

Students' Poor Performance In Science Subject In West African School Certificate Examination In Enugu State: Cases And Strategies For Improvement

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Abstract

This study investigates the causes of students' poor performance in Science Subjects in West African Senior School Certificate Examination in Enugu State and the strategies for improvement. Four research questions were formulated for the study. Two hundred and seventy (270) respondents comprising of two hundred and twenty-two (222) SSSIII science students and forty-eight (48) science teachers were randomly sampled from eleven (11) public schools in Enugu East Local Government Area. The researcher used the survey method as the design of the study. Twenty-six item questionnaire designed was used for data collection. The data collected were analysed using mean. Data analysis revealed that the causes of students' poor performance in science subjects in West African Senior School Certificate Examination are multi-dimensional Some of which include: lack of qualified science teachers, teachers' poor teaching methods, students lack of interest in science subjects, lack of parents' supervision of their children 's' class work and academic performance, inability of parents to provide their children with necessary textbook and other study aids, lack of qualified teachers' in the field of science etc. Finally, the research also revealed strategies to improve student' performance in science subjects, some of which include: provision of standard science laboratory, employing enough qualified science teachers, use of appropriate teaching method/aids in teaching science subjects etc. The researcher recommended among others; government and stakeholders should employ enough and qualified science teachers in secondary schools, parents should adequately motivate their children and provide them with necessary textbooks for their study, science teachers should make use of appropriate teaching methods in teaching science subjects, etc.

Keywords: *Students' poor performance, Science Subject, West African School, Certificate Examination, Enugu State, Strategies for improvement*

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I. Introduction

Background of the study

Knowledge is a crucial factor in self-actualization and national development. The ability to apply acquired requisite knowledge into concrete and practical utility is considered a source of power. Consequently, Francis Bacon aptly states that knowledge is power. Knowledge is the key to self-actualization and national development. This requisite knowledge that empowers the individual and the nation towards actualization of its potential is acquired through education. One of the national goals of education is that education is an instrument for national development. It also fosters the worth and development of the individual for each individual's sake, and for the general development of the society (national policy on Education,2014).

However, the nonchalant attitude being manifested by great number of Nigerians today in acquisition of requisite knowledge (which is the key to self-actualization and national development), and the continuous

poor academic performance of students in Nigeria is inimical to the progress of our nation and cast great shadow on the future of this country. The 21st century is characterized by advancement in science and technology. For Nigeria to realize accelerated development in 21st century, she needs qualitative science education in our schools especially in secondary schools. Over the last two decades, there have been repeated calls for reforms and innovations aimed at improving science education in Nigeria, hence education in our secondary schools which greatly signals apparent imminent cataclysmic catastrophe in the field of science and in nation's achievement of the millennium development goal. Teachers are worried because their status and teaching professionalism is being threatened with student's poor performance, while the parents are aggrieved because of non-realization of their hopes on their children and their investment on their children's education. It is obvious that one of the major problems facing the educational system in Nigeria is the abysmal failure of students in public examinations, particularly at the secondary level of education, and more especially in sciences, worth more when a credit pass in these science subjects at the senior secondary certificate level is prerequisite for admission into Nigerian Universities to study for profession like medicine, dentistry, pharmacy, engineering etc. hence there is need to identify the major causes of the problem with a view to providing lasting solution to the problem.

Pathetically, shameful failure in students' academic performance in Nigeria is no longer news in the recent years. The annual release of the west African Senior School Certificate Examination results in the country has always been characterized with public's unhappiness. Since the student performance do not in any way match the government and parental investments in education at this level. The situation is so pathetic that stakeholders keep on wondering why this level of education has persistently failed to meet the yearning and aspirations of the society. The table below carefully illustrates the academic performance of students in west African Senior School Certificate Examination results from 2007 to 2015.

Table 1: percentage of students who passed with 5 credits including English and Mathematics.

