

THE INFLUENCE OF SELF-CONCEPT ON BIOLOGY STUDENTS ACADEMIC PERFORMANCE IN KATSINA LOCAL GOVERNMENT AREA

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ABSTRACT

The study investigated the Influence of Self-concept on biology Students' Academic performance in Katsina Local Government Area. The research design used for this study was ex-post facto design. The population of the study consisted of two thousand eight hundred and forty (2,840) SS11 students in Katsina Metropolis. A sample of eighty five (85) SS11 students was drawn using simple random sampling technique. Three research questions and three hypotheses guided the study. Self-Concept Biology Questionnaire (SCBQ) and Biology Achievement Test (BAT) were the two instruments used for data collection. The instruments were validated by experts with the reliability coefficient of 0.69 and 0.78 respectively. Research questions were answered using mean and standard deviation while the research hypotheses were tested using simple linear regression and t-test statistics at 0.05 level of significant. Research findings revealed that Self-concept has significant influence on academic performance of biology students. Also the study showed that, biology students with Positive self-concept performed better than those with negative Self-concept. The study also showed that Male Biology students with positive self-concept performed better than Female biology students with positive self-concept. It was recommended among others that biology teachers should encourage positive self-concept among biology students in secondary school and should also be retrained through workshops, and seminars on how to motivated students towards having positive Self-concept in their studies.

Keywords: *Self-concept, Academic Achievement and Biology Students*

INTRODUCTION

Biology as one of the science subject taught in Nigerian schools is regarded as the study of life and structure of living things. Biology concerns itself with the study of the structure, behaviour, distribution, the origin of plant and animals and their relationship with their environments. Biology plays a vital role in different scientific and technological disciplines such as agriculture, biochemistry, engineering, medicine, microbiology, and pharmacy among others. That is why it becomes compulsory for students to have sound knowledge background of biology up to secondary school certificate level before undertaking courses in any science related discipline. In spite of the central position of biology among other science subjects, studies revealed that, academic achievement of students in biology at senior secondary school certificate (SSCE) has been consistently very poor and unimpressive. This is attributed to the poor or non-use of laboratory equipment, teacher attitude, and inadequate instructional material and negative self-concept of students in biology (Afuwape, 2011).

Self-concept is the cognitive or thinking aspect of self (related to one's self- image) and generally refers to the totality of a complex, organized and dynamic system of learned beliefs, attitudes and opinions that each person hold to be true about his or her existence. Ude (2019) define academic self-concept as to how a student views his or her academic ability when compared with other students. According to Yara (2010) self-concept will enable students to build self-confidence in themselves both at school and at work .This will equally stir them to pursue academic excellence.

According to Franken (2012), there is a great deal of research which shows that self -concept is perhaps, the basis for all motivated behavior. It is the self -concept that gives rise to possible selves and it's the possible selves that create the motivation for behavior. These support the idea that one's paradigm or world view and one's relationship to the view provided the boundaries and circumstances within which we develop our vision about possibilities. This is one of the major issues facing children and youth today (Huitt 2004). Self-concept and academic performance are dynamically interactive and reciprocal; each is mutually re-enforcing to the extent that a positive (or negative) change in one facilitate a commensurate change in the other.

Academic performance as one of the variable of this study is the level of performance in the subject as exhibited by an individual. Busari (2000) defined academic performance as the display of knowledge attained by students in the school subject. Poopola (2010), stated that, academic performance is an expression used to present students' scholastic standing and which is a function of a various factors such as method of teaching, teachers' qualifications, child's home background, school environment, attitude, and interest, among others. According to Okafor (2000), academic performance is based on the degree of intellectual stimulation that the child could receive from learning situations.

