst. Past research evidence on challenges to the implementation of the UBSc were also reviewed. Summary of students' statistics from Universal Basic Education Commission (UBEC) and also summary of Basic Science results. Discussion was made on concept and relevant theories adopted for the study. (BECE) were presented. The data collected were analyzed using mean and standard deviation to answer the research questions. The result obtained revealed that most junior secondary schools do not have adequate resources in their outdoor laboratories for Basic Science instruction. Also, the few available resources are not utilized in the junior secondary schools therefore, the goals of UBSC were unattained which reflect inadequacies in the upper Basic Curriculum Programme. It is therefore the position of this paper to point out that for a sustainable community development to be achieved, the upper basic science (UBSC) should be re – structured to reflect the current capacities, handicaps and needs of learners in a fast-changing society, also there should be adequate science teachers for the Basic Science teaching.*

Keywords: *Science Curriculum, Universal Basic Education, sustainable community development*

INTRODUCTION

The relevance role of science in the economic growth of any nation in the contemporary time is quite obvious. As a developing nation, the importance of science to the development of the nation Nigeria cannot be underestimated especially as her national income rests mainly on petroleum and petrochemical industries. It is in this respect that the Federal Republic of Nigeria [1]. Specified among others that the goals of science education shall be to produce scientists for national development. However, science education cannot produce scientists for national development where the science curriculum is not well structured, and the content not well delivered. In education, evaluation, is the determination of the worth of a thing. It includes obtaining information for use in judging the worth of a programme, product, procedure, or objective in education. Education is to teach one to think intensively and to think critically. Education must enable one to shift and weigh evidence, to discern the true from the false, the real from the unreal, the facts from the fiction (the purpose for education, 2013). Education is to produce a skilled workforce, help students to become critical thinkers (SAP voice). The evaluators are concerned with the formal educational evaluation which consists of a formal assessment of the worth of the upper Basic Science Curriculum Programme as the outcome of the programme. The evaluators gather a wide variety of evidence, regarding the impact of the programme.

Curriculum is the organized knowledge which the society presents to the learner in order to achieve a pre – determined goals of education [2]. Curriculum has been seen as the heart of any successful education

programme. Therefore, the major aspect of Nigerian education that has been quite often criticized is the curriculum. Curriculum becomes relevant if it addresses current and anticipated needs, problems and aspirations of the learner and the society. Science and Technology education is the driving force of every society. As we face global planetary, social, and economic issues it falls on science and technology education to stand to the test of time in appreciating what has come to be their responsibility. Our society, therefore, depends on its science and technology education programme for sustainable development. The three components of the Basic Education include: The lower Basic (primary 1 – 3), The middle Basic (primary 4- 6), The upper Basic (JS 1- 3). The upper Basic Education Curriculum of Junior secondary school is (JS 1 – 3, age 12 – 14). At the upper basic level of Education, students are basically exposed to some rudiments of pure Science and technology. The overall objectives of basic science curriculum are to assist the students to; Develop interest in science and technology, acquire basic knowledge and skills in science and technology, apply their scientific and technological knowledge and skills to meet societal needs, take advantage of the numerous career opportunities offered by science and technology, prepare for further studies in science and technology and prepare for career choices in science and technology.

According to Danmole [3], the Upper Basic Science Education curriculum for Junior Secondary School (JS 1 – 3) supposed to have been achieved by the year 2011. Every child is expected to complete primary 6 before being placed in the Junior Secondary (JS 1). Basic Science curriculum 9 year is a restricted and realignment of the revised curriculum for the Integrated Science Junior Secondary School.

Ada [4] noted that science may be viewed from three perspectives as follows: Science as knowledge, knowledge about things around us. Knowledge takes the forms of concepts, facts, principles assumption, mental models, theories laws, Science as method or means of obtaining knowledge. Scientists achieve this through the use of different skills such as observation, measurement, classification experimentation, communication, identification, hypothesizing, prediction and inferring. These skills are used in process of investigation. In doing all these scientists must demonstrate some attitudinal pre – a requisite which is referred to as the third aspect of science viewed as attitude. Scientists must meet some attitudinal pre– requisites in their investigations or process of inquiry. These attitudinal pre– requisites include objectivity, curiosity, open mindedness, critical and rational thinking, Reflective thinking, honesty, skepticism, carefulness, deductive and inductive reasoning, intuitive and logical reasoning, accuracy consistency and patience. This nature of science has made that practical work is indispensable to the understanding of science Aliyu, [5]. emphasized the importance of practical work in facilitating learning for understanding and help to reinforce the principles been studied in science. It is only the practical work that can help learners to develop such process skills as observation, measurement and so on as mentioned earlier.

