ISSN: 3208 - 2715
Volume 12, Number 1, 2025
International Journal of Advancement in Educational Research

ASSESSING THE IMPACT OF GENDER ON BASIC SCIENCE STUDENTS' INTEREST AND ACADEMIC ACHIEVEMENT IN SOME SELECTED SCHOOLS IN ETCHE LOCAL GOVENRMENT AREA OF RIVERS STATE

Nwala, Longinus Ph.D & Balafama Green Ph.D
Department of Integrated Science, Faculty of Natural and Applied Sciences,
Ignatius Ajuru University of Education, Port Harcourt, Nigeria.

Email:nwalalonginus@gmail.com, balafama.green@yahoo.com

ABSTRACT

The study assessed the impact of gender on Basic science students' interest and academic achievement in Etche Local Government Area of Rivers State. The study employed the descriptive and explanatory design. The study population was 600 and the sample size of 150 students, covering three schools in Etche Local Government Area. Three research questions guided the study. The data was analyzed using the mean and standard deviation which was presented in frequency tables and percentages. The researcher developed questionnaire titled: effect of gender on science students' interest and academic achievement in Basic science in Etche Local Government Area (EGSSIAABSELGA). The findings of this study revealed that gender has a significant effect on science students' interest and achievement in Basic science. Therefore, teacher should try to make science learning interesting by using teaching methods such as inquiry/discovery methods also the teacher should give equal attention to the male and the female students; there should be no discrimination on the basis of gender.

Keywords: Assessing, impact, gender, interests and Basic science students

INTRODUCTION

Science and technology has drastically increased our knowledge of the world. It has opened up astoundingly new and improved ways of diagnosing, treating illness and interest of Basic science students. Rapid advances in electronics have ushered in the "computer age" which is rapidly altering our lives for better.

According to Blum. A (2016) Scientist have even ventured into the hitherto unknown environment of the moon and other planets. It is therefore proper that the skills that have widened our knowledge of the world around us from minute things to the very large ones be learnt. Humphrey B. R.T. Johnson (2019). The national policy on education gave premium by prescribing admission ratio of 60:40 percent sciences to Liberal arts into Nigeria Universities. The policy did not discriminate between boys and girls in their access to the study of science and technology in schools. In other words, it is then intention of government to provide equal, educational opportunities to all citizens of the country. This notwithstanding, various science education literatures have revealed low participation of females in science and technology education.

According to Nwabilisi (2017) science and technology education refers to the teaching and learning of science. As a result of technological advancement, he said most countries of the world, for example Nigeria adopted the study of basic science at the Junior Secondary level of education.

In the early 70's, Basic science was introduced into the junior secondary school curriculum. It is also pertinent to note that basic science course in Nigeria as originally conceived was designed for the first two years of the secondary level. However, in accordance with the new national policy on education, it became important to design a core content curriculum in Basic science along with other subjects. Consequently a core-content curriculum for Basic science was prepared under the auspices of the Federal Ministry of Education. Basic science is now currently studied at the junior secondary level.

According to Cohen (2014) Basic science embraces such area of study as physics, chemistry, Biology, Geography etc, which is studied as a unified whole unlike the general science which limits itself to Physics, Biology and Chemistry, and which in not basic science.

Formally these subjects of science physics, chemistry, biology, geography etc were studied distinctly with no correlating forces that united them as an entity. It was A.P.S.P. (African Primary School Program) and S.T.A.N (Science Teachers Association of Nigeria) who came out with a conclusion that science should not be studied in isolation, hence the birth of basic science. With Basic science introduced into Nigerian schools, it is hoped that technological advancement and prosperity will be achieved Khabale (2012). Lipsey (2014) says science education is the sure gate way to the scientific and technological greatness of African nations and a quality science education is a foundation for sustainable development of developing countries. There is clear-cut evidence to show governments efforts to improve the quality and standard of education in order to solve social and economic problems.

Research work of Obemeat (2011) Nwadiea (2014), and Forambi (2016) have shown the level of student performance in Joint Admission and Matriculation Board (J.A.M.B) and Senior School Certificate Examination (S.S.C.E) are nothing to write home about. Students recorded very low achievement in integrated science inspite of the effort shown by government and non-governmental organizations; there is ample empirically- base evidence that students still lack interest in science subjects.

