Self-Concept as a Predictor of Academic Performance among Biology Students in Federal College of Education Zaria, Nigeria

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Abstract
This study investigated Self-concept as a Predictor of Academic Performance among Biology Students in Federal College of Education Zaria, Nigeria. Two research questions formulated and two null hypotheses guided the study. The research design was quasi-experimental pre-test post-test. Population of the study consisted of 3200 biology students at various levels of study in Federal College of Education (COE) Zaria, from which 590 students were selected as sample using stratified random sampling technique. Two research instruments were used for the study (Self-Concept Questionnaire and Biology Performance Test). The data collected was analysed using t-test statistical tool at 0.05 level of significance. Finding revealed that the students’ self-concept was statistically significant to their performances in biology. Also, there is a significant difference between the students’ self-concept and their study habits. Recommendation included that the students should be encouraged in their self-concept through guidance and counselling orientation. The study concludes that the students have very high self-concept in relation to biology and the self-concept was found to be highly correlated with their performance in the subject.

Keywords: Academic performance, Biology, College of Education Predictor, Self-concept,

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.

In recent times, reports of large-scale educational failure among Nigerian school-going adolescents have raised more attention and greater concerns among stakeholders in Nigerian education. Isangedighi in Anyanwu (2013) observed that indiscipline, drug addiction, poor socio-economic background of the parents, inadequate motivation on the part of students, lack of information coupled with teachers’ nonchalant attitude to work and students’ negative self-concept have often resulted into students’ inconsistent and poor academic performances. Yoloye in Anyanwu (2013) submitted that theories of educational disadvantages and social cultural pathology have been most prominent in the explanation of this failure. A growing number of scholars, however, have rejected this latter view and have suggested that many of the problems of learning are the artefacts of discontinuities which are brought about by the separation of learning from real life functions and situations (Fagbemi, 2001), and by the exclusion of the child’s language, values and mode of cognition from the school environment and his self-concept, (Ugodulunwa, 2007).

Self-concept, which is an individual’s perception of self, is an important concept of any child’s development. As children begin to develop a sense of self, interact and gain experience in the world, their self-concept is affected. Ahmavaara & Houston(2007) noted that the importance of self-concept within educational settings has been discussed by several scholars and has led to the performance of studies examining the role of self-concept in school performance. Tella (2007) opined that the term self-concept refers to the ordered set of attitudes and perceptions that an individual holds about himself/herself. YuTan and Yates (2007) maintained that ‘self-concept’ is a multidimensional construct, having one general facet and several specific facets, one of which is
‘academic self-concept’. The researchers define self-concept for this study can be defined as the totality of the value an individual places on himself, his capabilities and his worth. Wilson, (2008) opined that the term self-concept refers to the ordered set of attitudes and perceptions that an individual holds about himself/herself. Brunner, Ludtke & Trautwein (2008) defined self-concept as the perception that one has about himself which is formed from experiences and relationships with the environment where significant people (such as parents and teachers) play an important role. Self-concept is an important construct in psychology and education. Olatunde (2010) defined self-concept as the perception that one has about himself which is formed from experiences and relationships with the environment where significant people (such as parents and teachers) play an important role. He further noted that self-concept could be one of the determinants among the causes of poor academic performance.

One of the important problems that confront the present-day teacher is how to raise the efficiency of the students in their procedures of study in the various school subjects. Many methods of supervised or directed study are being tried. The socialized recitation is now a part of the regular classroom routine in many high schools. By this method, pupils take an active part in defining the problem under consideration, in securing data, in presenting these data for class criticism, and in raising questions. Classroom study is now imitating much of the former home study, (Oluwatimilehin and Owoyele, 2012).

**Statement of the Problem**

Akubuiro & Joshua in Anyanwu & Alafiatayo (2016) noted that in recent times, there had been complaints from almost every part of the country about the poor performance of students in education. This claim is supported by Chief Examiner’s report on students’ performance in senior secondary school certificate examination administered by both the West African Examinations Council (WAEC) in 2010, where he decried the yearly deterioration of students’ performance, particularly in the area of biology (and sciences in general). This situation is not in favour of Nigeria’s move towards developing a scientific and technological culture.

To measure the impact of reform efforts on student self-concept is important and requires measurement tools with robust psychometric properties (Xu, Shi & Liu, 2008). As biology science has become ever more deeply embedded in everyday life, how people perceive science has attracted more attention not only from the scientific community, but also from social scientists (Barker, Dowson & McInerney 2005, Raju 2013).

Often times, the teacher is blamed for the poor academic performance, and even when the child is blamed, explanation is proffered only in terms of the child’s cognitive or intellectual ability. Little or no attention is paid to the child’s self-concept of himself and the subject, and the study habits/skills the child employs in studying, which could influence his performance in the subject, Olatunde (2010). It is therefore, the opinion of the researchers that a gap exists in the understanding of the possible relationship between students’ self-concept to biology at NCE level and their academic performance. This research therefore, seeks to investigate self-concept as a predictor of academic performance among biology students of Federal College of Education, Zaria, Nigeria.