In the selection of content, globalization information and communication Technology (ICT) and entrepreneurship were observed to be three major issues considered to be crucial in the development of the nation worldwide and influencing the contemporary development globally, it has become inevitable for Nigeria to incorporate relevant content into the school curriculum. At the upper Basic Science Education, (JS 1 – JS 3), the Basic Science offered at the lower Basic (primary 1 – 3) and the middle Basic (primary 4 – 6) has been separated to provide students with appropriate experiences in science and technology curriculum. The overall goal is to ensure the development of survival strategies by learners to live effectively within the global community. The junior secondary school is both pre – vocational and academic. It is tuition free universal and compulsory. It shall teach basic subjects which will enable learners to acquire further knowledge and skills. Every learner shall offer a minimum often (10) and a maximum of thirteen () subjects. The subjects include: English, One Nigerian language (L_1 or L_2), Mathematics, Basic Science, Social Studies, Creative and Cultural Arts (CCA), the religions (CRS and Islamic studies), Physical and Health Education (PHE), French language, Basic Technology and Computer Science (ICT age).

Electives are: Agriculture, Business studies, Home Economics, Arabic language and Local crafts. Must offer elective but not more than 3. From the simple to the complex from JSI – JSIII. The reason for the spiral curriculum is to sustain the learner's interest in science and also to ensure the understanding of simpler topics before teaching and learning complex ones in order to promote meaningful teaching and learning. The activities prescribed for each topic in the

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teaching and learning process imply full participation of learners therefore encouraging a child – centered teaching and activity-oriented learning. The curriculum has been organized in such a way that the spirit of creativity can be cultivated in the learner through experimentation and exploration of the environment which is an outdoor laboratory. A learner at the upper basic science level is very curious and would be eager to explore the environment; therefore, the curriculum should provide the learner with the opportunity to explore the environment. From the assessment of the curriculum one can confidently say the upper level of Basic education is purely science topics. The upper basic science curriculum can be said to be carefully organized, planned, professionally written and documented to have all it entails to bring socio – economic development through the achievement of the Millennium Development Goals (MDGs) and if properly implemented, it will result to sustainable and development. Basic Science Curriculum content is arranged in particular order of thematic and spiral pattern. The contents, principles, facts, concepts, assumption, mental models, theories, and laws are organized in themes that is broad, themes and sub – themes taking into account the learner's needs, interest and overall societal problems and demands in the present age of science and globalization.

According to Ango [6], a scientifically literate society in African countries will be in a good position to make feasible, sane and valid decision on issues directly related to their lives. The contents are organized and sequence in the most meaningful order so as to re – order at different levels of education in primary Junior secondary, senior secondary and even tertiary level of education. Basic science teaching and learning had built in strategies where the learners are required to be involved in inquiry and related activities that can develop critical thinking skill. The broad – base or broad field curriculum promotes relationship between different identified areas of knowledge of separate subject – centered curriculum. The broad – base enables the learner to acquire a comprehensive knowledge base to face the problem of living and personal advancement in future.

According to the executive secretary of the Nigerian Education Research and Development Council (NERDC), According to Obioma [7]. in Daily Trust curriculum seeks to correct the abnormalities of the former one which was lacking in areas of human capacity development. Obioma added that a feature of the new curriculum is the phasing out of primary science and integrated science for what is now known as Basic Science which according him prepares a learner adequately for the higher studies by providing a solid foundation on which to build upon. The Nigerian Educational Research and Development Council (NERDC) has expressed confidence that the new national education curriculum is capable of curing the ills of the country's education system. The new curriculum addresses issues of value re – orientation, poverty eradication, critical thinking, entrepreneurship, and life skills. Inspite of these concerted efforts at ensuring an effective transformation of the education system the implementation is observed to be very slow or poor.