Several studies have been carried out over the years to determine factors that influence students' achievement in Basic Science. Basic Science is a fundamental science subject that prepares students for the senior secondary school science subjects and subsequently for science related courses in higher institutions. Abande (2010), opined that interest is a state of curiosity or concern about something or the attention given to something.

Magnus (2018), further stated that interest encompasses the positive, pleasant feelings an individual has when trying to study a subject-matter. From the above definition, it could be concluded that interest governs our feeling and attitudes towards a particular thing or activity. Deci (2012) emphasized that interest is an important factor that supports learning, individual development and achievement. Gbamanja (2001) in Olatunde (2017), itemized problems that have to a great extent drastically reduced students' interest in Basic science hence their achievement in the subject; these problems include;

- Lack of understanding of what science is all about.
- Lack of well-equipped science laboratory
- Lack of funds for the supply and maintenance of necessary equipment.
- Poor teaching strategies used by the teachers.
- Lack of workshop centres.
- Lack of textbooks, journals and materials needed for professional growth.

If a student shows a higher interest in a course, this will help him to put in more time, effort and energy in learning which will in turn lead to higher or better achievement. In a research by Olaf, Jurgen & Kai (2013) involving 602 students in Germany, they found out sex differences in achievement in favour of boys in mathematics achievement, they also found out that interest had no significant effect on learning from grade 7 to grade 10 but affected their course selection. Further it was seen that interest at the end of grade 10 had a direct and indirect effect (via course selection) or achievement in upper secondary school. This means that high achievers showed more interest than low achievers. Allen and Robbins (2010) tested the effects of interest and motivation on timely degree completion they found out that interest had a direct effect on timely completion while motivation had an indirect effect. These findings show the importance of interest on students' achievement.

Jegede (2012) in a survey of junior school boys and girls on the influence of gender on interest in science argued that there is a gender gap concerning students' interest and achievement in science. Both male and female students perform well in science in the junior secondary school but

by the time they begin their course of study in the polytechnics and universities the female students do not retain their interest in science.

Further, in Azman (2014), according to a survey carried out in selected educational institutions in Sub-Saharan Africa, the issue of gender played a major role in the choices students made and also their performances in core science subjects. Umoh (2013) conceptualized gender as a psychological term used in describing behaviours and attribute expected of individuals on the basis of being born as either male or female. Wonu & Anackwe (2014) found out no significant difference in the mathematic achievement of male and female students. Josiah & Etuk-Iren also found out a non-significant relationship between gender and achievement of college students.

Abiam & Odok (2016) in their research work found that there was no significant gender difference in the achievement of students in number; numeration statistics and algebraic process. In a similar vein Josiah & Etuk-Iren (2014) found a non-significant relationship between gender, age, mathematics anxiety and college students' achievement in algebra. In another research by Mari and Shauba (2012), they revealed that female students had a better understanding of science process skills when compared to the male students. They suggested that the view that seems to have established itself that boys are better than girls in science education needs to be approached and interpreted with great caution. Similarly, Godpower-Echie and Amadi (2013) in a research work involving four hundred (400) senior secondary (SS) 2 chemistry students found out that there was a positive correlation between gender and students' achievement in chemistry. Females tend to perform better in areas of standardized science assessment that address the human application of science such as life science, (Ingels and Dalton, 2018). Contrary to the findings above, Babalola and Fayombo (2019), found out that there was no statistically significant difference in the students' science achievement based on gender. Fredrick (2018) opines that there was no statistical difference between boys and girls in the ability to manipulate the apparatus/equipment take observations, report/record results correctly, and compute/interpret/analyse result during chemistry practical's and that both male and female student perceived interpreting/analysing results to be most difficult skill to perform during chemistry practical. Ikenna (2011), found out that gender alone has no effect on academic achievement but could act in conjunction with other variables to affect learning outcomes.

Therefore an investigation into the effect of gender on interest and achievement of students in integrated science in Etche Local Government Area of Rivers State is timely and worthwhile. This tendency that girls have to adopt themselves to the boy's curriculum originated in the history of schooling because for hundreds years ago it was purely boy's institution, it was only the boys that were training in the school. The girls did not go to school their education and end in kitchen.

According to Akinbola (2016). He also says this tendency characterizes not only basic science course but all subjects of school instruction and can be substantiated, for example, by the analysis of current school books although authors and publishers are try in hard to mark them more girl's friend.