There are many studies carried by different researchers on influence of self –concept and academic performance. For example, studies of Salami, (2004) Bandura (2005), Oluwatayo (2011) and Ude (2019)) found that academic self-concept influences students academic achievement, but Study by Afuwape, (2011) and Adebule (2014) showed that self-concept did not influence academic performance of students. It is in order to substantiate this assertion that this study investigated the influence of self-concept on academic performance of Biology Students in Katsina L.G.A. Comparing the differences of academic performance between biology students with positive and negative self-concept is another area of interest in this research. Studies carried out by Liu (2009) showed that, students with positive self –concept performed better than biology students with negative self-concept, but studies by Williams (2010) showed that students with negative self-concept outperformed students with positive self-concepts. It is in order to verify this claim that, this research investigated the difference in the performance of biology students with positive and negative self-concept in Katsina L.G.A.

Gender is another variable in this study. Many studies were done on self-concept and academic achievement of gender. Studies by Wendy & Johnson (2009) and Adrian & Buchanan (2011) showed that male biology students performed better than the female biology students with positive self-concept, but studies by Fisher (2008) and Oluwatayo (2011) found that there is no significant difference in the performance of male and female students with positive self-concept. This study therefore investigated the difference on academic performance of male and female biology Students with positive self-concept in Katsina Local Government Area.

STATEMENT OF THE PROBLEM

Teachers have been teaching biology in secondary schools through different methods of teaching, but up to now, WAEC result from (2010-2016) has shown that, there is still persistent failure of students in biology. This is attributed to many factors among which consisted students' negative self-concept about the subject. It is in order to solve the problems of persistent poor performance. But this study investigated the Influence of self-concept on students' academic achievement in Katsina L.G.A.

Objectives of the Study

The specific objectives of the study are to:

1. Determine the influence of Self-concept on biology students' academic performance in senior secondary school of Katsina L.G.A
2. Find out the difference in academic performance of Biology students with positive and negative Self-concept in Katsina L.G.A
3. Identify the difference in academic performance of male and female Biology students with positive Self-concept in Katsina L.G.A.

Research Questions

The following research questions guide the study:

1. What is the influence of Self-concept on biology students' academic performance in senior secondary schools of Katsina L.G.A?
2. What is the difference in the academic performance of Biology students with positive and negative Self-concept in Katsina L.G.A?
3. What is the difference in the academic performance of male and female biology students with positive self-concept in Katsina L.G.A?

Hypotheses

The following hypotheses were raised and tested at 0.05 level of significance;

HO₁: There is no significant influence of self-concept on biology students' academic performance in Katsina L.G.A.

HO₂: There is no significant difference in the academic performance of Biology students with positive and negative Self-concept in Katsina L.G.A.

HO₃: There is no significant difference in the academic performance of male and female Biology students with positive self-concept in Katsina L.G.A.

METHODOLOGY

The research design used for this study was ex-post facto design. The population of the study consisted of all the 2,840 students in the eleven senior secondary schools in Katsina Local Government Area. Simple random sampling technique (fold and random picking method) was used to draw a sample of Two (2) senior secondary schools out of the existing eleven (11) public senior secondary schools. Two instruments were used for data collection which consisted of Self-Concept Biology Questionnaire (SCBQ) and Biology Achievement Test (BAT) validated by three senior lecturers in the Department of Science Education, Federal University Dutsin-Ma. The reliability of the instrument was obtained by administering the questionnaire to a group of individuals who are not part of the sample of the study, re-administering the same questionnaire to the same individual at a later date and correlating the two set of scores. The period between first administration and second administration was one week. For each of the schools under study, the researcher sampled students with self-concept based on the question provided and those without it and were given the instrument to be filled according to their choices, the question consist of two part positive and negative self-concept, the researcher used their last term performance which also helps him in the study. Meanwhile, the researcher administered the instruments in three days. In order to administer the instrument appropriately, the researcher sampled out one hundred and fifty (150) students in Government Senior Secondary School Kofar Yandaka. In the second day, the researcher then proceeded to Katsina College Katsina where he administered the instruments to one hundred and twenty-five (125) students. In the third day, the researcher went to Government College Katsina where he administered the instrument to ninety-five (95) students. In each of the three schools, the researcher instantly collected back the questionnaire upon the expiry of the time allowed for the test. Meanwhile, the researcher produced 370 copies of the instrument and were administered by the help of the staff of the sampled schools accordingly.

