

## ATTRITION OF STUDENTS IN SCHOOL ENROLLMENT IN HEALTH SCIENCE AND BIOLOGY: IMPLICATIONS FOR COUNSELING FOR SUSTAINABLE EDUCATION GOALS

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### **Abstract**

*Health science as a core curriculum subject for Senior Secondary School Certificate Examination (SSSCE), has suffered great student enrolment attrition in the secondary school and more recently, Biology, a related subject has also started experiencing the same enrolment attrition. This study therefore examined the possible causes of the student enrolment attrition in these core science subjects in five local government areas of Delta State. The design adopted for the study was descriptive survey research design. The population of the study was 6,000 SS1-SS3 students, while the sample was 600 students. Three research questions were raised to guide the study. The instruments for data collection were: knowledge level of students on Health Science (KLSHS), Enrolment figure of Health Science and Biology (EFHSB) and academic achievement of Health Science and Biology (AHSB). A simple non-parametric statistical percentage was used to answer the research questions. The findings after analysis indicated that there was actually attrition in enrolment of students in health science and biology in the secondary schools. The study therefore recommended that health science and Biology be made compulsory in the schools in view of their relevance in nation building; and that government should promote interest in science subject for student by giving grants and scholarship to science students.*

**Key words:** Enrolment, Health Science, Biology

### **Introduction**

Sometime ago in the educational system of Nigeria, precisely in the early 70's to late 80's, school enrolment subjects as deemed appropriate by foresighted policy makers on education, spelt out Health Science\* and Biology among the natural science subjects as compulsory for all final year secondary school candidates. The essence of these subjects being made compulsory by then them calculative and foresighted policy makers, was to create awareness on issues bothering on health of the individual, personal hygiene, selection on marital integration, terminal ailment and national growth and development. According to Ajaja (2007) cited in Anagafo (2017 P.1) "Health science and Biology that are offered by school students are for their personal needs, health services and societal development".

The benefits of these subjects could be seen back then, in the well-being of individuals and the society. As these subjects with their sensitive topics were explained by qualified and dedicated teachers, the little adult student (adolescent)

with a “Tabula Rasa” mind treaded cautiously on areas relating to excessive use of alcohol that can result in hazardous drinking, harmful drinking, binge drinking, that can cause liver cirrhosis, hypertension, palpitations, blackouts, hand tremor, importance, sleep disturbance, night sweating, polyuria and a host of then. (Odoemelam, 2011).

Since these subjects (Biology and Health Science) are highly imperative and are easier to understand than chemistry and physics, (Anagafo, 2016), enrolment of these subjects in the external examination was always very high for both science candidates and non-science candidates. According to Amakiri (2012), “Biology precisely, is a prerequisite science subject for many fields of learning that can contribute immensely to the technological growth of any nation especially in the fields of forensic science, genetic engineering and medicine”. According to the author, “it is the highest model registration among the science subjects”. Again, James and Awodi (1997) stated that biology and Health Science as curriculum subjects have witnessed a higher level of enrolment than any other science subject in the final year external examination.

\*Health Science is Different from Physical and Health Education (PHE)

But today, what is the state of Biology and Health Sciences in the educational system of Nigeria, despite these benefits to individuals and the society at large in combating and preventing many killer diseases?

At this point, it will be good to strike a different between Health science and Biology as core curriculum subjects and their relevance to the individual and the nation as a whole, (NERDC, 2004). Health Science according to Wikipedia (2016) “is a multidimensional field, which actively combines bio-medical, psycho-social organization and societal aspects of health, diseases and health care. It teaches healthy life-style to students in areas such as unity and balance on drugs, prevention and nutrition. Again, Health Science is a Social science that draws from biological, environmental, psychological, physical and medical sciences to promote health and prevent diseases, disabilities and premature death through education driven voluntary behaviour change. Biology on the other hand studies all living organisms because it encompasses everything from botany to zoology, including some aspects of Health Science. Hence, while Health science explores the human body through its functions and diseases, Biology major, actually helps to prepare a student for medical school. Now, what is the state of Health Science and Biology over the years in an under developed country like Nigeria.