Chikwenze and Chikwenze [8] itemized from the results of their research on the assessment of the extent of implementation of Universal Basic Education (UBE) Programme in Nigeria focus on Basic Science Curriculum as follows; Technology and the global reliance on its processes and products in all areas of human endeavor have made them invaluable that any society or country without them risks being alienated from global village.

Basic science is the foundation and fundamental ingredients of all sciences and technology at the upper basic level of education, students are basically exposed to some rudiments of pure science and technology, the overall objectives of basic science curriculum are to assist the students to develop interest in science and technology, acquire basic knowledge and skills in science and technology apply. Their scientific and technological knowledge and skills to meet societal needs, take advantage of the numerous career opportunities offered by science and technology prepare for further studies in science and technology. In order to ensure the development and implementation of basic science programmes for a sustainable community development, the federal government urged states to promote Basic science intheir respective areas, in compliance with the directive. However, the plateau state government has enacted a law establishing basic science programme in Junior secondary schools, achieve certain aims and objectives and to ensure that standard in basic science programme is maintained laudable as the objectives of teaching basic science appear, one is not sure whether these objectives are achieved as documented evidences had shown that most primary and junior secondary school teachers in Nigeria do not know the objectives of the basic science not to talk of implementing them due to a number of

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setbacks militating against effective and efficient implementations, some of these short commas include under staff of most primary and secondary schools in Nigeria in the area of science. Lack of adequate knowledge of content and pedagogy by many science teachers who are poorly trained, shortages in a number of science laboratories (both indoor and outdoor) in most secondary schools in Nigeria, large class size of basic science students in most JSS among others. These may be the reasons for the persistent, poor. It is against this backdrop that the researchers have chosen to examine some of the problems associated with the national curriculum for Basic science performance in science especially science programmes on evaluation of upper basic science curriculum programme for a sustainable community development in some sampled junior secondary schools in plateau state.

Science is acknowledged as the bedrock of national development; this implies that any nation who desires to attain national development must make science education a priority. Science education has its focus on preparing individuals with appropriate skills, abilities and competencies both mental and physical to line and contribute to the development of the society.

Science is a system of tenants and methods for constructing and verifying descriptive and explanatory modules of natural phenomena. Whereas, technology is a system for inventing technical means (techniques) to advance and end frequently but not exclusively with an eye towards solving practical problems. As by the researcher and puts it that scientists seek to describe and explain phenomenon while technologist such as engineers seek to invent and apply knowledge to solving practical problems. Many theories have made their contributions on how basic science programme can be better taught and learnt for a sustainable community development. The theoretical framework for the study was based on two relevant theories. These are Ausubel's theory on meaningful learning and Bruner's theory on discovery learning. In his theory, Ausubel posited that meaningful learning consist in a process of subsumption where new materials to be learnt are related to relevant ideas in the existing cognitive structure of an individual learner on a substantive basis. The existing materials in the cognitive structure known as subsumer's serve to anchor the incoming knowledge. When the subsumer's are absent, Ausubel contended that advanced organizers should be used to facilitate the learning process. The advanced organizers represent the introductory materials that are normally prepared for in advance to link new learning materials to the subsumers. With the new learning materials in a balance form (subsumption) enable internal activation of learning to occur thereby creating the ability for retention, recall or retrieval and use of the knowledge on the contrary if the process of linking the new learning materials with the old one that is subsumption, should not take place, the form of learning that will emerge will be rote memorization which is not meaningful. This implies that, learners who have poorly organized cognitive structures tend to forget information rapidly.

Bruner's also posited that, meaningful learning has to do with the activity of discovery learning in problem solving where a learner need to be taught to discover by himself what is to be learned. He emphasized that the process of discovery learning is more important than the product, therefore, the learner must play an active role in the learning process to make discoveries. For the reason, Bruner advocated the use of a lot of learning resources called manipulative materials for the learner to interact with towards meaningful conceptual development. The process of the discovery learning according to Bruner, should start early enough by breaking down the materials or the concepts to be learnt into teachable units to make it easy. The major role of the teachers here is to search and provide challenging problems, a conducive learning environment and encouragement for children to learn by discovery. These theories are relevant in the study based on their stance in promoting meaningful understanding and application of science in problem solving. In particular, by considering the learner as an important factor in the process of learning, the need for the learner to participate actively in the learning process, the need for teachers to guide the process of learning and the idea that learners need encouragement to learn science meaningfully so that they can engage and use their knowledge independently to apply science (technology) to solve problems.