YEAR	PERCENTAGE PASS
2007	22
2008	20
2009	26
2010	26
2011	23
2012	30
2013	38.81
2014	36.5
2015	31.28

Sources: The Sun News, 2011 and Vanguard, 2014.

Table 1 above shows the percentage of students who had five credits and above in west African senior school certificate Examination (WASSCE) including English language and Mathematics from 2007-2015. These results indicate that student's performance on the average is below 50%. A crucial look at the above statistics shows a decline in academic performance of students from year 2012-2014. This has been a major concern for the government and the society.

The vanguard News on 12th August 2015, reporting the performance of students in May/June 2015 West African Senior School Certificate Examination (WASSCE) aptly states that the West African Senior School Certificate Examination (WASSCE) recorded mass failure in the release May/June 2015 West African Senior School Certificate Examination (WASSCE), results. Announcing the results on 11th august 2015, at WAEC office, Yaba, the Head office of National West African Certificate Examination

WAGE office, Mr. Charles Eguridu noted that out of 1,692,435 candidates that sat for the examination, 529,425 candidates representing 31.28%, obtained credits in five subject and above, including English Language and Mathematics. | He also noted that 'when compared to the 2012/2013 May/June WASSCE results, there was marginal decline in the performance of candidates as 30% and 38.81%. (www.vanguardngr.com/2014/08/massfailure).

The above statistics aptly pictured the pathetic situation and the deplorable nature of education system in the country. The same story still reoccurs in students' Examination although with slight differences.

Table 2: percentages of students who obtained A, B, AND CREDIT in WASSCE in biology, chemistry and physics from 2008-2012

YEAR	NO OF STUDENT	BIOLOGY	CHEMISTRY	PHYSICS
2008	60	33.94	44.44	48.26
2009	50	28.95	43.69	47.83
2010	70	49.65	50.70	51.27
2011	50	38.50	49.54	63.94

2012	40	35.66	43.13	68.74
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Source: WAEC Statistic, 2012

A critical survey of the academic performance of students in West African Senior School Certificate Examination shows that there is an urgent need to address the problem of student's poor performance in sciences before it gets off hand. This deplorable nature of education system of the country especially the poor performance of students in science prompts the researcher to examine critically the causes of student's poor performance in science subjects in West African Senior School Certificate Examination in Enugu East L.G.A. and the possible strategies for improvement.

Statement of problem

From the foregoing, it is clear that there are issues in science education in Nigeria that needs to be improved upon. The incessant poor performance of students in sciences in West African school certificate Examination is a radical proof that there are problems in science. It is against this backdrop that the researcher embarks on a critical survey of the perceived causes of students' poor performances in science subjects in West African Senior School Certificate Examination in Enugu East L.G.A from different perspectives with a view to elucidating possible strategies for improvement.

Purpose of the study

This study aims at identifying the factors that cause students poor performance in science subjects in West African School Certificate Examination in Enugu East local Government Area and strategies for improvement. Specifically, the study intends to ascertain:

- I. The qualification of science teachers in secondary schools in Enugu East Local Government Area.
- II. Major constraint affecting students learning of science subjects in West African Senior School Certificate Examination.
- III. The implications of poor students' performance in science subjects.
- IV. The strategies for enhancing students' performance in science subjects in West African Senior School Certificate Examination.

The following research questions were formulated to guide this study:

Research Questions

1. What are the qualification of science teachers in secondary schools in Enugu East Local Government Area?
2. What are the major constraint affecting students learning of science subjects?
3. What are the possible implications of students' poor performance in science subjects in Enugu East L.G.A.?
4. What are the strategies for improving students' poor performance in science subjects?

Significance of the study

This research work is significant to the researcher because it tends to expose the researcher to the factors responsible for the poor performance of students in science examinations and the strategies for improvement. The research will reawaken and at the same time deepen ones' consciousness of the importance of science education for national development and in actualization of millennium development goal and elicit positive attitude towards science education.

