

**ORIGINAL SCIENTIFIC PAPER**

# Implementation of Physical Education component within the basic science and technology curriculum and the time allocation in comparison to other basic science and technology subjects

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## Abstract

The objective is to assess the implementation of physical education (PE) component within the basic science technology subjects (BST) curriculum and the time allocation in comparison to other BST subjects. Descriptive survey research was adapted. The population was 109,778, comprising 109,383 students, 78 PE teachers and 317 head teachers of public Junior Secondary School (JSS), representing eighteen (18) Local Government Areas (LGAs) in Edo State. The sample size was 1,060 comprising 70 PE teachers, 90 Head teachers and 900 students; and they were selected using multi-stage sampling procedure. Two instruments were used to obtain data: "Implementation of PE component of BST curriculum questionnaire (IPECBSTCQ) and Time Allocation and General time table information for PE and BST subjects schedule (TAGTIPEBSTS). The cronbach alpha statistics was used to determine the reliability of the instrument, the r-value of 0.95 was obtained for the IPECBSTCQ. Main findings suggest an endorsement of policy statements related to PE within the BST by the PE and Head teachers. Also, PE is not accorded necessary attention compared to other subjects within the BST curriculum. It was concluded that PE and other Head teachers were conversant with National Policy on Education (NPE) stipulations as relates to PE within the BST curriculum; just as it was necessary for more time to be allotted to PE on the general time table in comparison to other BST subjects. It was chiefly recommended that supervisory officials of the Ministry of Education should ensure strict adherence to policy implementation related to PE within the BST.

**Keywords:** Physical Education, Basic Science and Technology, Implementation, Curriculum, Time allocation

## Introduction

In consonance with the emphasis on physical education as advocated by international organizations, the National Policy on Education (2013) recommended the teaching of physical education at all levels of education. In actualizing this, the Nigeria government among others, stated that various measures shall be taken to implement the policy where physical and health education are emphasized at all levels of the educational system. This, however, is presently not the case as physical education and hence physical exercises have reduced drastically within the school system (Abu-

bakar, Rabiu, Usman, & Yahaya, 2015). If physical and health education is emphasized at all levels of the education system as stated in the National Policy on Education, it would have impacted positively on the attitudes of the young ones to physical activity and on their health since most children spend the majority of their day in schools or in other educational settings (Lator, 2021).

Prior to this study, physical education has been a subject in the school curriculum as a wholesome entity. The new school physical education (PE) curriculum has become laminated within other subjects under the new name 'basic science and technology

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(BST). This has the potential of likely diminishing its visibility and could affect its implementation. Report by Hardman and Marshall (2019) on Second World-wide Survey of School Physical Education, conducted by the International Council of Sport Science and Physical Education, revealed several areas of continuing concern, such as: gaps between policy and practice; physical education curriculum quality and relevance; insufficient curriculum time allocation; perceived inferior subject status; lack of competent qualified and inadequately trained teachers; deficiencies in facilities, equipment and teaching materials and inadequate provision or awareness of pathway links to wider community programs and amenities outside of schools. In the update on the state and status of physical education world-wide, physical education is neither compulsory nor offered by girls in 50% of countries of which 40% are in Africa and 17% in the Middle East (Hardman & Marshall, 2019).

The World Health Organization Stepwise Approach to Chronic Disease Risk Factor Surveillance revealed that insufficient physical activity is a public health problem in some countries and population subgroups in Africa (Bovet, Damasceno, Sambo, Tesfaye & Armstrong, 2011). This situation was linked to the low level of physical activity (Bovet et al, 2011) which in turn is a reflection of the low status of Physical Education in Africa. In many schools in Nigeria, PE seems relegated or marginalised because it is not a compulsorily examinable subject at the senior secondary school certificate level and also because it lacks standards and a strong policy implementation from the Ministry of Education. It has been found that PE periods in most schools are not taken seriously and in fact there is inadequate time allotment to physical education and sports in the school time table, and this influences the effective utilization of physical education teaching resources, if at all available (Ugwuanyi, 2013). In a study on the declining profile of Physical Education programme in educational institutions in Nigeria, Akindutire and Olanipekun (2014) revealed that Physical Education in educational institutions in Nigeria like other subjects in the school curriculum is faced with many problems which affect students' participation in the programme. Several studies carried out to establish the factors affecting the implementation of junior secondary school (JSS) PE curriculum in Nigeria have shown that resource materials and facilities, teachers incompetence, the school environment, learners attitude, culture and ideology, instructional supervision and assessment as well as stakeholders and interest groups, are militating factors (Ibenegbu, 2018).