Although, National Policy on Education (2004) stated copiously the place of science education in the educational system of Nigeria especially Health Science and Biology, many years after, the implementation of the programme appeared to be haphazardly done. Ajaja (2009) pointed out that the area of science education practices which are not in conformity with the provisions in the national policy range from method of instruction to sticking to the stated objectives in terms of activities and behaviour. General Yakubu (2012) at Afe babalola University Ado Ekiti, queried the haphazard nature of Education Policy and stressed that the inconsistent

educational policy has a greater deal of confusion in the educational system. While Nnadi (2012) lamented that the government has lost its focus, if not why should every minister of education introduce his/her policy. These inconsistent policies on education over the years have created attrition on enrolment proper in Health Science and Biology and academic achievement of students in these subjects. For examples School enrolment Records of Health Science and Biology started to dwindle after the National Curriculum conference was convened in 1973 and the first national Policy on Education (NPE) was published in 1977. Some policy innovators felt that there was need to review the 2<sup>nd</sup> and 3<sup>rd</sup> editions of the NPE published in 1981 and 1998, on social change and demands on education. The review was made and the 4<sup>th</sup> edition of the National Policy on Education was published in 2004. Unfortunately, however, the social change and the demands on education for which the NPE was reviewed was not fore-sighted enough to consider the physical and emotional Health of the nation as a nucleus to the growth and development of the nation. Among the innovations and changes in the 2004 NPE edition are the:

- ❖ Prescription of minimum number of subjects to be taken by Senior Secondary Certificate Examination Candidates (SSCE)
- ❖ Repositioning science, technical and vocational education in the scheme of national education for optimum performance and
- ❖ general contextual change to reflect the state of professional practice in education, among other (NERDC, 2004. p.5)

Therefore among the core science subjects to be offered in the last year of senior secondary school candidates henceforth, are one of Biology, Chemistry, Physics or Health Science Enrolment for Health Science by candidates in their SSCE was badly affected as a result of the option. Gradually, nothing much was heard about Health Science in the secondary schools, and most secondary school students today can never tell that there is a subject called Health Science among the core subjects; only Biology and maybe Physical and Health Education. As a result, the importance on hygiene, knowledge about pathogenic micro-organisms, sex education and many other lethal disease by students became very little while they continue to indulge in many forms of ill-health behaviours out of ignorance.

Then, around 2012 and 2013, there was a “contextual change....in educational policy”, where the curriculum became overloaded contrary to the prescription of minimum number of subjects to be taken by SSCE candidate stated in 2004 NPE. Civic education was made compulsory for all SSCE candidates, animal Husbandry, crop science, fishery etc which were part of agricultural science among others were added to the subjects for SSCE candidate. And Ironically, Biology was made optional; and health Science education was totally forgotten. That year 2013, West Africa Examination Council (WAEC) and National Examination Council (NECO) in their SSCE records had a drastic attribution in Biology enrolment by candidates while animal husbandry and others new subjects sprang up (Anagafo, 2016). In 2014 to 2015, Ebola disease broke out followed by Lassa Fever, many un-informed persons started to offer suggestion for preventive measure, “bath with salt

solution and also drink it, then eat bitter cola, 8-10 lobes at a go". Since then, increase in cholera outbreak, meningitis, Hepatitis, gastroenteritis, cancer of various organs of the body continue to ravage the nation every now and then. Health Science and Biology which are key subjects to proffer preventive solution to these problems, would have sat at the corner laughing (so to say) that "you neglected my importance in nation building". Summarily therefore, major causes of the enrolment attrition of Health science and Biology were on inconsistency on policy change and curriculum somersault.

