Study Habit, Self-Concept and Science Achievement of Public and Private Junior Secondary School Students in Ogun State, Nigeria (Pp. 492-506)

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Abstract
This study compared study habit, self-concept and science achievement of students in public and private junior secondary schools in Ogun State, Nigeria. Twelve secondary schools were randomly selected from Egba and Ijebu divisions of the state. A sample of three hundred and sixty (360) students participated in the study. Three research instruments were used to collect data. There was no significant difference in study habit and self-concept of students in public and private schools. However, private school students performed significantly better than their public school counterparts in integrated science (t = 3.400, p<0.05). In both public and private schools student study habit and self-concept combined together and singularly predicted science achievement. Counsellors should encourage students to study and also train them on how to improve their self-concept in order to improve science achievement.

Key Words: Study habit, self-concept, science achievement, public and private schools, junior secondary schools.

Introduction
Scientific discoveries affecting individuals and the society at large are frequently found in our homes and workplaces. The nations that are highly developed economically are those that are also highly developed

scientifically and technologically. There is no way a nation can develop if definite and concrete attempts are not made to improve level of literacy and student achievement in science. Frome (2001), National Assessment of Educational Progress (2000) and Edwards, Leising and Parr (2002) reported that assessment of student achievement in science often do not indicate levels of performance cogent with a society that is demanding its citizens and employees be scientifically literate.

In Nigeria, students have been consistently performing below average in the science subjects especially in the external examinations (Salim, 1999; Olatoye, 2002). Reports from the second international study of science achievement (a cross-national study of science achievement in 19 countries) revealed that Nigeria is one of the few countries which performed below average in science achievement tests (Keeves, 1992)

The Third International Mathematics and Science Study (TIMSS) is the latest and largest data ever collected on science achievement. TIMSS collected data from 15,000 schools in forty-five countries in more than 30 different languages. In most countries and internationally, boys performed better than girls at both seventh and eight grades. This is attributable to significant higher performance by boys in earth science, physics and chemistry. Internationally students had most difficulty in the chemistry items. There was positive significant relationship between educational resources in the home and science achievement, the more books students reported in the home the higher their science achievement. Also, the higher the level of parent education, the higher the science achievement.

The past fifteen years in the history of educational development in Nigeria have witnesses the proliferation of schools especially private schools at every level of education. The number of private universities and secondary schools established in the last fifteen years is far more that the number ever established before the proliferation started. There is increased in public demand for education. Private operation of schools is now more popular than any other time in history. Some experts are of the opinion that private schools will increase the quality of public school education (University of Wisconsin, 1999). Recently, Braun, Jenkins and Grigg (2006) reported that public schools perform favourably with private schools when students' income and socio-economic status are taken into consideration.

According to a cross-national study of private schools reported by Tooley and Dixon (2005), large majority of poor children attend private schools especially in Lagos (Nigeria) and Nairobi (Kenya). These schools have roughly equal number of boys and girls, better pupil teacher ratios, higher teacher commitment and sometimes better facilities than government schools. Generally, student achievement is higher in private than public schools. Unregistered private schools have also reduced the percentage of out-of-school children because poor parents are able to send their children there. The notion that private schools are serving the needs of a small minority of wealthy parents is therefore misplaced.

United States Department of Education (2002) reported that the following on private schools:

- Private school students generally performed higher than their public school counterparts on standardized achievement tests

- Private high schools typically have more demanding graduation requirements than do public high schools

- Private school graduates are more likely than their peers from public schools to complete advanced level courses in their academic subject areas.

- Private school students are more like than public school students to complete a bachelor's or advanced degree by their mid 20s.

However, science achievement cannot stand alone. Evidence from literature shows that some variables like study skill and self-concept influence student achievement in schools. Study skills are fundamental to academic success. A student who does not give enough time to read may find it difficult to do well in examination especially where the syllabus is wide and there is limited time to prepare for examination. There seems therefore to be a link between library resources, reading and study habit. Libraries promote reading culture among users. Abarah (1998) observed that librarians and libraries play a vital role in promoting reading habit which is necessary in the development of a person and nation. Reading is one of the most important means for acquisition of knowledge. It is important to education that everyone is brought into contact with a good library throughout his or her period of learning.