**Theoretical Framework**

This study is hinged on the theory of Metacognition (Flavell 1987). Metacognition is concerned with the learner’s knowledge concerning his own cognitive processes, products and the active monitoring and consequential regulation of those processes in relation to the cognitive objects or data on which they bear. According to Flavell in Almasi (2003), metacognitive experience can also be a “stream of consciousness” process in which other information, memories, or earlier experiences may be recalled as resources in the process of solving a current-moment cognitive problem. Self-concept, as the learner’s consciousness of himself and ability to perform a task, is expounded by metacognition.
Purpose of the Study
The purpose of the study are to:
1. Determine the effect of biology students’ self-concept on their academic performance
2. Determine effect of biology students’ study habit on their self-concept

Research Questions
The research is guided by the following questions:
1. What is the effect of biology students’ self-concept on their academic performance?
2. What is the effect of biology students’ study habit on their self-concept

Null Hypothesis
H₀₁: There is no significant difference between biology students self-concept and their academic Performance in Federal college of Education, Zaria
H₀₂: There is no significant difference between biology students self-concept and their study Habits in Federal college of Education, Zaria

Methodology
The research design used for the study was a quasi-experimental with pre-test post-test. A quasi-experimental design is an empirical study used to estimate the causal impact of an intervention on its target population. The population of the study comprised all NCE biology students in the Federal College of Education, Zaria, Nigeria. According to academic records (2015), there are about 3200 students in the Department of Biology, studying at various levels (Pre-NCE, NCE, B.Sc Ed) in the Federal College of Education, Zaria. Stratified random sampling technique was used to select 15% from each of the levels of study (NCE I-III, B.Sc (Ed)), bringing a total of 590 students as the research sample. The research instruments are Self-Concept Questionnaire (SCQ) adapted from Marsh (2010) Academic Self-description Questionnaire and self-constructed Biology Performance Test (BPT), which draw questions from the students previous semester examinations, from 2010-2015. The face and content validity of the research instruments was done by three senior lecturers: in the departments of Psychology and Science Education, ABU, Zaria, with minimum qualification of Ph.D. To ensure reliability, the instruments were pilot-tested using 80 students studying biology from Kaduna State College of Education, Gidan Waya. The reliability of the instrument was established through the test-retest method. A correlation coefficient of 0.89 obtained from the tests indicated the instrument’s reliability and suitability for this research.

The data for this study was collected from the biology students of F.C.E, Zaria. The researchers were personally involved in this process to avoid malpractices during the test. The necessary instruction needed for the successful completion of the test was clearly stated and explained to the students before the commencement of the test. The data collected for this study was analyzed using t-test statistics statistical tool, at 0.05 level of significance.

Results and Discussion

Null Hypothesis 1: There is no significant difference between Biology Students Self-concept and their Academic Performance in Federal College of Education, Zaria

Table 1: Analysis of Biology Students’ self-concept and their academic performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>t-value.</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPT</td>
<td>590</td>
<td>14.35</td>
<td>6.858</td>
<td>.405</td>
<td>0.312</td>
<td>588</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
From the result showed in Table 1, the Biology Performance test and Students Self-concept are significantly correlated (P < 0.05). This is deduced from the observed t-value of 0.312 and a probability level of significance (0.0001) obtained in the test at the 588 degree of freedom. With these observations therefore, the null hypothesis which state that there is no significant difference between biology students’ self-concept and their academic performance in Federal College of Education, Zaria, is hereby rejected.

**Null Hypothesis 2:** There is no significant difference between biology students self-concept and their study Habits

**Table 2:** Analysis of Biology Students’ Self-concept and their Study Habits in Federal College of Education, Zaria

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>t-calc.</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Concept</td>
<td>590</td>
<td>5.28</td>
<td>0.644</td>
<td>0.03781</td>
<td>0.015</td>
<td>588</td>
<td>0.0496</td>
</tr>
<tr>
<td>Study habits</td>
<td>590</td>
<td>5.02</td>
<td>0.488</td>
<td>0.02868</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the observed t-calculated value of 0.015 and a probability level of 0.0496 obtained for the test as indicated in Table 2 at the 588 degree of freedom, the two variables were significantly correlated (P>0.05). Thus, the null hypothesis that there is no significant relationship between biology students self-concept and their study Habits is hereby rejected. The result shows that the students’ study habits reflect in their self-concept.

**Discussion of Findings**

From the test of null hypothesis I of the study, the impact of students’ self-concept on their academic performance in the administered BPT was tested. The result revealed that the students’ self-concept was statistically significant with their performances in biology. The null hypothesis was rejected. The high self-concept was found to have significant impact on their performance in the biology performance test. The finding is in line with Salami & Aremu (2006) and Nuthana & Yenagi (2009) who respectively reported a significant relationship between self-concept of students and their academic performance.

Null Hypothesis 2 tested for significant difference between the students’ self-concept and their study habits. The result of the test reveals significant difference between the two variables. The null hypothesis was therefore rejected. The implication here is that self-concept of students may directly and significantly relate to the study habits they exhibit in relation to the teaching and learning of biology in the selected senior secondary schools. The finding here agrees with the report of Crede and Kuncel (2008) where it was reported that study habit and students self-concept were significantly correlated. The finding however contradicts the report of Brunner, Ludtke & Trautwein (2008) where they posit that study habits and self-concept do not correlate positively.

**Conclusion**

Based on the findings from the result obtained from the investigation into self-concept as a predictor of Academic Performance among Biology Students in Federal College of Education, Zaria, the following conclusion could be drawn:

The students have very high self-concept in relation to performances in biology and their self-concept is significantly correlated with the biology performance test.
The students’ self-concept is not statistically significant with the study habits they exhibit in biology.

**Recommendations**

The following recommendations were proffered:

1. The students should be encouraged in their self-concept through guidance and counselling orientation.
2. Curriculum experts (NCCE) should consider introducing study skills training in teaching and learning to boost the students’ self-concept and study habits.

**References**


Raju S.S (2013). Impact of Self-Concept on Scholastic Achievement of 9th class students in physical sciences. *IOSR Journal of Humanities and Social Science*, 9(5) 129-133