STATEMENT OF THE PROBLEM

The persistent poor performance in science especially Basic Science among students makes it imperative to evaluate the upper basic science curriculum programme to find out the reason for their poor performance. The new curriculum addresses issues of value re – orientation, poverty eradication, critical thinking, entrepreneurship and life skills, in spite of these concerted efforts at ensuring an effective transformation of education system. The

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implementation is lacking, or the process is very slow at the speed of snail's movement. Going by research evidence on poor performance in science by students reasons abound such as teachers shy away from teaching science practically. The teachers often complain of inadequate or lack of science instructional materials to justify the use of expository method. Meanwhile, there are readily available resources within the local environment which can be used for the teaching of Basic Science concepts. However, many teachers shy away from using them even when they may be available.

RESEARCH QUESTIONS

The following research questions guided the study

1. To what extent are the teaching learning resource materials available for Basic Science programme (BSP) instruction in Plateau State Secondary Schools?
2. To what extent are the available resource materials utilized for Basic Science instruction in is the Plateau State?
3. What are the qualifications of the teachers teaching the basic science programme in Plateau State Junior secondary schools?
4. What are the common teaching methods employed by teachers teaching Basic Science in Plateau State Junior secondary schools?
5. What are the challenges confronting the implementation of Basic Science Programme in Junior secondary schools Plateau State?

METHOD

This study adopted a descriptive research design using purposive sampling technique. The samples for the study consist of 20 junior secondary school, 60 Basic Science Teachers spread across the three senatorial zones in the state. The researchers assumed and exercised some judgement in relation to the elements that constitute a representative sample with respect to the research purpose. The sample include only those teachers who have a teachers' degree with 5 years post qualification experience and schools that have presented their basic science students for BECE for the past 10 years. The researchers used 7 schools in zone A (Southern).

The data for the study was gathered through the administration and scoring of the instrument namely BSTQ. The researchers payed a visit to the education resource Centre Jos to ascertain the number of junior secondary schools that have presented students for junior secondary school certificate examination for the past five years. The researchers personally visited the twenty sampled schools in the three zones to collect data on the number of JSS III Basic science students and teaching in each of the schools and also administered the Basic teacher questionnaire (BSTQ).

3 from the rural and 4 from the urban
For zone B (North Central)
7 schools were used
4 from rural and 3 from the urban
For zone C (Northern)
3 from the rural and 3 from the urban

For Basic Science teachers;

From zone A (Southern)
Rural: 10 basic science teachers
Urban; 10 basic science teachers
From zone B (Central)
Rural;10 basic science teachers
Urban; 10 basic science teachers
From zone C (Northern)
Rural; 10 basic science teachers
Urban; 10 basic science teachers

For Basic science students

From zone A
Rural; 20 basic science students
Urban;20 basic science students
From zone B
Rural; 20basic science students
Urban; 20 basic science students
Frpm zone C
Rural; 20 basic science students
Urban 20 basic science students
Giving a total of sample size of 120 JSS III students selected in Plateau State

Know questionnaire (BSSQ) were Basic Science Teachers Questionnaire (BSTQ) used for data collection. The instruments were validated by three experts from the department of Science and Technology Faculty of Education University of Jos. The instrument was pilot tested using Kuder – Richardson ($K - R_{21}$) formula which yielded a coefficient of 0.69 and 0.71 respectively.

The table 1 shows that the mean ratings of 2.60 for school farm which is greater than the standard reference mean of 2.50 indicates that the basic science teachers were of the view that the school farm as one of resources for basic science instruction is slightly

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adequate available in the *secondary* schools in Plateau state.

Table 1. Mean Responses of Basic Science Teachers on availability of resource materials for instruction

S/N	Items	HA	MA	SA	N	Mean	STD
1	School farm	4	25	31	60	2.6	1.94
2	Play ground	15	37	8	60	2.8	1.11
3	Mechanical workshop	9	35	16	60	1.9	0.64
4	Blacksmith workshop	4	34	22	60	1.7	0.59
5	Electronic workshop	7	22	31	60	1.6	0.69
6	Electrical workshop	4	17	39	60	1.4	0.61
7	Cyber café	9	21	30	60	1.7	0.73
8	Streams/pond	0	17	43	60	1.3	0.45
9	Industries	0	17	43	60	1.3	0.45
10	Pictures	24	28	8	60	2.3	0.69
11	Overhead projectors	9	27	24	60	1.8	0.74
12	Video tapes	6	20	34	60	1.5	0.68
13	Audio tapes	8	21	31	60	1.6	0.72
14	Computer	13	24	23	60	1.8	0.76