Purpose of the study

Nigeria as a developing country has a lot to benefit from educating its female citizens on science and technology.

a. A student who is well educated in science would acquire manipulative skills that will be very useful to her in her immediate environment and the entire society.
b. She would develop the scientific attitude of open mindedness, creativity, objectivity curiosity, ability to suspend judgment until sufficient evidence is obtained etc.
c. The data emanating from this study will be useful to education planning authorities. It will enable them to come to terms with the stark realities of the effects of gender as related to students' interest and achievement in Basic science of the educational system and programmes.
d. It will serve as a basic for curriculum planning and determine the success.

e. To the parents, the results from the study influence to a certain belief.
f. Parents belief that training a female is a waste of time, they also belief that if they train female is the husband that will enjoy, they also belief that female education and end in the kitchen.

Research Questions

The following research questions were formulated to guide this study;

1. What influence has gender on students' interest in basic science?
2. Does gender have any effect on students' academic achievement in basic science?
3. What is the relationship between students' interest and academic achievement in Basic science?

Hypothesis

HO_1: There is no significant influence of gender on students' interest in Basic science
HO_2: There is no significant effect between genders on the students' academic achievement in Basic science.
HO_3: There is no significant relationship between students' interest and academic achievement in Basic science.

RESEARCH METHODOLOGY

Research Design

The researcher adopted the descriptive survey research design. According to Neankwo (2013), the thrust in the use of this design is that certain features or variables are merely described as they are at the particular time.

Population of the study

The population of this study consists of three Junior Secondary School Class (J.S.S.3) students in Universal Basic education in Etche Local Government Area, which are Community Secondary School UBE, Igbo –Etche, Government Secondary school, UBE Okehi Etche and Community Secondary UBE, Egwi Etche. The student where 6,000 in number in (2021/2022) academic session when this work was conducted. The choice of J.S.S.3 student was based on the fact that they were set of students who could deeply understand the subject of the study.

Sample size and Sampling Techniques

One hundred and fifty (150) J.S.S.3 students constituted the sample of this study. The research used simple random sampling techniques to selects three (3) schools from the Local Government Area. Community Secondary school UBE Igbo-Etche, Community Secondary School UBE, Nihi Etche and Community Secondary School (UBE), Egwi Etche. 50 students which consist of 25male and 25 female each from the three selected schools.

Instrument for data collection

The instrument for this study is a self-developed questionnaire. This is because the questionnaire is convenient and most suitable for the purpose of a survey research. The research instrument entitles the "***Effect of gender on science students' interest and academic achievements in basic science in Etche local government area of Rivers State (EGSSIAABSELGA).*** The EGSSIAABSELGA instrument was divided into 2 sections; A, and B. The Section "A" contains the socio-demographic information of the respondents while section "B" contains respondent's reaction to research questions as related to the subject understudy. The questionnaire was designed to elicit four (4) point modified Likert scaled statements of "Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) =1. The researcher will determine the

criterion mean (x) using the weighted responses. Thus, those that fell below 2.5 was rejected and those above 2.5 accepted.

Reliability of the instrument

In other to determine the Reliability of the instrument a test-retest method was adopted. The researcher will administer 15 copies of the study instrument (questionnaire) to two secondary schools in Port Harcourt City; the schools will be selected outside of the sample. Afterwards, precisely 14 days, the same instrument will be re-administered to the same group of students and the two sets of response were correlated using the Pearson Product Moment Correlation Co-Efficient (r) to determine the level of reliability of items under each research question. The reliability index for the study is will be recorded if it is above 0.5.

Method of data collection

The researcher went personally to the three schools used in this study and administered copies of questionnaire to the students. All the copies of the questionnaires were collected back on the spot. After this exercise the students' responses were collected for statistical analysis.

Method of data analysis

Mean and Standard deviation were used to analyse the data collected

DATA PRESENTION AND ANALYSIS

This chapter deals with the presentation of analyzed data as well as the results or answers to the research questions stated in this study. The data and result of each research question are presented on different tables.

RESEARCH QUESTION 1: What influence has gender on student's interest in basic science in schools in Etche Local Government Area, Rivers State?