To analyzed the data obtained, the researcher employ the use of mean and standard deviations in answering research questions and simple regression analysis and t-test for testing the null hypotheses use in the

study at $P \leq 0.05$ with the statistical packages for Social Sciences (SPSS) software.

Results

The data collected for this research study was presented and analyzed by answering the research questions and testing the null hypotheses.

Answering Research Questions:

The research questions raised by the study has been answered using descriptive statistical tools as follows.

Research Question 1:

What is the influence of Self-concept on biology students' academic performance in senior secondary schools of Katsina L.G.A?

Table 1: Mean and Standard Deviation of biology students with Self-concept and those without self consel in Katsina L.G.A

Pair	N	Mean	Std. Dev.	Std.Error Mean	Mean Difference
Student with Self-concept	85	14.48	4.36	75894	5.92
Students without self concept.	85	8.53	3.83	63806.	

The result in Table .1 reveals that mean score of students with self-concept is 14.48 and standard deviation of 4.36 while students without self-concept recorded a mean scores of 8.53 and standard deviation of 3.83. The result shows that self-concept influences the academic performance of biology students because student with self-concept have higher mean performance scores than those without it.

Research question 2: What is the difference in the academic performance of Biology students with positive and negative Self-concept in Katsina L.G.A?

Table 2: Mean and Standard Deviation of Biology Students with positive and negative Self-concept in Katsina L.G.A

Pair		N	Mean	Std. Dev.	Std. Error Mean	Mean Difference
Students with Positive Self-concept		85	53.6735	18.83192	2.69027	9.4235
Students with Negative Self-concept		85	44.2500	17.88675	2.82814	

The result in Table 2 shows the mean score of students with positive and negative self-concept towards Biology among senior secondary school students in Katsina L.G.A. The result showed that, the mean score of students with Positive Self-concept is 53.7 and standard deviation of 18.83, and students with negative self-concept recorded a mean of 44.25 and standard deviation of 17.88. The result shows that students with positive self-concept performed better than students with negative self-concept in senior secondary school students of Katsina L.G.A.

Research Question Three: *What is the difference in the academic performance of male and female Biology students with positive Self-concept in Katsina L.G.A?*

Table 3: Mean and Standard Deviation Scores of Male and Female Biology Students with Positive Self-concept in Katsina L.G.A.

Gender	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference
Male	53	56.050	30.375	5.546	3.2
Female	32	52.850	30.839	6.896	

The result in Table 3 presented the mean score of Male and female Biology students with positive self-concept. The result reveals that mean score of male is 56.050 and standard deviation of 30.375, were as female students in the same group recorded a mean of 52.850 and standard deviation of 30.839. The result shows that male Biology Students with positive self-concept performed better than female students with positive self-concept.

Testing Null Hypotheses

The hypotheses were tested using Regression Analysis @ $P \leq 0.05$ levels of significance.

H₀₁: There is no significant influence of Self-concept on Biology students' academic performance in Katsina L.G.A.

Table 4: Simple Linear Regression Equation of the influence of Self-concept and academic performance of Biology students in Katsina L.G.A.

Variable	N	B	Df	M	R ²	P	Remark
Student Self-concept	85	0.076		0.0178			
Student Academic performance	85	-0.474	84	0.096	-4.26	0.00	Significant

@ P ≤ 0.05 levels of significance

The result in Table 4 presented the regression analysis of Biology students' self-concept and academic performance. The result reveals that β= Beta Coefficient of self-concept is 0.076 and μ= Std. Error of 0.018 were as academic performance of students in Biology recorded a β= Beta Coefficient of -0.474 and μ= Std. Error of 0.096. The result showed that, the R²-value observed at -4.26 and p-value of .000 and degree of freedom of 84. The p-value of 0.00 is less than 0.05 level of significance. This showed that, there is significant influence of self-concept on biology students' academic performance in Katsina L.G.A.