Implementation of the PE component of the Basic Science and Technology Curriculum can be examined in the light of: policy issues; PE objectives; PE status; availability and adequacy of facilities, equipment and infrastructural requirements; professional qualifications; availability and use of instructional materials; in-service training; instructional abilities employed by Physical Education teachers; and students' attitude toward PE; among others. Piasta, Justice, McGinty, Mashburn, and Slocum (2015) have identified four dimensions for assessing good curriculum implementation, called curriculum fidelity, and they are: adherence, exposure, quality of programme delivery, and participant responsiveness. The Caribbean Community Secretariat (CARICOM) (2011) pointed out that, once a curriculum has been adopted, policies must be put into place to guide the achievement of the objectives and goals. These include policies, time allotments and scheduling, play attire, learning facilities, health and safety.

Several studies have been carried out in Nigeria and other countries on the Implementation of Physical education curriculum. Emeh, Isangadighi, Asuquo, Agba, and Ogaboh (2011), examined the reactions from education stakeholders in South-South States of Nigeria on issues facing curriculum design and implementation especially at secondary school level. Information from participants revealed that the curriculum content, pedagogy,

evaluation techniques among others in secondary schools is inadequate, unrealistic and should be reviewed.

The effective implementation of the PE and sports programmes (instructional, intramural and extramural) has become necessary in order to reap bountifully from this subject in the area of PE curriculum implementation and improved sports performance and development in Nigeria.

#### *Statement of the Problem*

It seems the teaching and learning of Physical Education has rapidly declined in secondary schools, due to its marginalisation when compared with other popular school subjects as is reflected on schools time table. This agrees with why Ojeme (1990) lamented that the falling standard of PE seems to justify the need for soul searching on the importance of PE in the school curriculum.

The situation of PE as a subject in Nigeria was very worrisome when it was standing on its own as a subject. Today, the situation has become more complex and baffling with the combination/integration of the subject with three others, such as Information Technology, Basic Science, and Basic Technology now titled Basic Science and Technology (BST). The subject has become less desirable now that it has been hidden and perhaps laminated/integrated within other subjects. Looking at this from another angle, there is no connection or similarities between or among these subjects which are combined with PE in terms of being related in meaning. Also in terms of results from the junior school certificate, students cannot really tell their score or performance in the subjects. These and others have presented serious curricula issues that need to be addressed.

The need therefore exist for an empirical investigation to assessing the extent of PE implementation within the integrated mode of the physical education curriculum in the basic science and technology curriculum.

#### *Research Questions*

1. Is the PE component of BST curriculum implemented in line with policy statements?
2. What time is allocated to PE on the general time table in comparison to other subjects within the BST?

#### *Methodology*

##### *Research Design*

The descriptive survey research design was adopted for this study. This design was adopted because it allows for a systematic gathering of information related to determining the objectives of physical education component of the Basic Science and Technology curriculum vis-à-vis teachers' competence in JSS

#### *Population of the Study*

The population of the study consist of 109,778 respondents, made up of 109,383 students and all 78 PE teachers as well as all 317 head teachers of public junior secondary schools, representing the eighteen (18) local government areas in Edo State. Table 1 is a representation of the population used in this study.

#### *Sample and Sampling Techniques*

The sample size of this study was 1,060 respondents comprising seventy (70) PE teachers, ninety (90) Head teachers, and nine hundred (900) students in public junior secondary schools in Edo State.

The multi-stage sampling procedure (Omorogiuwa, 2010) was adopted in the selection of the sample for the study. At the first stage, the researcher used the existing stratification of Edo State into eighteen (18) local government areas spread across the three senatorial districts, namely: Akoko-Edo, Egor, Esan Central, Esan

**Table 1.** Distribution of PE teachers, head teachers and students in Edo State, Nigeria

S/N	Local Government Area	No of Public Junior Sec Schools	PE Teachers	Head teachers	Students
1	Akoko-Edo	29	5	29	6312
2	Egor	13	5	13	9528
3	Esan Central	14	4	14	2782
4	Esan North East	12	0	12	3589
5	Esan South East	17	1	17	2002
6	Esan West	16	5	16	4135
7	Etsako Central	9	0	9	2049
8	Etsako East	16	0	16	4459
9	Etsako West	28	7	28	6888
10	Igueben	10	0	10	1149
11	Ikpoba-Okha	20	17	20	22498
12	Oredo	14	5	14	18157
13	Orhionmwon	28	5	28	3848
14	Ovia North East	29	8	29	6413
15	Ovia South West	15	5	15	2882
16	Owan East	16	4	16	4116
17	Owan West	10	2	10	3210
18	Uhunmwonde	21	5	21	5366
<b>TOTAL</b>		<b>317</b>	<b>78</b>	<b>317</b>	<b>109383</b>

Source: Post Primary Education Board (2021)

North East, Esan South East, Esan West, Etsako Central, Etsako East, Etsako West, Igueben, Ikpoba-Okha, Oredo, Orhionmwon, Ovia North East, Ovia South West, Owan East, Owan West, and Uhunmwonde.