Government will also benefit from this study because it will highlight the challenges therein in science education in our secondary school and the possible strategies for improvement. This will help the government to take necessary steps towards providing qualified science teachers and materials in school, which is paramount for performance of the students in science subjects' and in actualization of nations millennium development goal.

Teachers will also benefit from this study because, it offers them an opportunity to re-examine their teaching methodology and re-adhere to choice teaching methods and techniques best suited for science subjects. It also brings to their consciousness the obstacles to effective teaching and learning of sciences.

Finally, students' will benefit from this research work because solutions will be offered to the factors pausing their continual poor performance in science subjects which will finally transcend into improved performance. It will at the same time renew students interest and commitment in the study of the sciences.

Scope of the study

This study will be limited to the causes of students' poor performance in science subjects in West African Senior School Certificate Examination in Enugu East local Government Area and possible strategies for improvement. Also it will be limited to number of schools and type of schools.

It is also limited to three major science subjects in senior secondary school which includes: biology, Chemistry and Physics.

II. Methodology

Design of the study

The design used by the researcher for the study is survey. That is, a sample is drawn from the population as a basis for interpretation and generalization.

Area of the study

This study was conducted in Enugu East local Government Area of Enugu State, Nigeria. Six schools were selected out of eleven public schools. The schools include: Government Technical College, Government Secondary School, Transekulu Girls, Urban Girls Secondary School, Nike Grammar School, and Federal Government College.

Population of the study

The target population of this study comprise of three hundred and seventy (370) senior secondary three (SSS111) science students and eighty (80) science teachers in 11 public secondary schools in Enugu East L.G.A of Enugu State. Thus the total target population of the study (that is the 370 SSS3 science students and 80 science teachers) is four hundred and fifty (450) in number.

Sample and Sampling techniques

Simple random technique was used to select six schools out of the eleven public schools in Enugu East L.G.A, (i.e. there are 6 towns in Enugu East L.G.A and 1 public secondary school was selected from each of the town. In all, 2 boys school, 2 girls school, and 2 mixed sexed community schools were selected), Subsequently, using the same technique, 222 SSS111 science students (i.e. 60% of the students' population) and 48 science teachers (i.e. 60% of the teachers' population) were selected for the study. This gives a total sample of 270.

Instrument for data collection

Twenty-four item questionnaire designed was used for data collection. The researcher designed the questionnaire to find out the causes of students' poor performance in science subjects in West African Certificate Examination in Enugu East local Government of Enugu State and the strategies for improvement. Four point Likert scale was used (SA), (A), (SD), (D) to represent strongly agreed, agreed, strongly disagreed, disagreed, respectively.

Validation of instruments

The instrument was developed and validated by experts in the field of sciences. They were asked to examine the items in terms of clarity of instruction to the respondents, proper wording of items, and its relevance to the research question. It contains 28 questions grouped into 4 sections, section A contains 4 questions which focuses on the qualification of science teachers in secondary schools in Enugu East Local Government Area, section B contains 9 questions which focused on the major constraints affecting students learning of science subjects in West African Senior School Certificate Examination, Section C contains 6 questions that focuses on possible implications of students' poor performance in science subjects, while D has 9 questions, which focuses on the strategies for improving students', poor performance in science subjects. The expert's corrections and recommendations were used to prepare the final copy of the questionnaire.

Reliability of the instruments

Test retest method was employed in order to establish the reliability of the instrument. The researcher administered the instrument on two different occasion to the same set of 370 science student in SSS111 and 80 science teachers outside the scope of study. Two different set of responses were obtained and correlated using Pearson's product moment correlation coefficient (PPMCC), which showed high reliability.

Method of data collection

The researcher visited the selected six public secondary schools in Enugu East L.G.A and administered the questionnaire to the respondents himself. The questionnaires were collected on the spot after completion. The researcher used this method to avoid delay and to reduce losses which may arise.