Standard reference mean X=2.50; HA - Highly available; MA - Moderately Available; SA- Sparingly available

In the same vein, the mean rating of 2.50 for playground is also greater than the standard reference mean of 2.50 indicates that the basic science teachers were of the view that the playground as a resource material for teaching basic science is adequate and available in the junior secondary schools in Plateau state. However, a mean rating of 1.90, 1.70, 1.60, 1.40, 1.70, 1.30, 2.30, 1.80, 1.50, 1.60, and 1.80

For mechanical workshop, blacksmith workshop, electronic workshop, electrical workshop, cybercafé, streams /pond, industries , pictures, overhead projectors industries close to school, pictures, overhead projectors, video tapes, Audio tapes and computers respectively which are less than the standard reference mean of 2.50 indicates that the basic science teachers were of the view that the resource materials for Basic science instruction are not adequately available in the Junior secondary schools in Plateau State.

Table 2 shows that mean ratings for school farm, playground, mechanical presenting the data from the table – delete this workshop, blacksmith workshop, Electronic workshop, Electrical workshop, computer laboratory streams/ponds, industries close to school, pictures, overhead projectors, video tapes, audio tapes and computer laboratory which are less than the standard reference mean of 2.50 indicates that the basic science teachers were of the view that the resources for Basic Science instruction are not adequately available and utilized in the Junior secondary schools in Plateau State. However, a mean rating of 2.80 which is greater than 2.50 indicates that the basic science teachers were of the view that only the school playground is available and utilized in the junior secondary schools. This evident that there is poor supply of materials in chemistry in secondary schools that some laboratories are opened only on WAEC and NECO examination days. This unavailability of resources and their non-utilization for teaching could be reason for the continued inability of students to identify and state the uses of simple laboratory apparatus and the poor performance as observed by WAEC chief examiner's report.

Table 2**.** Utilization of resource materials for Basic Science instruction by teachers

S/N	Item/Resource	Always	Occasionally	Seldom	Never	N	Mean	STD
1.	School farm	5	19	23	13	60	2.3	0.91
2.	Play ground	21	14	15	10	60	2.8	1.11
3.	Mechanical workshop	7	14	16	23	60	2.1	1.05
4.	Blacksmith workshop	0	0	25	35	60	1.4	0.50
5.	Electronic workshop	5	16	12	27	60	2.0	1.03
6.	Electrical workshop	5	12	26	17	60	2.1	0.91
7.	Computer lab/computer (WIFI)	3	14	15	28	60	1.9	0.95
8.	Streams/pond	1	9	14	36	60	1.6	0.81
9.	Industry close to school	2	4	33	21	60	1.8	0.72
10.	Pictures	23	24	9	4	60	2.1	0.90
11.	Overhead projectors	4	10	15	31	60	1.8	0.96
12.	Video tapes	3	6	18	33	60	1.7	0.86
13.	Audio tapes	4	7	15	34	60	1.7	0.93
14.	Computer Laboratory	11	18	17	14	60	2.4	1.04

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Furthermore, research question 2 reveals the outdoor laboratory resources are unavailable for basic science instruction to present specific concepts to the learner using local materials at their natural settings which are familiar with the learner, it is not yet determined whether the out-door resources to enhance students retention in basic science are readily available. Therefore, part of this study determined the availability and utilization of out-door resources for basic science instruction.

Table 3. Qualifications of the teachers teaching the basic science programme in Plateau State Junior secondary schools

S/N	Item	F	N	%
1	B.Sc	20	60	17
2	B.Sc(Ed)	23	60	20
3	HND	60	60	5
4	NCE	10	60	57
5	GCE	1	60	1

The responses of basic science teachers in Table 3 shows that out of the 60 Basic Science teachers in the 20 schools only 25(42%) were graduates (10 B.Sc, 12 B.Sc Ed and 5 HND) 34 (57%) had NCE while 1(1%) GCE. The number of the qualified Basic Science teachers were found to be insufficient as majority of them had an average of 1qualified teacher for the subject findings.