"A healthy nation is a wealthy nation," is a witty saying, "but a disease plaque nation is a poor national". The truth in this adage is evident when there is an outbreak of epidemics like Ebola, Lassa fever, cholera, Flu, meningitis, in any nation, as the case was in Nigeria and some other countries recently. Fear of death by Ebola or Lassa fever gripped almost everybody in the country. Staff (including medical personnels) in one of the Federal Medical Centres (FMC) in the country vacated their duty post for a day when a suspected Lassa fever victim was dumped in the hospital premises. For the first time, sanitizer agents were placed in almost every institution, including the places of worship and the market place. Awareness on hand-washing was created for the first time and some people were even told to wash their body with table salt and also drink a solution of it. Business slowed down, the country was running helter-skelter to save lives. Here, attention was no longer on technological growth and development but on the welfare of health of the citizens. Fatemeh (2014) stressed that health Science promotion improves the health status of individual, families and communities, states and the nation. It reduces premature death by focusing in prevention, thereby reducing huge financial cost that companies, individual, employers, families insurance companies, medical facilities, communities, the state and the nation would spend on treatment.

"A stitch in time, saves nine," often times World Health Organization (WHO) sounds warning on the increasing occurrence of some terminal ailments like Cancer of the lungs, breast, prostates gland, cervix, endometrial, and the liver, as well as Hepatitis A,B,C and D. Some causes of these diseases are associated with the dietary life-style of the people and their cosmetic behaviour. Unfortunately, most people, especially the youths in schools who indulge in these lifestyle are seriously ignorant of the danger ahead. A study carried out by favour (2016) reveled that 63.7% of women, especially secondary school student have no knowledge of breast cancer, let along the warning sign of it. National Agency for food, Drug and Control (NAFDAC, 2003) by way of sensitization pointed out that one can be predisposed to breast and skin cancer by some body's cream such as antiperspirants, perfumes, deodorants and the likes applied directly on the skin, where one in every eight woman can develop breast cancer.

Again, WHO linked some common causes of cancer, Hepatitis and other ailment to dietary life style that most people indulge themselves in. Some common habit most school adolescents practice in the school and outside the school environment include hazardous drinking which increase blood alcohol level, dysfunctional drinking that is responsible for psychological damage to social

functioning and being drinking that is responsible for liver damage and most causes of accident (Odoemelam 2011).

Alcoholism is immediately followed by smoking either cigarette or marihuana. School Children and adolescents appear to start smoking as they form peer group in school out of curiosity and to impress others. Ferry (1998) attest that most Americans, about 85% begin smoking at 13 to 14 years and very soon they become addictive to nicotine. Thorpe and Olson (1990) Cited by Odoemelam (2011) warned that long term smoking is associated with lung cancer, emphysema, cancer of the larynx and esophagus and cardiovascular disease. Furthermore, they added that smoking is identified as the largest cause of death in the United States.

Now, the youths in our various schools, who indulge in these various live style are not aware of the dangers ahead. Some are involved in bulimia nervosa, over-eating of varieties of food leading to stomach upset, caused by over concern with thinness and attractiveness, depression and other emotional problem (Odoemelam 2011). Others who abuse drugs become drug addict, suffer from insomnia (troubled sleeping) and mental distress. These and many others are issues or topics in Health Science and Biology that children in secondary schools needed to be furnished with, for prevention sake. This was why Reiss (2000) aptly stated that we live in an age where biology seems to be in the ascendancy. This evident in many of worlds burning issues such as biodiversity, human population growth, genetically modified organisms, reproductive technologies, genetic counseling, marital based counseling and prolongation of life. Added to this, Ahmad and Asghar (2011) made it point blank that the relevance of Biology and health Science to the corporate existence and survival of mankind, should primarily impels firm support from educators, teachers “policy makers” to seek a coherent instructional intervention that can remedy the prevailing underachievement and apathy towards Biology and Health science

A case study on this was carried out by Bert (2015) on Ferry Moore who won 2015 Google science fair in Canada. According to the study, the Canadian Government spent over 50 billion dollar on public kg 1-12 students to motivated them to study science, technology, engineering and mathematics (STEM) because when bright young student aren't motivated to pursue science, the result is a future of limited possibility for health and other breakthrough. “Young minds are creators of innovative and unique solution, because when they drop science everyone loses”.

In view of the fore-going, this study is aimed at verifying the authenticity of the claims on school enrolment attribution in Biology and health science in five local Government areas of Delta State between 2012 and 2013 compared. The study also verified the knowledge levels of secondary school students on Health Science as a core subject in their curriculum as well as the academic achievement of Biology and Health Science between 2012 and 2013.

