

Factors Responsible For Low Enrolment of Students in Physics in Nigeria Tertiary Institutions

VICTORIA BOLANLE OJIH

*Department Of Physics Education,
School Of Science Education,
Federal College of Education (Technical), Asaba,
Delta State, Nigeria.*

LAWRENCE ESE ESIEKPE

*Department Of Physics Education,
School Of Science Education,
Federal College of Education (Technical), Asaba,
Delta State, Nigeria.*

And

MACDONALD CHUKWU OKAFOR

*Department Of Physics Education,
School Of Science Education,
Federal College of Education (Technical), Asaba,
Delta State, Nigeria.*

Abstract

Physics is a serious subject in view of the technological age we are in. The current trend need availability of Physics teachers to provide education that is total in nature. Current trend on enrollment of students in Physics in tertiary institutions in Nigeria is on the decline. Therefore, this study investigated the factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria. A Sample of three hundred and nine (309) students of which 140 were from four secondary schools in Isoko South Local Government Area (L.G.A.) in Delta South senatorial district. 150 were from five secondary schools in Oshimili North L.G.A.) in Delta North senatorial district while the remaining 19 were Physics students of Federal College of College of Education (Tech) Asaba. 20 items likert type questionnaire was administrated to obtain responses on the factors that are responsible for low enrolment of students in Physics. The responses were analyzed using t-test statistics at 0.05 significant level and 307 Degree of freedom. The calculated t-value was 0.37 and t-critical was 1.63. Since t-critical was significant, the null hypothesis was retained. There was no significant difference among the respondents concerning the factors responsible for low enrollment of Physics in tertiary institutions in Nigeria. Some of the recommendations made were the need for well equipped Physics laboratory, recruitment and retraining of Physics teachers and special scholarships for Physics students in tertiary institutions.

Physics as a science subject finds its application in all areas of technology and national development. For a developing country like Nigeria to develop technologically, there must be need for qualitative Physics education. The teaching and learning of Physics which is a practical course requires the use of laboratory and equipment. Physics teachers trained without adequate exposure to activities and experiments cannot be efficient.

Hegarty-Hazeal (1986), Klopfer (1971), Laisi (1998) and Akano (2005) opine that the exposure of students to laboratory activities and experiment is the hall mark of science education which provides skill acquisition, understanding of basic principles and applications.

In recent times, Physics education has witnessed low enrolment of students in tertiary institutions in Nigeria. This low enrollment is traced to poor performance of students in Physics at the secondary school level.

It is disappointing to note that the students performance in Physics at internal and external examination has remained considerably poor despite all the educational reforms.

The few ones that have credit pass in Physics rather choose career courses like engineering and medicine, reason being traced to unattractiveness of the teaching profession (Akpan, 2004).

Teachers are the key factors in the teaching and learning of Physics. Teachers are the life wire of any qualitative and quantitative education. The success of any school system largely depends on the attitude of the teachers. If teachers have no commitment to the teaching of Physics and exhibit truancy, their students are bound to copy them. (Korau, 2006).

The hatred students have for Physics is as a result of the hatred they have for mathematics since Physics and mathematics are related (Mushol 1976; Okeke 1982 and Busari 1988).

As a result of hatred for Physics, some refuse to improve on their interest. Some found themselves offering Physics because they are compelled to do so by their parents.

Many variables have been implicated as being responsible for the poor performance of students in Physics. These are government related variables, examination body related variables, home related variables (Popoola, 2010). Amazigbo (2000), identified specific variables, such as lack of incentives for teachers, lack of interest in the part of students, students not interested in hard work, incompetent teachers, lack of conducive classroom, etc.

Lack of understanding of mathematical skills leads to inadequate comprehension of Physics. Also inadequate mastery of mathematical process, fundamental concepts and skills in mathematics are probably the causes of the difficulties in solving Physics problems.

Searching into relationships between affective factors and mathematical reasoning supports the fact that affective domain has some impact in the learning of Mathematics which is an integral part of Physics (Popoola, 2010). There are conflicting findings on the relationship that may exist between affective and cognitive

achievements (Simpson and Waziks 1987, Lassa 1987, Inekwe 1996). Affective domain remains an important dimension for learning which should not be neglected. Super (1960), said that emotion generates energy'' and if education for learning is to be more than mere training of the intellect (the cognitive) then the importance of the acceptance of feelings and emotion in the classroom can be seen as being more therapeutic.

The purpose of this study is to find out the factors responsible for low enrolment of students in Physics in tertiary institution in Nigeria and suggest possible solutions.

Research Methodology

This research study was carried out in Delta State. The population of the study comprised of Physics students from Senior Secondary Schools and N.C.E. students of Federal College of Education (T) Asaba.

Four schools were visited in Isoko North Local Government Area in Delta South Senatorial District. The schools were:

- St. Joseph Secondary School, Ozoro (40)
- Owhegbo Grammar School (35),
- Otor-Owhe Grammar School Otor-Owhe (35)
- Victory Secondary School, Akiowhe (20)

Five schools were also visited in Oshimili North L.G.A. in Delta North senatorial District. The schools were:

- St. Patrick College (SPC) Asaba (35)
- Osadeni High School Asaba (30)
- Demonstration Secondary School (DSS) Asaba (30),
- Asaba Secondary School, Asaba (25).