Method of data analysis

The researcher analysed the data collected using mean rating. Items were analysed by computing the mean response of the respondents on each item on the questionnaire. Nominal values were assigned to different scaling items as follows: Strongly agreed (SA) - 4 points

Agreed (A) = 3 points

Disagreed (D) = 2 points

Strongly Disagreed (SD) = 1 points

The Mean (x) of the nominal values was determined as follows:

Formula

$$X = \frac{\sum FX}{N}$$

Where x = Mean

Σ = Summation

F = Frequency of response

X = Number of scores

N = Total Number of Respondents

Thus, $x = \frac{4+3+2+1}{4} = 2.5$

4

An interval of 0.5 was added to the mean (2.5)

$2.5+0.5 = 3.0$

Decision rule

From the above, my response receiving a mean score rating of 3.0 and above is regarded as accepted while any mean score rating below 3.0 is regarded as rejected.

III. Results

Research question one:

What are the qualifications of science teachers in secondary schools in Enugu Local Government Area?

Table 4: mean rating of the respondent on the qualifications of science students in secondary schools in Enugu East Local Government Area.

S/N	ITEM	(SA)	(A)	(D)	(SD)	N	$\sum FX$	\bar{X}	REMARK
1	NCE	160	50	30	30	270	880	3.3	Accepted
2	B.Sc	181	78	5	6	270	974	3.6	Accepted
3	B.Ed	162	87	15	6	270	945	3.5	Accepted
4	M.Sc	80	70	90	30	270	740	2.7	Rejected
5	M.Ed	170	60	34	6	270	934	3.5	Accepted
6	PhD.Ed	150	70	30	20	270	890	3.2	Accepted
7	PhD	90	50	60	70	270	700	2.5	Rejected

Table 4 shows that item 1, 2, 3,5 and 6 which have mean values of 3.3, 3.6, 3.5, 3.5, and 3.2 respectively were accepted. This is because they have mean values of 3.00 and above which is the acceptance level.

This implies that the qualifications of science teachers in secondary schools in Enugu East Local Government Area of Enugu State are: NCE, B.Sc, B.Ed, M.Ed and phd.Ed. To enter into a teaching career as a qualified teacher one has to finish an official teacher training program that involves earning a particular number of subjects and education credits and doing teaching practice being sent into schools to teach as a student under the supervision of qualified teachers.

Research question two:

What are the major constraints affecting students learning of science subjects in West African Senior School Certificate Examination?

Table 5: mean Rating Of the respondents on the constraints affecting students learning of science subjects in West African School Certificate Examination in Enugu East local Government Area?

S/N	ITEM	(SA)	(A)	(D)	(SD)	N	$\sum FX$	\bar{X}	REMARK
1	Lack of standard science laboratory causes 'student poor performance in science subjects.	181	78	5	6	270	974	3.61	Accepted
2	Lack of qualified science teachers causes students' poor performance in science subjects.	172	75	20	3	270	956	3.54	Accepted
3	Teachers poor teaching methods causes students' poor performance in science subjects.	162	87	15	6	270	945	3.50	Accepted
4	Students' lack of interest in science subjects causes poor performance of students' in science subjects.	144	89	22	15	270	902	3.34	Accepted

5	Lack of parents' supervision of their children's' lass note and academic performance causes students' poor performance in science subjects	85	108	58	19	270	799	3.00	Accepted
6	Inability of parents to provide their children with necessary textbooks and other stud aids causes students poor performance in science subjects.	146	94	24	6	270	920	3.41	Accepted
7	Lack of students frequent revision of science subjects causes students' poor performance in science subjects	148	99	14	9	270	926	3.43	Accepted
8	Teachers' poor exposure ofstudents practical aspect of science subjects causes poor performance science subjects.	154	85	23	8	270	925	3.43	Accepted
9	Lack of adequate instructional materials for teaching and learning science subjects causes; students poor performance in science subjects.	149	94	20	7	270	925	3.43	Accepted

Table 5 above shows that items,2,3,4,5,6,7,8, and 9 which have men values of 3.61, 3.54, 3.34, 3.00, 3.41, 3.43, and 3.43 respectively were accepted. This is because they have mean values of 3.00 and above which is the acceptance level.