### **Statement of the Problem**

At one time in Nigeria, Health Science and Biology among the natural science subjects were core subjects offered by students in their final years in the secondary schools. These subjects provided awareness on hygiene and health status of

the youths in the Secondary schools then. But when the National Policy on Education was reviewed in 2004, Biology and Health Science were optional, and health science was dropped for Biology by students and was forgotten. By 2012, when the curriculum was furthered reviewed by the National Policy on Education, Biology was now made optional. This means, two core subjects on health issues are facing extinction. The researchers saw this as blind spot in the educational system of Nigeria, in view of the relevance of these science subjects to the healthy nature of the society. The extent of this study therefore is to proffer solution to these core science subjects.

### **Research Question**

The research questions that guided this study are:

1. What is the awareness level of secondary school students on the concept of Health Science and its enrolment figure as one of the core subjects in the school curriculum?
2. What is the enrolment figure of students offering biology between 2012 to 2013 in (5) five local government area of Delta State?
3. What is the academic achievement of students in Biology and Health Science after the curriculum review between 2012 to 2013?

### **Method**

This study adapted the descriptive survey research design. This design was appropriate for the study because it investigated the attrition of students in school enrolment in Health science, Biology and tactfully investigated the academic achievement of students in Biology and Health Science between 2012 to 2013 after the change of curriculum

The population of the study was 6,000 SSI-SSIII students from two secondary schools each in five local government areas of Delta State.

Meanwhile, to test the reliability of the instrument and to bring out the degree of the relationship of the text items and determine the internal consistency of the instruments, cronbach Alpha Reliability coefficient was used, hence a reliability coefficient of 0.063, 0.56 and 0.67 were obtained for all the instruments.

**Research question 1:** What is the awareness level of secondary school students on the concept of Health Science and its enrolment figure as one of the core subjects in the school curriculum.

**Table 1:**  
**Awareness level of secondary school students on Health science and Biology and its enrolment figure**

Enrolment figure		Questionnaire items			
	L.G.A	Below are two core science subjects offered in senior secondary school indicate the one you are familiar with and have enrolled in 2013			
		Awareness on	Awareness on	Enrolment Figure on	
1	Okpe L.G A	Health Science	Biology	Health science	Biology
	Mereje sec sch	0	60	0	26
	Adeje sec sch	0	60	0	35
	Total awareness level	0	120	0	
	Total enrolment level			0	61
2	Sapele L.G.A				
	Merit mixed sec Sch	0	60	0	40
	Chude girls Gramm. sch	3	60	0	75
	Total awareness level	3	120		
	Total enrolment			0	115
3	Warri South L.G.A				
	Urhobo college	1	60	0	80
	Delta career College	2	60	0	45
	Total awareness level	3	120	0	
	Total enrolment figure			0	125
4	Ika South LGA				
	Staff model Sec Sch	1	60	0	90
	ICE Agbor	0	120		
	Total awareness level	1	120		
	Total enrolment			0	170
5	Oshimili South LGA				
	ICE Asaba	1	60	0	
	Asagba Mixed Sec Sc	1	60	0	140
	Total awareness	2	120		80
	Total enrolment				220

On the awareness level of students on the concept of Health Science, table 2 showed that the one subject that the students were not familiar with was health science. They were 100% aware of Biology as core subject but not health science. Only few schools like Chude girls Gramm school Sapele, ICE Asaba, Urhobo college Warri, had 1,2 or 3 students who said they have heard of the subject, Health Science but not as a core subject to be enrolled.

Research question 2: What is the enrolment figure of students offering Biology between 2012 to 2013 in five (5) L.G.A. of Delta State.

