

Self-Concept and Study Habit as Predictors of Academic Performance among Senior Secondary Chemistry Students in Katsina State, Nigeria

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Abstract

The study was conducted to determine self-concept and study habit as predictors of academic performance in Chemistry among Senior Secondary Schools in Katsina State, Nigeria. Two (2) objectives coined with the research hypotheses were developed. The study adopted correlational survey design. The population of the study comprised 3,627 Chemistry students from twelve public secondary schools in Baure Zonal Education Quality Assurance. A sample of 370 respondents were selected using simple random sampling technique. Three validated instruments namely Chemistry Performance Test (CPT), self-concept inventory (SCI) and study habit inventory (SHI) were used by the researcher for data collection. The reliability coefficient of the CPT was obtained using Pearson Product Moment Correlation was 0.76 and that of SCI and SHI was obtained using Cronbach alpha was 0.86 and 0.75. The data collected were analyzed using Statistical Package for Social Sciences null hypotheses were tested at $p < 0.05$ level of significance using simple regression analysis. The findings revealed that the self-concept and study habit have a significant influence on students' academic performance in chemistry as indicated that they contribute to about 95.1% and 72.6% of the total variance of students' performance respectively. The study recommended among others that; teachers should be trained through workshop, conference, seminars among others on how to inculcate into students a desirable skill of positive self-concept and study habit to improve their academic performance.

Keywords: Academic performance, Chemistry, Predictors, Senior Secondary Schools, Self-concept, Study Habit.

Introduction

One of the greatest tools which man has devised for his progress is education. All societies have one form of education or another, utilising the knowledge gained in varying degrees. It is often considered the only way of being recognised as elite in the society, failure of which may bring untold hardship and frustration to the individual. Education begins at birth and continues throughout life. It is constant and ongoing. Chemistry is a branch of science that studies matter and its changes. It deals with the study of composition and the properties of matter (which is basically any macroscopic substance that we can observe). It deals with changes, or how these substances evolve when submitted to certain conditions or how one substance changes or reacts while interacting with a different substance. It also concerned with the study of matter and energy and interactions between them. Chemistry tends to focus on the properties of substances and the interactions between different types of matter, particularly reactions that involve electrons (Hall, 2019)

Chikendu, Konyefa and Nwanze (2020), stated that Chemistry is one of the science subjects that is first introduced to students at the senior secondary level of education. The subject is perceived by students as abstract and difficult. A lot of

instructional approaches have been developed through research that are student-centred and which can help to tackle some of the problems encountered in the teaching and learning of chemistry. Despite the depth of research in chemistry instruction and students' performance, students' performance in chemistry has continued to remain poor, this drastically affect self-concept.

According to Cherry (2020), self-concept is generally thought of as our individual perceptions of our behaviour, abilities and unique characteristics, a mental picture of who you are as a person. Self-concept tends to be more malleable when people are younger and going through the process of development. Self-concept is an all-embracing idea we have about who we are physically, emotionally, socially, spiritually, and in terms of any other aspects that make up who we are, we form and regulate our self-concept as we grow, based on the knowledge we have about ourselves. It is multidimensional, and can be broken down into these individual aspects. Many of the successes and failures that people experience in many areas of life and especially academic performance are closely related to the ways that they have learned to view themselves and their relationships with others.

Study-habit is a well-planned and deliberate pattern of study, which has attained a form of consistency on the part of the students towards understanding academic subjects and passing examination (Siahi & Maiyo, 2015). It is a behaviour exhibited on scheduled, regular and planned basis includes such actions as reading, taking notes, holding study groups which the students perform regularly and habitually in order to accomplish the task of learning (Alex, 2011; Adeninyi, 2011). A good study-habit involves good study time management skills, study environment, test preparation habits, note-taking, reading and writing habits. Time management especially study time is the mark of a student who studies well. When students adopt good study-habit, they buy out a dedicated schedule and un-interrupted time to apply themselves to the task of learning (Mahwish, Naima, Hira & Wajiha, 2017).

Statement of the Problem

Students in Baure usually abscond from classrooms during chemistry lessons and deviates from learning the concept of reduction oxidation (REDOX) in chemistry. There has been a continues decline in the senior secondary school certificate examinations results, (WAEC & NECO, 2015-2020). In Baure Local Government Area of Katsina State, secondary school students developed phobia of studying Chemistry in various higher institutions of learning, some of them who were capable and enrolled into universities are no more in study, they were completely withdrawn from the universities and their number is increasing regularly as observed by the researcher. This may not be unconnected with the students' self-concept or study habit in senior secondary schools in Baure local government area of Katsina State.

Research Objectives

1. Determined the relationship between self-concept and students' academic performance in Chemistry in Baure Zonal Education Quality Assurance Katsina State.
2. ascertained the relationship between study habit and academic performance of students in Chemistry in Baure Zonal Education Quality Assurance Katsina state.

Hypotheses

Based on this study, the following null hypotheses were formulated and tested

- H₀₁:** There is no significant relationship between students' self-concept and academic performance in Chemistry
- H₀₂:** There is no significant relationship between students' study habit and academic performance in Chemistry

Methodology

This study adopted correlational survey research design and determined the relationship between self-concept and study habit as predictors of academic performance in chemistry among senior secondary school students in Baure zonal education quality assurance, Katsina state. The choice for this design was due to self-concept inventory (SCI) and study habit inventory (SHI) would be used for the study and a survey design is applicable where questionnaire is used as the data collecting instrument. Moreso, surveys are great for conducting qualitative research because, they are able to pull in such profound and diverse feedback from respondents. They can even make researches aware of insights they had not previously considered as a possibility. The population of the research cover all secondary schools in Baure Zonal Education Quality Assurance Katsina state, Nigeria.