This implies that the factors that cause the students' poor performance in science subjects in Enugu East Local Government Area are: lack of standard science' laboratory, lack of qualified science teachers, teachers' poor teachingmethod, students' lack of interest in science subjects, lack of parents supervision of their children's classes note and academic performance, inability of parents to provide their children with necessary textbook and other study aids, lack of students' frequent revision of science subjects, teachers poor exposure of students to practical aspects of science subjects and lack of adequate instructional materials for teaching and learning science subjects.

Research question three:

What are the possible implications of students' poor performance in science subjects in Enugu East Local Government Area?

Table 6: mean rating of the respondents on the possible implications of students' poor performance in science subjects.

S/N	ITEM	(SA)	(A)	(D)	(SD)	N	ΣFX	X	REMARK
1	Students poor performance. in science subjects leads to increase in the rate of students drop out from school after secondary education.	127	80	39	24	270	850	3.15	Accepted
2	Students poor performance leads to decline 'in students' enrolment in science related courses in universities and tertiary institutions.	..137	101	24	8	270	907	3.36	Accepted
3	Students' poor performance in science subjects adversely affects the nation's goal for improving industrialization in the country.	125	98	33	14	270	874	3.24	Accepted
4	Students poor performance in science subjects frustrates the aspiration of parents to see their children become educated and highly placed in the society.	98	106	40	26	270	816	3.02	Accepted
5	Students poor performance in science subjects leads to lack of professionalism the field of science.	166	79	15	10	270	816	3.02	Accepted
6	Students poor performance in science subjects leads to wastage of education fund	91	86	57	36	270	772	2.86	Rejected

Table 6 above shows that item 1,2,3,4 and 5 which have mean values of 3.15, 3.24, 3.02, and 3.49 respectively were accepted. This is because they have mean values above 3.00 which is the acceptance level.

This implies that the possible implications of students' poor performance in science subjects have on Enugu East Local Government Area in particular and Nigeria in general include: increase in the rate of students' drop out from school after secondary education, decline in students' enrolment in science related courses in universities and tertiary institutions, adverse effect on the nation's goal for improving industrialization in the country, frustration of the aspiration of parents to see their children become educated and highly placed in the society, lack of professionals in the field of science.

On the other hand, table 5 equally shows that item 6 which has mean value of 2.86 is rejected because it has mean value below 3.00 which is the acceptance level. This implies that wastage of education fund is not among possible implications students poor performance in science subjects have on Enugu East Local Government Area.

Research question four:

What are the strategies for improving students' poor performance in science subjects?

Table 7; mean rating of the respondents on the strategies for improving students' poor performance in science subjects.

S/N	ITEM	(SA)	(A)	(D)	(SD)	N	ΣFX	X	REMARK
1	Provision of standard science laboratory improves students' performance in science subjects	181	85	2	2	270	985	3.65	Accepted
2	Employing enough qualified science teachers in secondary school enhances students' performance in science subjects	186	80	3	1	270	991	3.67	Accepted
3	Use of appropriate teaching methods in teaching science students' performance in science subjects	196	70	4	0	270	1002	3.71	Accepted
	Improving students interest in science subjects enhances students' performance in science subjects.	175	87	8	0	270	977	3.62	Accepted
	Parents' adequate motivation of their children and providing necessary textbooks for their children helps to improve student performance in science subjects.	142	109	15	4	270	929	3.44	Accepted
	Allocation of more time for practical in science subjects in the school time table enhances students' performance in science subjects.	170	95	4	1	270	974	3.61	Accepted
	Students' frequent revisionscience subjects and adoption of good study method enhance students' performance in science subjects.	178	79	10	3	270	972	3.60	Accepted
	Science teachers going for regular in - service training enhances students' performance in science subjects.	142	113	14	1	270	936	3.47	Accepted
	Provision of adequate instructional materials for teaching and learning science subjects improves student' performance in science subjects.	182	76	12	0	270	980	3.63	Accepted