**Table 2: Enrolment figure of students in Biology between 2012-2013**

L.G.A. Sampled schools	Year	Biology enrolment figure	The school total enrolment figure	Total	Year	Biology enrolment figure	The school total enrolment figure	Total
Okpe L.G.A	2012				2013			
Mereje sech sch		50	56	89.3%		26	60	43.3%
Adeje sec scho		80	82	97.6%		35	70	50%
<b>Total</b>		<b>130</b>	<b>138</b>	<b>94.2%</b>		<b>61</b>	<b>130</b>	<b>46.9%</b>
Sapele L.G.A	2012				2013			
Mixed Sec sch		60	66	90.9%		40	70	57.1%
Chude girls G.S		130	133	97.7%		75	140	53.6%
<b>Total</b>		<b>190</b>	<b>199</b>	<b>95%</b>		<b>115</b>	<b>210</b>	<b>54.7%</b>
Warri South	2012				2013			
Urhobo Collage		150	153	98.8%		80	150	53.3%
Delta Career coll		80	80	100%		45	88	51.0%
<b>Total</b>		<b>130</b>	<b>233</b>	<b>55.8%</b>		<b>125</b>	<b>238</b>	<b>52.5%</b>
Ika South	2012				2013			
Staff Model Sec sch		180	185	97.1%		90	188	47.9%
ICE Agbor		100	131	97.1%		80	120	66.7%
<b>Total</b>		<b>280</b>	<b>288</b>	<b>97.2%</b>		<b>170</b>	<b>308</b>	<b>55.2%</b>
Oshimili South L.G.A								
Asagba Mixed Sec Sch	2012	110	115	95.7%		140	150	93.3%
ICE Asaba		130	131	99.2%		80	125	64%
<b>Total %</b>		<b>240</b>	<b>246</b>	<b>96.6%</b>		<b>220</b>	<b>275</b>	<b>80%</b>

Table 2 above shows the enrolment figure of students offering Biology between 2012 and 2013 in five local government areas sampled with two secondary schools each. In Okpe L.G.A., the biology enrolment figure in 2012 was 130 against 138 having 94.2%. But in 2013, it became 61 against 130 with a percentage of 46.9. In Sapele LGA, it was 190 in 2012 against 199 having 95%. But in 2013, it was now 155 against 210 having 54.7%. Ika South, 2012 had enrolment of 280 in Biology against the school total enrolment of 288. But in 2013, out of 308 students only 170 put in for biology having 55.2% against 97.2% the same enrolment reduction occurred in Warri South, with 52.5% against 55.8%. Only in Oshimili South, (Asaba)



the state capital with influx of students, had 80% enrolment in 2013 against 97.6% in 2012.

**Research Question 3:** What is the academic achievement of students in Biology and Health Science after the curriculum review between 2012 to 2013?

**Table 3: Academic achievement of students in Biology and Health Science between 2012-2013**

	Local govt. area	Year	Bio student fig and Health Science		Mean (x) performance		SD	
			Biology	Health	Biology	Health	Biology	Health
1.	Okpe							
	Mereje sec. sch	2012	50	0	90	0	9.5	0.0
		2013	26	0	55	0	7.07	0.0
2	Sapale							
	Merit Mixed Sec Sch	2012	60		95	0	9.8	0.0
		2013	35			0	7.1	0.0
3	Warri South							0.0
	Urhobo College	2012	150			0	8.9	0.0
		2013	80			0	6.7	0.0
4	Ika South							0.0
	ICE Agbor	2012	100			0	9.2	0.0
		2013	80			0	7.7	0.0
5	Oshimili South	2012	130			0	9.2	0.0
	ICE Asaba	2013	80			0	7.1	0.0

The table 4 above showed the evaluation of the academic achievement of students in Biology and Health science between 2012 and 2013. The  $\bar{X}$  and SD of students academic achievement in biology in the five LGA, are 90, (.5) (9.8) 80 (8.9) 85 (.2) and 85 (9.2) while in 2013, the  $\bar{x}$  achievement and SD are 55 (7.7), 50 (7.1), 45 (6.6) 55 (.7), and 50 (7.1) respectively.