Table 4.1: Mean and standard deviation showing what influence has gender on student's interest in basic science in Etche Local Government Area, Rivers State

S/N	Item	Mean	SD	Decision
1	Male students tends to do well in their studies more than female	3.13	1.11	Accepted
2	Female students have a better understanding of science process skills compared to male students	2.54	1.05	Accepted
3	Boys are more capable than girls in science	2.99	1.16	Accepted
4	Male students enjoy science class more than female	3.05	1.15	Accepted
5	Girls are more frightened of basic science than boys because of lack of confidence and anxiety when learning basic science	3.06	1.11	Accepted

Table 4.1 above shows the influence gender has on student's interest in basic science in schools in Etche Local Government Area, Rivers State. Item1, 2, 3, 4, and 5 was accepted as the influence gender has on student's interest in basic science in schools in Etche Local Government Area because they are above the criterion means.

RESEARCH QUESTION 2: Does gender have any effect on students' achievement in basic science in secondary schools in Etche Local Government Area, Rivers State?

Table 4.2: Mean and standard deviation showing if gender has any effect on science students' achievement in Basic science Etche Local Government Area, Rivers State.

S/N	Item	Mean	SD	Decision
6	Girls are interested in natural phenomena like weather, rainbow or the eclipse of the moon	3.18	1.01	Accepted
7	Females tends to perform better in area of standardized science assessment that address the human application of science such as life sciences	2.65	0.80	Accepted
8	Greater opportunity for boys than girls to engage in science activities	3.12	1.15	Accepted
9	Science is more important to male than females	2.92	1.12	Accepted
10	Girls have more negative attitude towards basic science than boys	2.51	0.96	Accepted

Table 4.2 above shows that Respondent agreed to item 6, 7, 8,9 and 10 as gender having effect on students' achievement in basic science in secondary schools in Etche Local Government Area, Rivers State, this is because their mean value was above the criterion mean of 2.5.

RESEARCH QUESTION 3: What is the relationship between students' interest and achievement in basic science in secondary schools in Etche Local Government Area, Rivers State?

Table 4.3: Mean and standard deviation showing the relationship between science students' interest and achievement in basic science in Etche Local Government Area, Rivers State.

S/N	Item	Mean	SD	Decision
11	Students are interested if basic science is presented in biological or medical context	3.15	1.05	Accepted
12	Most basic science students pay attention in class because they intend to build a carrier in science	3.09	1.04	Accepted
13	I always like to stay in class and pay attention during basic science lesion	3.15	0.97	Accepted
14	Student are attracted to basic science because they have a clear structural understanding of the content	3.07	1.05	Accepted
15	Effective instructor communication is central to greater students interest s	3.20	1.06	Accepted

Table 4.3 above shows that Respondent agreed to item 11, 12, 13,14 and 15 the relationship between students' interest and achievement in basic science in secondary schools in Etche Local Government Area, Rivers State, this is because their mean value was above the criterion mean of 2.5.

DISCUSSION OF FINDINGS

Findings on the effect of gender on science students' interest and academic achievement in basic science in Etche Local Government Area, Rivers State. Research question 1 which talked about the influence gender has on science students' interest in Basic science in schools in Etche Local Government Area, Rivers State agreed that, Male students enjoy science class more than female, Male students tends to do well in their studies more than female, Female students have a better understanding of science process skills compared to male students , Boys are more capable than

girls in science, Girls are more frightened of Basic science than boys because of lack of confidence and anxiety when learning Basic science. This is in consonant with Lore Hoffman (2013) who stated that girls diminishing interest in Basic science correlates closely to the growing acceptance of their gender role and that girl are more interested in natural phenomena, like weather, rainbow or the eclipse of the sun.
This also agrees with Femema and Sharman,(2015); Richardson and Suinn (2010), Robert and Saxe,(2018) who stated that anxiety is in relation to interest towards Basic science. They also stated that some Basic science teachers believe that boys are more academically capable than girls and that boys' contributions in Basic Science were more impressive. Furthermore, this is in collaboration with Swift (2011) who stated that females in all the institution of learning performs a bit lower than their male contemporaries.