At the second stage, the simple random sampling technique of balloting with replacement was used to select ninety (90) public

junior secondary schools in Edo state. This involved the use of pieces of paper, which were folded and put in bags from which the researcher picked schools based on their local government area; put it back in the bag, and then picked another. The procedure was used to select five (5) public JSS in each LGA, thus giving a total of ninety (90) out of 317. At the third stage, the simple random sam-

**Table 2.** Representation of Sampled population included in the study

S/N	LGA	No of Schools Considered from each LGA	No of PE teachers selected from each LGA	No of Head teachers selected from each LGA	Number of students selected from each LGA
1	Akoko-Edo	5	4	5	50
2	Egor	5	3	5	50
3	Esan Central	5	4	5	50
4	Esan North East	5	0	5	50
5	Esan South East	5	1	5	50
6	Esan West	5	4	5	50
7	Etsako Central	5	0	5	50
8	Etsako East	5	0	5	50
9	Etsako West	5	7	5	50
10	Igueben	5	0	5	50
11	Ikpoba-Okha	5	16	5	50
12	Oredo	5	4	5	50
13	Orhionmwon	5	5	5	50
14	Ovia North East	5	8	5	50
15	Ovia South West	5	4	5	50
16	Owan East	5	4	5	50
17	Owan West	5	2	5	50
18	Uhunmwonde	5	4	5	50
<b>TOTAL</b>		<b>90</b>	<b>70</b>	<b>90</b>	<b>900</b>

pling technique was also used to select 70 teachers from the 78 PE teachers from all LGA in the State. The fourth stage involved using proportionate random sampling technique to select ten (10) students from each of the 90 selected public JSS to give a total of 900 students selected for the study (i.e. 50 students from each LGA). Additionally, the head teachers/principals of each of the sampled schools were used in the study, totalling 90 head teachers/principals. Table 2 is a representation of the sample used in the study.

#### **Research Instruments**

The instruments used were implemented for the first time in this study:

1. Implementation of PE component of BST curriculum questionnaire (IPECBSTCQ)
2. Time Allocation and General time table information for PE and BST subjects schedule (TAGTIPEBSTS)

The IPECBSTCQ is a questionnaire used by PE teachers in assessing the extent to which the PE component of BST curriculum was and is being implemented in JSS. Assessment options were based on the modified Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

The TAGTIPEBSTS solicited time allocation and general time table information for PE and other BST subjects for JSS. This was carried out by the Head teacher/principal on the scale of time allocation per period (minutes), number of periods per week, total time allocation, and number of forms per class.

#### **Validity of the Instrument**

The instrument was validated by the two experts of Human Kinetics and one expert of Educational Measurement and Evaluation in the University of Benin. This was carried out to ascertain the construct and content validity of the instrument.

#### **Reliability of the Instrument**

To establish reliability of the instrument, the researchers carried out a pilot test using twenty students, ten teachers, and ten head teachers drawn from twenty public junior secondary schools in Edo State. These students, teachers, and head teachers were not involved in the main study. The instrument was given to the various respondents to fill, the data obtained were analysed using Cronbach's Alpha Statistics, which is a measure of the internal consistency of test items. A reliability coefficient of the instrument obtained was: PE component of BST curriculum implementation (0.95).

#### **Method of Data Analysis**

The data collected were analysed using the descriptive statistics of frequency count, percentage, mean and standard deviation to answer the research questions. The Statistical Packages for Social Sciences (SPSS) was employed in carrying out the analyses.

#### **Results**

Table 3 represents the mean+standard deviation of the participants' responses in IPECBSTCQ.