The population of N.C.E. students of F. C. E. (T) was 19. The instrument for data collection was 20 item structured questionnaires on factors responsible for low enrolment of students in Physics in tertiary institutions in Nigeria. The instrument was structured to elicit information on the level of agreement and disagreement with the item statements based on a 4-point Likert scale of Strongly Agree (SA) = 4; Agree (A) = 3, Disagree D = 2, Strongly Disagree (SD) = 1.

The instrument was validated by two lecturers from F. C. E (T) Asaba. The instrument was modified using their suggestions.

Research Question

The following research question guided the study.

1. What are the factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria?

The following null-hypothesis guided the study at 0.05 level of significance.

H₀₁: There is no significant difference between the mean ratings of secondary school students from the F.C.E (T), Asaba on factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria.

Ho₂: There is no significant difference between the mean ratings of mal and female students on the factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria.

Table 1: mean rating of factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria.

S/ N	Items	Mean Secondary School Students	Mean F.C.E. (T), Students	Decisi on
1.	Abstractness of Physics	1.85	2.03	D
2.	Non-professionalism of the subject	3.05	2.76	A
3.	Teacher's poor method of teaching	3.00	2.95	A
4.	Lack of qualified teachers	3.50	2.76	A
5.	Difficulties in getting job as a Physics graduate	1.15	0.03	D
6.	Lack of laboratory	3.33	3.23	A
7.	Laboratory not well equipped	3.33	3.32	A
8.	Lack of interest	3.00	2.57	A
9.	Society having no regards for Physics graduate	1.50	1.66	D
10.	Expensive Physics textbook	0.45	0.92	D
11.	Poor performance of students	3.20	2.76	A
12.	Parental influence	2.94	2.69	A
13.	Laziness on part of students	3.50	2.88	A
14.	Lack of motivation and incentives	2.69	2.58	A
15.	Lack of mathematical solving skills	2.73	2.95	A
16.	Teachers lack of patience with students	3.45	2.34	A
17.	Inability of teachers to create time for students	1.75	1.47	D
18.	Gender factor	2.76	2.59	A
19.	Poor remuneration of Physics teachers	2.09	1.29	D
20.	Obsolete materials	2.99	2.95	A
	Mean	2.72	2.02	

A = agreement

D = disagreement

Table 2: mean ratings of male and female students on factors responsible for low enrollment of students in Physics in tertiary institutions in Nigeria.

S/N	Items	Mean Male Students	Mean Female Students
1.	Abstractness of physics	1.56	3.39
2.	Non-professionalism of the subject	3.03	3.04
3.	Teacher's poor method of teaching	3.46	3.50
4.	Lack of qualified teachers	3.46	3.50
5.	Difficulties in getting job as a physics graduate	1.07	1.20
6.	Lack of laboratory	3.23	3.04
7.	Laboratory not well equipped	3.34	3.30
8.	Lack of interest	3.03	2.15
9.	Society having no regards for physics graduate	1.85	1.13
10.	Expensive physics textbook	0.75	0.10
11.	Poor performance of students	3.22	3.10
12.	Parental influence	2.92	2.17
13.	Laziness on part of students	3.46	3.19
14.	Lack of motivation and incentives	2.78	2.10
15.	Lack of mathematical solving skills	2.88	2.04
16.	Teachers lack of patience with students	3.37	3.04
17.	Inability of teachers to create time for students	1.47	2.87
18.	Gender factor	2.91	2.02
19.	Poor remuneration of physics teachers	2.81	2.03
20.	Obsolete materials	3.01	2.01
	Mean	2.81	2.62

Table 3: T-test respondents of F. C. E. (T) and secondary school students on low enrollment of students in Physics in Nigerian tertiary institutions.

Source of variation	N	X	S.D	DF	T-Cal	T-Critical
Secondary school students	290	2.72	0.54			
F.C.E(T) Asaba students	19	2.02	0.79	307	0.46	1.64

Table 4: T-test of mean respondents of male and female on factors responsible for low enrollment of Physics in Nigerian tertiary institutions.

Source of variation	N	X	S.D	DF	T-Cal	T-Critical
Male students	248	2.81	0.38	307	0.37	1.64
Female students	61	2.62	0.36			

From table1, the secondary school rating and F.C.E. (T) mean rating is above 2.5 for item 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 18 and 20. The mean score rating above 2.5 shows agreement. This means that non-professionalism of the subject is one of the factors responsible for low enrollment. Those who have credit pass in Physics prefer to study engineering, medicine etc. it was also noted that poor performance of students, poor teaching methods, lack of a qualified teacher, lack of laboratory, lack of equipment, lack of motivation and incentives on the part of the teachers, parental influence, obsolete materials and lack of mathematical solving skills, lack of interest,

laziness on the part of the students, teachers lack of patience with the students and gender are observed to be factors responsible for the low enrollment.