***But in Health Science, there was no academic achievement in all the local government areas because no student registered for it.***

### ***Discussion of Findings***

This study explored the relevance of Health Science particularly and Biology as core subjects in the secondary schools, for sustainable educational goals. The study deliberately investigated the knowledge level of secondary school students on the concepts of Health science as a tool for prevention of many deadly diseases that are topics teachable in both Health science and Biology. The findings showed the backwardness of students on issues pertaining to health (0). The findings corroborated the findings of Favour (2016) who revealed that 63.7% women, especially school students, have no knowledge of breast cancer, let alone the warning sign of it and that of NAFDAC (2003) sensitization that some creams, perfumes and antiperspirant can predispose one to cancer of the breast and that of the skin.

The study further revealed that secondary school students are not even aware that subject like Health science is part of their SSS curriculum as a core subject. (0%, 3% and 5%) respectively. And most disheartening is the fact that they have no knowledge that Health science and Biology offered in the secondary school can help to prevent most diseases and some unhealthy behaviours (such as drunkenness, cigarette smoking, illicit sexual behaviour), they ignorantly indulge in, in the school termed as socialization. The 62.5% of school students in the five local government area sampled, revealed that they needed counseling on issues relating to the selection of healthy marriages mates in the future based on their knowledge of Health science and Biology offered today in the school system.

The study pointed out that the enrolment attrition in these subjects is based on the inconsistency adjustment of the national policy on Education. Finally, the study found out that the low academic achievement of students in 2013 was also as a result of attrition of biology enrolment in the school which brought discouragement, unseriousness on the part of those who decided lackadaisically to put in for Biology in the 2013 SSCE.

### ***Counselling Implication***

It is when a “problem is identified”, that it is believed by wise saying, that such a “problem is half solved” An identification of a problem will equip a counsellor with strategies to proffer solution to the problem. (Ugoma, Dickson and August 2016). Therefore, having found out that evidence of learning crises in the attrition of school enrolment of Biology and Health Science are apparently inimical to the well-being of the child to achieving a sustainable educational objectives in the society, there is urgent need to:

1. Restore Health Science education and Biology as core science subjects to be offered compulsorily by all students in the secondary school from SSS 1 to SSS 3: Just as civic education is now made compulsory for all students.
2. The essence of these science subjects is to create the awareness, the knowledge and the sensitization of students to community health, communicable diseases, terminal diseases and their preventive measures. It will serve the same useful purpose that civic education is intended to give to the student, (the health of the nation is also the wealth of the nation)

3. The peoples perished because of lack of knowledge”, is a Holy scriptural quote, but when school children and adults are knowledgeable on issues relating to health, no one will tell the other to bath with table salt, drink salt solution too and eat ten lobes of bitter cola at a go, in case of health emergency.

### **Recommendation**

Having carefully considered the implication of this study, the following recommendations are hereby given judiciously:

1. Health Science and Biology be made compulsory for all students in the secondary schools, starting from SSS1-SSS3, as it used to be in the early 70s.
2. Since there is general contextual change to be made, based on social change and demands on education, NPE (2013), policy makers on education should for the sale of the health of the nation adjust the curriculum for the full recognition and placement of health science and biology, in the secondary school system.
3. Schools on their own, through their school counselors, should emphasize the need and importance of Biology and Health Science to their students, to build in their interest
4. Biology teachers should work hard to make Biology and Health Science very interesting in school where they are offered, through “cooperative method of teaching, and student centred method of teaching instead of teacher centred method. Student achieved greatly academically, when they are taught using student centred method.
5. Schools should endeavour from time to time to create awareness campaign on health issues to their students through various health workers in the state
6. Students should be encouraged by the school to form Health clubs where the Health teachers/Biology teacher guides such clubs. Clube on this nature can guide students on their indulgence in certain behaviours such as smoking, drinking, sexuality and over eating, peculiar to their age.
7. Finally, the government, both federal and state can promote science interest on the students by giving grants, incentives and scholarship to science students just as Canadian government spent over 50 billion dollars to promote STEM in its nations.

### **Conclusion**

When empirical studies on education are conducted with meaningful findings, it is highly encouraged that their recommendations be implemented fast for the growth and development of the nation. Since Nigeria is “yet far from the realization of Education for All (EFA)”, let the major stalk holders on education – the government, policy makers and NGO continue to dialogue on this issue on ground, to move our great country forward, to the level of Good Health For All (GOHFA).

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