Table 7 above shows that items 1,2, 3, 4, 5,6, 7,8 and 9 which have mean values of 3.65, 3.71, 3.62, 3.44, 3.61, 3.60, 3.47 and 3.63 respectively were accepted.

This implies that strategies for improving students' poor performance in sciencesubjects are provision of standard science laboratory in secondary schools,employing enough qualified science teachers in secondary schools, use of appropriate teaching methods in teaching science subjects, improving students' interest in science subjects, parents adequate motivation of their children and providing necessary textbooks for their children, allocation more time for practical in science subjects in the school time table, students' frequent revision of science subjects, science teachers going for regular in-service training and provision of adequate instructional materials for teaching and learning science subjects.

Summary Of The Major Findings

Based on the analysis made above, the following findings were made:

1. The qualification of science teachers in secondary schools in Enugu East Local Government Area in Enugu State include:

- NCE
- B.sc
- B.Ed.
- M.Sc.
- M.Ed
- PhD.Ed
- PhD

2. The major constraints affecting students' poor performance in science subjects in West African Senior School Certificate Examination in Enugu East Local Government Area in Enugu State include:

- Lack of standard science laboratory
- Lack of qualified science teachers
- Teacher' poor teaching method
- Students' lack of interest in science subjects
- Lack of parents' supervision of their children's' class note and academic performance
- » Inability of parents to provide their children with necessary text books and other study aids.
- Lack of students' frequent revision of science subjects
- Teachers' poor exposure of students to practical aspects of science subjects
- Lack of adequate instructional materials for teaching and learning science subjects.

3. The possible implications of student's poor performance in science subjects include:

- Increase in the rate of students drop out from school after secondary education.
- Decline in student's enrolment in science related courses in universities and tertiary institutions.
- Adverse effects on the nation's goal for improving industrialization in the country.
- Frustration of the aspiration of parents to see their children become educated and highly placed in the society.
- Lack of professionals in the field of science.

4. The strategies for improving students' poor performance in science subjects include:

- Provision of standard science laboratory in secondary schools,
- Employing enough qualified science teachers in secondary schools.
- Use of appropriate teaching method in teaching science subjects.
- Improving students' interest in science subjects.
- Parents' adequate motivation of their children and providing necessary text books for their children.
- Allocating more time for practical in science subjects in the school time table.
- Students' frequent revision of science subjects and adoption of good study method.
- Science teachers going for regular in-service training.
- Provision of adequate instructional materials for teaching and learning science subjects.

IV. Discussion

Table 4, in research question one revealed that the qualification of science teachers in secondary school include NCE, B.Sc, B.Ed, M.Ed, and PhD.Ed which according to National Policy on Education 4 edition 2014 "science education shall emphasize the teaching and learning process and principle" also "teacher education should among others aim at producing highly motivated, conscientious and efficient classroom teachers for all levels of Nigerian educational system".