HO₂: There is no significant difference in the academic performance of Biology students with positive and negative Self-concept in Katsina L.G.A.

Table 5: t-test Analysis of Biology students with Positive and Negative Self-concept in Katsina L.G.A.

Pair	N	Mean	Std. Dev.	Df	t-value	p-value	Remark
Students with Positive Self-concept	50	53.67	18.83				
Students with Negative Self-concept	40	44.25	17.88	88	0.877	0.024	Significant

@ P ≤ 0.05 levels of significance

The result in Table 6 shows a t-value of 0.877 and p-value of 0 .02 were observed at degree of freedom of 88. The p-value of 0.024 is less than 0.05 which showed there is significant difference in the performance of students with positive and negative Self-concept in Katsina L.G.A in favour of those with positive self-concept.

HO₃: There is no significant difference in the performance of male students and female Biology students with positive self-concept in Katsina L.G.A.

Table 6: t-test Analysis of the difference of Academic Performance of Male and Female Biology students with positive Self-concept.

Gender	N	Mean	Std. Dev.	Df	t-value	p-value	Remark
Male	30	56.0500	30.37534	48	.337	.564	Not significant
Female	20	52.8500	30.83961				

@ $P \leq 0.05$ levels of significance

The result in Table 6 reveals that mean score of male is 56.1 and standard deviation of 30.4, while that of the female students is 52.9 and standard deviation of 30.8. The result showed that t-value of .337 and p-value of .564 were observed at degree of freedom of 48. The p-value of 0.564 is greater than 0.05 level of significance. Thus, there is no difference in the performance of male and female biology students with positive self-concept in Katsina L.G.A.

DISCUSSION

The result in Table 1 and 4 shows that Self-concept influences biology students' performance in Katsina L.G.A. The finding of this study is in line with that of Salami, (2004), Bandura (2005), Oluwatayo (2011) and Ude(2019)) who showed that self-concept influenced academic performance greatly. But the studies contradicted that of Afuwape (2011) and Adebule(2014) who found that self-concept did not influence academic performance of biology students. The result in Table 2 and 5 showed the mean scores of Biology students with positive and negative self-concept in Katsina L.G.A. The result showed that biology students with positive self-concept achieved higher than biology students with negative self-concept. The findings of this study is in line with the studies carried out by Liu (2009) who found that, biology students with positive self –concept performed better than biology students with negative self-concept, but the findings contradicted the studies by Williams (2010) who found that biology students with negative self-concept outperformed students with positive self-concepts.

The result in Table 3 and 6 showed that, there is no significant difference in academic achievement of Male and female Biology students with positive self-concept in Katsina L.G.A. The findings is in line with that of Fisher (2008), Afuwape (2011) and Oluwatayo (2011) who found that, there is no significant difference in the academic achievement of male and

female students with positive self-concept, but the findings contradicted the studies of Wendy & Johnson (2009) and Adrian & Buchanan (2011) who found, that male students performed higher than the female students with positive self-concept.

CONCLUSION

Based on the findings of the study, it is concluded that self-concept has Significant influence on Biology Students' academic performance in Katsina L.G.A. This shows that Biology students with positive self-concept perform better in their academic performance than students with negative self-concept in Katsina L.G.A. The study also showed that there is no significant difference in the academic performance of male and female biology students with positive self-concept.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

1. The Federal Government of Nigeria through State Ministries of Education should retrained Biology teachers through workshops, and seminars on how to motivated students towards self-concept.
2. Teacher Training Institutions and curriculum development bodies should introduce compulsory extra classes on how students develop a Good habit towards positive self-concept.
3. There is the need for female biology students with self-concept to perform better in their academic performance towards learning Biology.

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