**Table 3.** Mean responses on PE component of BST curriculum in line with policy implementation

<b>Policy statements</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Decision</b>
PE teachers teach the PE content component of Basic Science and Technology	3.34	.539	Agree
PE is considered compulsory instructional component of the Basic Science and Technology curriculum	3.09	.702	Agree
The daily PE content requirement is implemented as prescribed	3.00	.594	Agree
The teacher-student ratio is 1:35 for effective teaching and learning at the JSS level	2.71	.789	Agree
PE is taught at all class levels of the JSS as prescribed by the Basic Science and Technology curriculum	3.29	.860	Agree
PE instructions are undertaken for at least 45 minutes twice weekly as stipulated in the Basic Science and Technology curriculum	2.89	.963	Agree
The instructional PE content includes basic human and sports games, movement of body parts, athletics, contact and non-contact sports as stipulated in the Basic Science and Technology curriculum	2.86	.912	Agree
Teachers and students have access to playground and sporting facilities as required	2.71	1.045	Agree
The inspectorate division of Ministry of Education monitors adherence to policy guidelines of the implementation of PE instructional content	2.77	.731	Agree
PE is taught with up-to-date instructional materials	3.03	.785	Agree
PE instructional content is taught as in the Basic Science and Technology curriculum	2.86	.879	Agree
Time is adequately allotted for instructional process in PE as in the other subjects that make up Basic Science and Technology	2.77	.942	Agree
The number of specialist teachers teaching PE are adequate	2.71	.825	Agree
Periods allocated for teaching of PE are adequate	2.80	.964	Agree
PE lessons are usually cancelled in comparison to the other compositing subjects in Basic Science and Technology	2.57	.815	Agree
The PE content diversity meets the Basic Science and Technology specification	2.77	1.003	Agree
PE teachers are considered of the same status as teachers in the other Basic Science and Technology specification	2.49	1.197	Agree

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Policy statements	Mean	Std. Deviation	Decision
PE is considered as subject of "no academic status" in comparison to the other Basic Science and Technology subjects	2.40	1.265	Agree
Only qualified PE teachers teach the diverse areas of physical education content	2.80	1.023	Agree
PE is supported by the same level of budgetary allocation as other subjects that make up Basic Science and Technology	2.54	1.039	Agree
Most instructional objectives for each PE class lesson are adequately met	2.77	1.031	Agree
Head teachers, teachers of other subjects, parents and members of the wider community view PE at the same level of importance as other subjects that make up Basic Science and Technology	2.69	1.157	Agree
Opportunities to promote school and instructional sports development and competitions are provided for within the PE content	2.51	1.040	Agree
The time devoted to physical education in schools could be more profitably used in studying other relevant subjects	2.43	.948	Agree
A person will be off emotionally if he did not participate in physical education	2.54	.611	Agree
Physical education class provide nothing which will be of value outside the class	1.94	.906	Disagree
Participating in physical education programme opens up a wider variety of career opportunities	2.89	.758	Agree
Skills learnt in physical education class do not benefit the learner	2.09	1.095	Agree
Cluster	2.73	0.91	Agree

Table 1 in relation to research question 1 revealed a cluster mean of 2.73 which falls within 2.00 and 4.00, which shows a strong agreement by head teachers of secondary schools to most of the policy statements raised as it relates to Physical education, except that most head teachers of schools disagree with the state-

ment that "Physical education class provide nothing which will be of value outside the class."

Figures 1, 2 and 3 represent the time allocation of PE subject on the general time-table in comparison to other subjects within the BST for JSS 1, 2 and 3 respectively.

### Average of total time allocation of PE within Basic science and technology for Jss 1

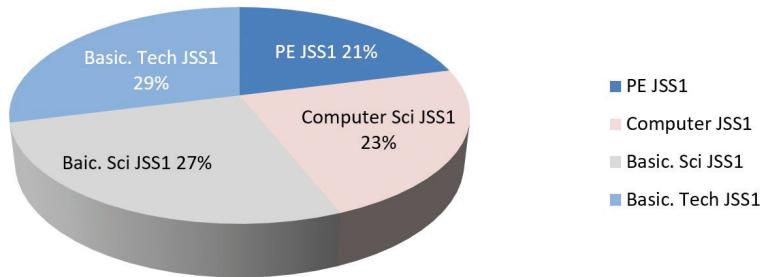


FIGURE 1: Pie Chart statistics on time allocation to PE on the general time table in comparison to other subjects within the BST for JSS 1

### Average of total time allocation of PE within Basic science and technology for Jss 2

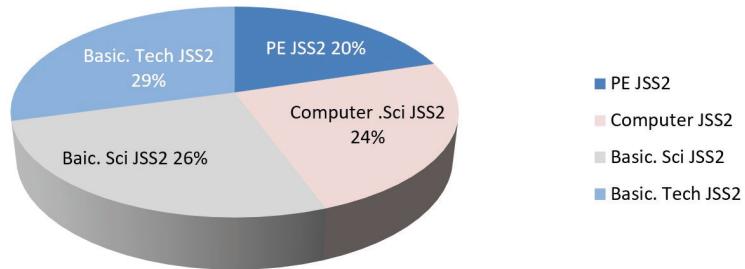


FIGURE 2: Pie Chart statistics on time allocation to PE on the general time table in comparison to other subjects within the BST for JSS 2