From table 2, the male mean score was 2.81. They score above the means in Non-professionalism of the subject, teachers poor method of teaching, lack of qualified teachers, lack of laboratory, laboratory not well equipped, lack of interest, poor performance of students, parental influence, lack of mathematical solving skills, teachers' lack of patience with students' gender factor and obsolete materials.

The female mean score was 2.62 they score above the mean in abstractness of Physics, non-professionalism of the subject, lack of qualified teachers, lack of laboratory, lack of equipment, lack of interest, poor performance, parental influence, laziness on part of the students, teachers lack of patience with students and inability of teachers to create time for students.

On table 3, the t-test statistics was used to analyze the data to test null hypothesis which stated that there is no significant difference between the responses of secondary school students and F.C.E. (T) students concerning the low enrollment of Physics students in tertiary institutions. The data collected were analyzed at 0.05 significance level with 307 degree of freedom. The calculated t-value was 0.46 while t-critical was 1.64. Since t-calculated was less than t-critical the hypothesis was retained. Table 4 shows the t-test statistic used to analyze the data to test null hypothesis which stated that there is no significant difference between the responses of male and the female students concerning the factors responsible for low enrollment of Physics students. The t-calculated was 0.37 and t-critical was 1.64 with 307 degree of freedom. Since t-calculated was less than t-critical the hypothesis was retained.

Conclusion and Recommendation

Physics plays a vital role in technology and national development. Since Physics teachers are on the decrease as a result of low enrollment, it then means that the nation will suffer qualitative and quantitative Physics education which is an impending catastrophe to national development.

Therefore, to avoid this looming danger, this paper recommends that:

- The government should intensify efforts in providing well equipped Physics laboratories
- Recruit qualified Physics teachers and re-train the existing ones on regular basis.
- Provide special scholarship for Physics students in tertiary institutions and incentives for Physics teachers. this will encourage the students and teachers and also boost the enrolment.
- Non-governmental organizations should also help in providing scholarships, modern laboratory, Physics equipment, conducive environment for effective teaching and learning of Physics.
- Parents should endeavour not to impose career courses on their wards especially when they show lack of interest.

References

- Akaono, B. U. (2005). The use of local materials in the teaching and learning of science in primary schools. A paper presented in the 1st science workshop organized by the Kontagera Zone of science Teacher Association of Nigeria in May 2005 at F.C.E. Knotagora
- Amazigbo, J. C. (2000). Mathematics Phobia Diagnosis and Prescription National Mathematics Centre Annual lecture, Abuja July.
- Busari, C. (1988). National Workshop on Review of researchers in Education by NRA in co-operation with CESAC, Lagos.
- Hegarty-Hazol, E. (1986). Science laboratory teaching. The international Encyclopedia of Teaching and Teacher education Great Britain, Perijarin Press.
- Inekwe, O. I. (1996). Cognitive Affective factors that affect three Geometric Reasoning Ability of Senior Secondary School Students in Kadunna State. PhD. Thesis Pp. 53.
- Klopter L. E. (1971). Evaluation of learning science in Bloom B.S. Hastings, J. T. Madmus, G. F. (eds.) Hard book of formative and summative evaluations of students learning New York. Mc Graw Hill.
- Korau, Y. K. (2006). Educational crises facing Nigerian schools and possible solutions being a paper presented at faculty of education Nigerian Conference 10th – 14th July, 2006.
- Lasisi, A. A. (1998). Testing the relative efficacy of laboratories teaching technique and enhancing effective communication in chemistry proceedings of the 39th Annual Conference of Science Teachers Association of Nigeria, 167-171.
- Lassa, P. N. (1987). Assessing the Cognitive Outcomes of Senior Secondary mathematics Students. *Journal of Educational Studies Insitute of Education, University of Jos Volume 1, Pp 8-18*
- Laws, J. S. and Eddy, C. T. (1967). Understanding Childen an Introduction to Psychology for African Teachers. London: George Allen and Unwin Limited page 25.
- Marbach-Ad, G. and Sokolove, P. G. (2000). Can Undergraduate Biology Students learn to ask higher level questions? *Journal of Research in Science Teaching* 37 (8) 854—870.

- Mughol, A. (1976). A Study of the concepts of Physics at the Secondary School Level. *Physics Education* 466(16) 145-146.
- Okeke, R. A. (1982). Topic Difficulties in Secondary School Physics. Unpublished M.Ed. Project University of Ibadan.
- Simpson, R. D. and Wazik, J. (1978). Correlation of Selected Affective behaviour with Cognitive performance in biology course of elementary teachers. *Journal of Research in Science Education*. January 1978 issue 1, 65.
- Tahir, G. (2006). Teaching Education in the 21st century and Beyond: issues, Problems and Strategies for improvement. Being a keynote address on the occasion of the 2006 National Conference of the faculty of Education, Ahmadu Bello University, Zaria.