Also in table 5, it was discovered that the major constraints affecting students learning of science subjects' in of West African Senior School Certificate Examination in Enugu East Local Government Area of Enugu State includes: lack of standard science laboratory, lack of qualified science teachers, teachers'

poor teaching methods, students' lack of interest in science subjects, lack of parents' supervision of their children's class note and academic performance, inability of parents to provide their children with necessary textbooks and other study aids, lack of students' frequent revision of science subjects, teachers' poor exposure of students to practical aspects of science subjects and lack of adequate instructional materials for teaching and learning science subjects. The findings correspond to a great extent with findings of Nwaogu (2011) in a similar research carried out on the factors affecting students' performance in Biology in Senior School Certificate Examination in Orumba South Local Government Area of Anambra State. Nwaogu (2011) in his own research equally identified teachers' poor teaching method, lack of instructional materials, students' poor interest in Biology subject, lack of standard laboratories and lack of qualified teaching personnel as the

major factors affecting students' performance in Biology in Senior School Certificate Examinations in Orumba South L.G.A of Anambra state. Therefore, the findings of Nwaogu affirms the findings in this research work. Furthermore, Nwankwo (2015) in another research in the availability and utilization of resources in teaching and learning of chemistry in Secondary schools in Orumba North Local Government Area of Anambra state equally affirms that availability of resources for teaching and learning of chemistry greatly affects students' academic achievement.

Research question three, table 6 shows the possible implications of students' poor performance in science subjects. This includes: increase in the rate of students' drop out from school after secondary education, decline in students' enrolment in science related courses in universities and tertiary institutions, adverse effects on the nation's goal for improving industrialization in the country, frustration of the aspiration of parents to see their children become educated and highly placed in the society and lack of professionals in the field of science. The view of Mohammed and Bello (2010) that a scientifically educated society presupposed a virile populace armed with scientific and technological knowledge necessary for liberation from ignorance, poverty, superstition, hunger and disease affirms the findings of this research. In other words, students' poor performance in science subjects adversely affect the nation's goal for improving industrialization and actualization of millennium development goal.

Research question 4, Table.7 shows that the strategies for improving the students' poor performance in science subjects are: provision of standard science laboratory in secondary schools, employing enough qualified science teachers in secondary schools, use of appropriate teaching methods in teaching science subjects, improving students' interest in science subjects, parents' adequate motivation of their children and providing necessary text books for their children, allocating more time for practical in science subjects in the school time table, students; frequent revision of science subjects and adoption of good study method, science teachers going for regular in-service training and provision of adequate instructional materials for teaching and learning science subjects, Ajayi (1998) and Oklilu (2005) affirmed the findings of this research that teachers going for regular in-service training enhance students' performance in science subjects when he vividly pointed out that teachers are not finished products even after the completion of their academic training or pre-service programme, He maintains that there is a great need for continuous on-going processes of training for teachers throughout their professional life. Science teachers are faced with the challenge of meeting with new innovations in science. It was in recognition of this fact, that it was stated in section 8, no 75 of National Policy of Education (NPE, 2014) that teachers shall be regularly exposed to innovations in their profession, also in-service training shall be developed as an integral part of continuing teacher education to take care of all inadequacies. Furthermore, Nwaogu (2011) in his research on the factors affecting students' performance in Biology in Senior school certificate examinations in Orumba South L.G.A affirms the findings of the researcher that to improve students' performance in examination, parents should provide their children with the necessary facilities and materials to be effective in schools, students should put in more interest in their study and standard science laboratory and library should be provided in schools. In addition, Nwankwo (2015) affirms that recruitment of more qualified science teachers, allocating more time to practical in chemistry and other science subjects in the school timetable, availability of resources for teaching and learning science subjects enhance students' performance in science subjects.

In agreement with the above findings, National Policy on Education (NPE, 2014) states that government should ensure that all schools are properly equipped to promote sound and effective teaching and in particular that suitable textbooks and libraries should be provided for schools.

V. Implications Of Findings

The findings of this study have implications to the general public, the government, parents, teachers and students. Everybody now have overview of the roles they have to play either individually or collectively in actualization of the national educational goals. This implies that all hands must be on deck. Based on the findings of the study, it shows that there will be utmost positivity if the results of the research are properly implemented. There will be increased interest, knowledge, understanding and renewed attitude of students towards science related course for effective teaching and learning, improvement of our national economy and achievement of millennium development goal which is the utmost target of our country's stability.