Research Question 2 which tends to find out if gender has any effect on students achievement in basic science in secondary schools in Etche Local Government Area, Rivers State, agreed that Girls are interested in natural phenomena like weather, rainbow or the eclipse of the moon, Females tends to perform better in area of standardized science assessment that address the human application of science such as life science, Greater opportunity for boys than girls to engage in science activities, Science is more important to male than females, Girls have more negative attitude towards basic science than boys.
These results are in agreement with Manope (2010) who stated in his findings that girls have more negative attitudes towards basic science than boys. This response is also in agreement with Kelly (2012) and Nkpa (2017) who indicated in his research that male is dominant in science education than girls with the reasons that there is greater opportunity for boys than girls to engage in science activities as teachers are bias towards elaborating more on boy's response than girl's response. Furthermore, it agrees with kremer and Hunerdery (2018) who revealed that female students' have a better understanding of science process skills when compared to male counterpart and they suggested that the premise that boys are better than girls in science education needs to be approached and interpreted with great caution. Furthermore it also agrees with Ingels and Dalton, (2018) who stated that females tends to perform better in areas of standardized science assessment that address the human application of science such as life science but disagrees with Babalola and Fayombo (2019), who stated that there was significant difference in the students' science achievement based on gender.
Research Question 3 which talked about the relationship between students' interest and achievement in basic science in secondary schools in Etche Local Government Area, Rivers State agreed that Students are interested if basic science is presented in biological or medical context, Most Basic science students pay attention in class because they intend to build a carrier in science, I always like to stay in class and pay attention during Basic science lesson, Student are attracted to Basic science because they have a clear structural understanding of the content, Effective instructor communication is central to greater students interest These statements are in agreement with Hoffmann and Haussier (2016) who stated that students are interested in Basic science if it is presented in a biological and medical context and also agrees with Balogun (2013) who stated that lack of understanding of the subject matter will result to lack interest and achievement.

RECOMMENDATIONS

1. The basic way to develop and maintain positive interest and achievement in Basic science is to provide pleasant experience for learning of Basic science.
2. The teacher must himself be enthusiastic, his appreciation of science as an important dynamic and remarkable subject must be real and deep.
3. The teacher should give equal attention to the male and the female students; there should be no discrimination on the basis of gender.

4. Reward by teachers to motivate the students to learn and work co-operatively.
5. The female students should be assisted by their parents and teachers to develop and sustain a positive interest towards learning.
6. The teacher should present materials so that it will be understood, be sure students attain a reasonable level of competence before going on to new topics (assess for pre requisite knowledge, concepts and skills).
7. The teacher should use variety of materials, models and real life situation) and methods that provide for students participation in discovering and discussion.

CONCLUSION

The findings of this study provides evidence to support the claim that states that there is an effect of gender on science students' interest and academic achievement in Basic science in Etche Local Government Area, Rivers State and the researcher can boldly say that the instrument used for the study tested what it was supposed to test.

REFERENCES

Abokede T.O. (2000). Secondary school teacher's opinion on the teaching of ecology with our environment.

Balogun T.A. (1998). Interest in science and technology education in Nigeria. *Journal of Science Teachers Association of Nigeria 23* (*182*), 82-99

Deci. E. (1999).Relationship of interest and motivation. Proceeding of the 2nd Conference on Interest and Gender. IPN 164: 146-162.

Grey J.A. (1989). A biological basis for the sex difference in achievement in science. In A- Kelly (Ed). The missing half. Girls and science education Manchester. University.

Gbamanja, (2001). Esseentials of curriculum and instruction theory and practice. Hamaz Global publishing Co. A division of Ala pempus & Sons Ltd. Ado-Ekiti, Ekiti State.

Hornby A.S. (2005) Oxford Advanced learners Dictionary International Students Edition 7th.

Hyde, J.S. Fennema, E and Lamon S.J. (1990), Gender difference in integrated science performance. A meta-analysis, psychological bulletin, 107, 139-155.

Humphrey B.R. T. Johnson (2007). Effect of gender on students interest and achievement in science class.

Jegede O.J. (1990). Integrated science in Nigeria. A review of the problems and prospects. *24th Annual conference Proceeding of Science Teachers Association of Nigeria*. 17(64), 3

Kolawale E.B. (2005).Measurement and assessment in education. Port Harcourt Bola Bay Publishers.

Mar J.S.; Shaibu, A. A. M (1997), Gender related difference in the understanding of science process skills. *Journal of Science Teachers Association of Nigeria* 32:21-27.

Smith T.E. (1992). Gender difference in the scientific achievement of adolescence effect of age and parental separation socio-Forces 71, 469-484,