Table 4. The responses of teachers on common teaching methods used for delivery (N=60)

ITEMS	AU	OU	SU	NU	M	STD
Lecture method	28	15	10	7	2.8	1.11
Process based teaching Method	13	12	33	2	1.7	0.93
Field Trip/Excursion	5	6	11	40	1.7	0.86
Demonstration	3	7	20	31	1.8	0.96
Iquiry method	4	20	20	16	2.2	0.91
Process based	15	8	17	10	1.6	0.72
Cooperative	5	12	25	18	2.1	0.91
Team teaching	20	25	10	45	3.1	0.90
Scaffolding	5	16	12	27	2.0	1.03
Games and play	8	4	25	23	1.8	0.72
Computer based teaching	11	19	14	16	2.4	1.04
Discussion	23	24	9	4	3.1	0.90

Table 4 shows that mean ratings for lecture project, field trip/excursion, demonstration, inquiry, process – based teaching, teaching for cooperative learning, team teaching, scaffolding, Games and play, computer assisted learning and discussion methods which are less than the bench mark of 2.50 indicates that the Basic Science teachers that the teaching methods for teaching Basic Science are not appropriately used in the Junior secondary schools in Plateau State. However, a mean rating of 2.8, 3.1 and 3.1 which is greater than 2.50 indicates that the teachers were of the view that only the lecture method team teaching and discussion method are used more often used. Technology is the practical application of knowledge. It is concern with creativity and hands-on activities. Therefore, basic science teachers who are supposed to use teaching methods that involve activities prefer to use teaching methods that do not involve activities as revealed in Table 4 which shows mean rating of 2.80 for lecture method and 3.10 for cooperative which are greater than standard reference mean of 2.50 indicates that the basic science teachers of the view that lecture and cooperative teaching methods were mostly use by them. This is in conformity with the view of Samba and Eriba (2012) that, the reason teachers are shying away from the use of teaching methods that involve activities where the learner can attain the desired retention in science is inadequate instructional materials. To buttress these reasons for low retention capability of basic science students,

Table 5. Responses of basic science teachers on challenges of curriculum implementation

S/N	Item	SA	A	D	SD	N	Mean	STD
1	I have the ability to meaningful interpret the objectives	5	23	19	13	60	2.3	0.91
2	It is always better to skip unfamiliar content areas	15	17	10	8	60	1.6	0.72
3	It is difficult to organize activities for students	25	20	10	5	60	3.1	0.90
4	It is better to skip activities where resource materials are not readily available	11	19	16	14	60	2.5	1.04
5	It is very easy to identify sources of teaching aids	5	6	11	40	60	1.7	0.86
6	I always finish the scheme of work for my students	3	14	15	28	60	1.9	0.95
7	I like assessing my students regularly	9	14	30	7	60	1.6	0.90

Table 5 shows that mean ratings which are less than the benchmark 2.50 indicates that the Basic Science teachers were of the view that there of curriculum implementation. However, a mean rating of 3.1 and 2.5

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respectively which is greater than and equals to 2.50 indicate that the Basic Science teachers were of the view that the greater challenges of curriculum implementation in teaching Basic Science is difficulty in organizing activities for students and skipping of activities where they claimed resource materials are not readily available.

DISCUSSION OF FINDINGS

The purpose of the study was to evaluate the upper Basic Science curriculum programme for a sustainable community development in Plateau State. The findings are discussed based on the five research questions. The finding showed that the resources for Basic science instruction are inadequately available. Data from Table 1 indicated means for the availability of school farm, playground, mechanical workshop, blacksmith workshop, electronic workshop, electrical workshop, computer laboratory with WIFI streams/pond, industries, pictures, overhead projectors, video tapes, Audio tapes and computers. Only school farm/gardens and playgrounds that are available in almost all the schools. Furthermore, the result also revealed that most of the available resources are not properly utilized for Basic Science instruction. Only the playground and school farm indicated that they are occasionally used since they rated above the mean of 2.50. this finding corroborates the finding of Ikechukwu [15] who noted that most of the resources for chemistry instruction are inadequately available.