VI. Recommendations

The researcher hereby presents the following recommendations for improving students' poor performance in science subjects:

1. Government, relevant agencies and stakeholders should provide standard science laboratory in secondary schools.
2. Government and stakeholders should employ enough and qualified science teachers in secondary schools.
3. Science teachers should make use of appropriate teaching methods in teaching science subjects.

4. Students' interest in science subjects should be enhanced through positive reinforcement and motivation by teachers, government, parents and various stakeholders.
5. Parents should adequately motivate their children and provide them with necessary textbooks for their studies
6. School authorities should allocate more time table for practical in science subjects and they should be guided to adopt good study methods.
7. Science teachers should be going for regular in-service training to update their knowledge.
8. Government, school's authorities, stakeholders and necessary agencies should provide adequate instructional materials for teaching and learning science subjects in secondary schools.
9. Students should be encouraged to make frequent revision of science subjects and they should be guided to adopt good study methods.

VII. Limitation Of The Study

The major limitation of this research work is the scope of study. The researcher should have loved to study wider areas which may include perhaps the study of the performance of students in science subjects in all the Local Government Areas in the state instead of concentrating on Enugu East Local Government Area. However, the researcher is convinced that the findings generated from this study are authentic and could be generalized to other Local Government Areas in the State.

VIII. Suggestion For Further Studies

The researcher suggests that more work be done on this topic from the following areas:

1. Evaluation of the academic achievement of male and female students in science subjects in senior secondary schools.
2. Enrolment of male and female students in science related subjects in secondary schools and tertiary institutions.
3. Students' attitude to study of science and science related courses in the secondary and tertiary institutions.
4. Assessment of employment and job opportunities in science related courses.
5. Effect of science and science related courses in national development.

IX. Conclusion

Science the study life and science Knowledge is the key to self-actualization and national development. The incessant poor academic performance of students in Nigerian is inimical to the progress of our nation. According to National Policy on Education 4th edition states "the acquisition of appropriate skills, abilities, and competences both mental and physical as equipment for the individual to live in and contribute to the development of the society" It is obvious that one of the major problems facing the education system in Nigeria is the abysmal failure of students in public examinations particularly at secondary level of education and more especially in science subjects. Stakeholders have continued to trace the causes of mass failure of students in public examination. Some people shifted the blame on government, someone parents, some on society, and students themselves with the teachers having lion's share of the blame.

The research on "**student's poor performance in science subjects in Enugu East Local Government Area: causes and strategies for improvement**" presents critical survey of perceived causes of students' poor performance in science subjects from different perspectives with a view to elucidating possible strategies for improvement. The research succinctly observed that education and science remain the fundamental and essential tools for man's progress and development. A scientifically educated society presupposes a virile populace armed with scientific and technological knowledge necessary for liberation from ignorance, poverty, superstition, hunger and disease, (Mohammed and Bello, 2010). Science education, therefore ought to occupy a unique position in our life and school curriculum.

Science education in the country is plagued with myriad of challenges. The researcher in line with various scholars has identified a number of factors that is responsible for student's poor performance in science subjects in secondary schools. These pitfalls if not promptly addressed results to abysmal failure of students in science examination which indeed signal apparent imminent cataclysmic catastrophe in the field of science and in nation's achievement of the millennium development goal. Consequently, the researcher critically elucidates the possible implications students' poor performance in science subjects may have in the nation, and at the same time suggests possible strategies for improvement.

The researcher is optimistic that if the findings of the research is properly implemented, there will be effective teaching and learning of science subjects, improved academic performance, renewed interest and commitment in the study of science and science related courses for individual's self-actualization and for improvement of our nation's economy and achievement of millennium development goal which is the utmost target of our country's stability.

Compliance to Ethical Standards; The entire participants filled out a consent form to declare their free will and interest in participating.

Conflict of interest. All authors declare that they have no conflict of interest

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