Simple random sampling technique was used to select 15% bringing a total of 370 students as the research sample. The research instruments are Self-Concept Inventory (SCI), Study Habit Inventory as well as Chemistry Performance Test (CPT) adopted from Bakare (1977), Deo (1985) and WAEC past question of 2017-2020 respectively.

Based on the population of 3,627 a sample of 370 respondents were selected as the sample of the study, this was arrived at using research advisers (2000) Sample suitable at 0.05 level of significance. The sample (370) respondents were proportionately distributed among the selected schools. The sample schools were selected using purposive sampling technique, this is because, not all the schools in the education zone offers Chemistry, some of the schools are not science-oriented school, and two schools were selected from each local government area of the zone making a total of six schools. Simple random sampling technique was used. The selected schools are as follows;

Table 1 Sample of the Study

S/N	Name of Schools	Males	Females	Total
1.	GSS Sandamu	35	35	70
2.	GSS Karkarku	25	25	50
3.	GPSS Zango	35	35	70
4.	GSS Rogogo	25	25	50
5.	GDSS Garki	30	30	60
6.	GSSS Baure	35	35	70
	Total	185	185	370

The reliability of the instrument was established through the test-retest method. A correlation coefficient of 0.86 obtained from the tests result indicating the instrument's reliability and suitability for this research. The data for this study was collected from the Chemistry SS II students of Baure Zonal Education Quality Assurance, Katsina state. The data collected for this study was analysed using linear regression analysis statistics statistical tool, at 0.05 level of significance for H_{01} and H_{02} .

Results

The null hypotheses stated to guide this study were tested as follows;

Table 2: Linear regression analysis of influence of self-concept on student's performance.

R	0.951					
R²	0.904					
Adjusted R²	0.903					
Std Error of the Estimate	2.99927					
Model	Sum of squares	df	Mean square	F	P	Remark
Regression	4474.757	1	4474.757	925.155	0.001	Significant
Residual	474.003	368	4.873			
Total	20286.585	369				

Table 2 indicated that the absolute calculated F-value for the relationship between students' self-concept and their performance in chemistry is $F_{1,369} = 925.155$, ($R=0.951$, $R^2=0.904$ and $p = .001$) However, self-concept significantly accounts for 95.1% of the total variance of the students' performance in chemistry, other variables not captured in this study may be responsible for the remaining variance of student's performance. The null hypothesis which states that there is no significant relative influence of

students' self-concept on their academic performance in Chemistry in Baure Zonal Education Quality Assurance, Katsina state Nigeria is therefore rejected (as $P=0.001$ is less than $\alpha=0.05$).

This implies that, there is a significant relationship between students' self-concept and academic performance in chemistry among senior secondary schools in Baure zonal education quality assurance Katsina state

Table 3: Linear regression analysis of influence of study habit on student's performance.

R	0.852					
R²	0.726					
Adjusted R²	0.723					
Std Error of the Estimate	3.72298					
Model	Sum of squares	df	Mean square	F	P	Remark
Regression	3590.421	1	3590.421	259.038	0.002	Significant
Residual	1358.339	368	13.861			
Total	4948.760	369				

Table 3 indicated that the absolute calculated F-value for the influence of students' study habit on their performance in chemistry is $F_{1,368} = 259.038$, ($R=0.852$, $R^2=0.726$ and $p = .002$). However, study habit significantly accounts for 72.3% of the total variance of performance in chemistry, other variables not captured in this study may be responsible for the remaining variance of student's performance in chemistry. The null hypothesis which states that there is no significant relative influence of students' study habit on their academic performance in Chemistry in Baure Zonal Education Quality Assurance, Katsina state Nigeria therefore rejected.

This implies that, there is a significant relationship between students' study habit and academic performance in chemistry among senior secondary schools in Baure zonal education quality assurance Katsina state.

Discussion

The following are the major findings of the study:

1. Self-concept significantly accounts for 95.1% of the total variance of the students' performance in chemistry ($F_{1,369}=925.155$, $R=0.951$, $R^2=0.904$ and $p = .000$).
2. Study habit significantly accounts for 72.3% of the total variance of performance in chemistry ($F_{1,368} = 259.038$, ($R=0.852$, $R^2=0.726$ and $p = .000$).
3. Self-concept and study habit jointly accounted for 90.4% of the total variance of performance in chemistry ($F_{1,369} = 458.021$, ($R=0.951$, $R^2=0.904$ and $p = .000$).
4. There is a no significant difference in the mean self-concept between male and female students among senior secondary schools in Baure Zonal Education Quality Assurance in Katsina state Nigeria, ($t = 0.565$, $df = 368$, and $P = .456$).
5. There is no significant difference in the mean study habit between male and female students among senior secondary schools in Baure Zonal Education Quality Assurance in Katsina state Nigeria, ($t = -0.111$, $df = 368$, and $P = .207$).

This implies that, there is a significant relationship between students' self-concept and academic performance in chemistry among senior secondary schools in Baure zonal education quality assurance Katsina state. This is in line with that of Efobi (2022), in his study; Relationship between academic self-concept and academic achievement of secondary school students in Biology in Anambra

State which indicates positive relationship between students' self-concept and academic performance.

Conclusion

Based on the presented and analysed data, the researcher concluded that positive self-concept and good study habit improve student's academic performance in chemistry at senior secondary school level.

Recommendations

The following recommendations are made based on the finding of the study
Since it was discovered that self-concept and study habit have positive influence on students' academic performance in Chemistry, it was recommended that teachers should be trained through workshop, conference, seminars among others on how to inculcate into students a desirable skill of positive self-concept and study habit to improve their academic performances academic performance of students significantly.

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