The finding on staffing situation in terms of quality and quantity for the adequate implementation of the Basic Science curriculum in Plateau state Junior secondary schools revealed that only 42 percent were graduates and only 20 percent are professional science teachers. The finding on common teaching methods employed by Basic Science teachers in Plateau state showed that the teaching methods are not appropriately used in Plateau state for the teaching of Basic science. Lecture method mean rated 2.8 team teaching 3.1 and discussion method rated mean of 3.1. this is to the finding of Olaitan [16] who found that teaching science concepts using inquiry method enhances students' retention abilities.

The finding on challenges of curriculum implementation revealed that Basic Science teachers found it difficult to organize activities for students and skipped activities where there are resource materials not available. With a rating mean of 3.1 and 2.50 respectively.

According to Buraimoh and Ogunmade[13]. majority of chemistry students failed to perform excellently in Senior Secondary Certificate Examination and other examination due to limited exposure to the basic rudiments of practical aspects of the subject, this applicable to biology and other science subjects. An assessment of transition from Lower Basic through Middle Basic to Upper Basic Science.

According to Labo÷popoola, Bello and Atanda [14], the UBE scheme has changed the Nigerian education system from 6 – 3 – 3 – 4 to 9 – 3 – 4 that is to say the system expects a smooth transition from the primary school (6 years) to the Junior secondary school (3 years) meaning 9 years of continuous education. The national summary of pupils' statistics from Universal Basic Education Commission (UBEC). The relevance of science and technology to national development in the life of any nation is quite obvious and cannot be over-emphasized. This is because knowledge and skills in science and technology are very vital in the development of any society.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, the researchers have concluded that the resource materials for the teaching of Basic Science be made available in the school environment and when these resources are available, they should be properly used. More professional graduates should be combined with the other teaching methods to enhance student – centredness and for better Basic Science curriculum implementation. Science and Technology Education are essential for the survival and development of any nation. This is because they provide skilled manpower for the labor force. Based on the findings of the study, the researcher has concluded that there is no sufficient qualified manpower, outdoor instructional materials, lack of involving learners on hands on skills and minds on experience and also the challenges of curriculum implementation in teaching basic science programme in Plateau State Junior secondary schools.

It is recommended that Basic science teachers should always seek the assistance of more experienced teachers to obtain information about resources for basic science instruction rather than skipping unfamiliar content areas and activities where materials are not readily available. The basic science teachers need to do a lot of reading on their own to become familiar with the different content areas of the subject. A science teacher must have a positive attitude towards teaching of science with a major goal of being to assist learners

learn as much as possible in science class or laboratories. A conscientious teacher is expected to make available variety of specimens and reagents, use the outdoor laboratory needed during practical classes.

He/she is to act as a facilitator, instructor and partner in the business of learning science. Government provides standard laboratory and adequate outdoor laboratory equipment for both junior and senior secondary schools. The teacher should be efficiently trained from time to time particularly in science practical to become better science teachers. The teachers' remuneration should be reviewed upward to motivate their commitment achieve the national objectives Device ways of helping each student to come to perceive learning science as a means of attaining his goals that have been imposed on him/her by the school administrators help students to be in the classroom to develop a favourable self – concepts a sense of personal worth and feeling of responsibility for his own education. The science teacher should give the student sufficient freedom to plan, carry out and evaluate his own educational programme without fear of criticism of failure. And also give the student the ample opportunity for expediency success and feeling that he/she is himself considers worthwhile.

APPENDIX 1

Summary: Statistics of Students Enrolment in Government Secondary Schools JSS 1 – JSS 3 (2008 – 2012) in Plateau State

	2008	2009	2010	2011	2012
Male	36262	34412	33607	32656	32364
Female	30855	27046	26982	27688	27590
Total	67117	61458	60589	60144	60014

Source: ERC planning, Research and Statistics Department

APPENDIX 2

Students Performance in Integrated Science 2004 – 2008 in Plateau State

Year	Enrolment	A	%	C	%	P	%	F	%
2004	19617	474	2.42	4011	20.44	13257	67.58	1875	9.56
2005	26401	960	3.90	12926	52.54	9413	38.26	1302	5.30
2006	28001	732	2.61	5170	18.45	14696	52.45	7421	26.49
2007	32794	297	0.91	4192	12.78	20171	61.51	8134	24.8
2008	43470	683	1.57	9672	22.25	25266	58.12	7849	18.06

Source: ERC Planning, Research and Statistics Department

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