### Average of total time allocation of PE within Basic science and technology for Jss 3

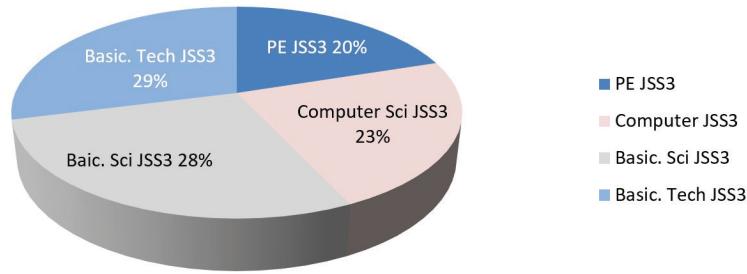


FIGURE 3: Pie Chart statistics on time allocation to PE on the general time table in comparison to other subjects within the BST for JSS 3

The data in Figure 1 showed the average of total time allocation of PE within BST for JSS 1. It is seen that of the four subjects comprising the BST curriculum, PE accounted for 21%, Basic Science was offered 27%, Computer Science was 23% and the time allocated Basic Technology was 29%. Thus, PE was allocated the least time amongst the four subjects making up the BST curriculum.

The data in Figure 2 showed the average of total time allocated to PE within the BST curriculum for JSS 2 was 21%, Basic Science was allotted 26%, Computer Science was allocated 24% and Basic Technology was 29%. Hence, the time allocated to PE on the general time table in relation to the BST curriculum was the shortest amongst the subjects constituting the curriculum.

The data in Figure 3 revealed that in the average of total time allocation for BST curriculum of JSS 3 showed PE being allocated 20%, Basic Science 28%, Computer Science was 23% and Basic Technology was 29%. Again, time allocated to the BST curriculum showed PE being allotted the least duration in relation to the other three subjects.

### Discussion

Results from research question 1 show high endorsement of Policy statements related to physical education within Basic Science and Technology. This finding implies that most policy statements are meant to enhance the importance of physical education within Basic Science and Technology, as much still needs to be done to enhance the status of PE in schools. This agrees with the findings of Varja (2018), who revealed that there are certain areas in that need to be improved to better prepare students for teaching in teachers-colleges. Those areas as a matter of policy were related to the facilities and materials, the structure, the timing, the content of the program, quality of the knowledge from previous educational levels, the concern of the small amount of graduated PE and Sport professionals, and limited time and attention to the people with disabilities. This finding also agrees with that of Onyong'a, Okwara and Okello (2010), who assert that lack of policies for national PE; programme is elaborated but not totally carried out or need of some changes as it is not updated. This also agrees with the observations and findings by Marshall and Hardman (as cited in Kahiga, 2014), Wanyama and Quay (2014), Osborne, Belmont, Peixoto, Azevedo and Carvalho (2016) who all believe PE is a devalued subject and so needs policy implementations to increase its status.

Results from research question 2 show that PE is not given serious attention compared to other subjects that make up Basic Science and Technology curriculum, i.e. Basic science, Basic technology, and Computer and information technology. This agrees with the findings of Sacli, Demirhan, Yesim and Murat (2014),

who showed that course time was a limitation facing PE among other factors. This also agrees with findings by Quick, Simon, and Thornton (2010), who revealed that only a small number of pupils across primary and secondary schools, around 6%, completed three hours of PE and sport within school time.

### Conclusion

It was concluded that PE component of BST curriculum is valuable to learners' education in and out of the classroom; as it was also obvious that the PE and other head teachers were conversant with the stipulations of the NPE. Lastly, there was the need for more time to be allotted to PE on the general time table in comparison to other subjects within the BST.

### Recommendations

1. Adequate course time should be allocated to PE on the general school time table.
2. There is the need for the State Ministry of Education officials to ensure strict adherence to the implementation of policy stipulations related to PE within the BST
3. Learners should be enlightened on the fact that the PE programme throws up a variety of occupational options so as to arouse their interest in pursuing a career at it.
4. Only specialist teachers should be hired to teach PE in schools
5. PE as a school subject should be made to stand alone and not integrated into other subjects (in this case the BST subjects) as there is no connection or similarities between or among these subjects which are combined with PE in terms of being related in meaning/conceptual structure.

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### Conflict of Interest

The author declares that there is no conflict of interest.

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