Futhermore, Nwalo (2000) described the problems of library in Nigeria as multidimensional. He identified the following problems;

- Scarcity of adequate books for libraries;
- Inadequate funding of libraries;
- Shortage of foreign exchange;
- Mutilation and stealing of library materials;
- Poor integration of library services in planning;
- Delay in legal recognition of librarianship in Nigeria.

Meanwhile, Tschumper (2006) reported that the study skills of the high school students are very poor. Poor performance in school have been traced to poor study habit. Bradon (1996) noted that if study skills are not improved, students will continue to perform poorly in tests and may not be able to realize their full potential. Students should therefore evolve good study habit skills like note-taking, time management, organizing for a test, recording regular assignments in a notebook, having regular time to study while removing distractions that come from television or phone call at home.

Another independent variable considered in this study is self-concept. Self-concept or self-identity is the mental and conceptual awareness and persistent regard that people hold with regard to their own being. Self-concept has to do with how a person perceives himself or herself, what the person thinks of himself or herself, how he or she values himself or herself and how he attempts through various actions to enhance or defend himself or herself. Parlikar (1972) reported that self-concept correlates positively with personal social and overall adjustment but negatively with achievement.

According to Rogers (1974) self is the central ingredient in human personality and personal adjustment. Carl Roger whose work on self-concept is very prominent in psychological literature defines self as a social product, developing out of interpersonal relationship and striving for consistency. He maintained that there is a basic human need for positive regard both from other and from oneself. In every person there is a tendency for self-actualization and development so long as this is permitted and encouraged by an inviting environment.

Motivation to engage or not in a task is significantly determined by self-concept or self-perception. Self-perceptions are predictive of student goal

orientation (Barker, Dawson and McInerney, 2006). In the past, researchers dealt with self-concept as one-dimensional affective attribute. However, later studies show that self-concept is multidimensional. General perceptions of self as a person (i.e. global self-concept) are posited at the apex of the structure. Self-concept can further be differentiated into academic and non-academic (physical, social, emotional) self-concept. Each of these facets of self-concept can further be divided into specific domains like mathematics self-concept and physical appearance self- concept.

Self-concept is a very important variable to consider in any achievement - related situation. A self-concept theory suggests that self-perception of relative ability is influential in academic performance and achievement (Anderman, Anderman & Griesinger, 1999; Harackiewiez, Barron, Tauer, Carater & Elliot, 2000). Poor perception of ability (low self-concept) may lead to disengagement in achievement-related tasks, and high self-concept may lead to enhanced engagement in tasks (Zusho & Pintrich, 2001). Self-concept does not only directly influence achievement but can also interact with other variables in determining whether a student will engage (or not) in achievement-related behaviour (Barker, Dawson & McInerney, 2006). Therefore study like this that investigated the relative and combined influences of study habit and self-concept on science achievement of Junior Secondary students in Ogun State is highly desirable.

Research Questions

The following research questions are answered in this study:

1.   Is there any significant difference between private and public school students'

    i.   Study habit

   ii.   Self-concept and

   iii. Science achievement?

2.   What is the combined influence of study habit and self-concept on student science achievement?

3.   What is the relative influence of study habit on student science achievement?

4.   What is the relative influence of self-concept on student science achievement?

5.   What are the relationships among study habit, self-concept and science achievement?

6.   Is there any significant difference between male and female student

   i.   Study habit

  ii.   Self-concept and

 iii.   Science achievement?

Method
Research Design
This study adopted an *ex post facto* research design. In such design, the independent variables have already occurred, the researcher cannot manipulate them.

Target Population and Sample

The target population for this study is all the Upper Basic Education students in Ogun State. The State was first stratified into two, Egba and Ijebu divisions. Random sampling technique was used to select six (6) secondary schools from each division in order to ensure each school had equal chance of being selected. Thus twelve secondary schools were randomly selected from the list of secondary schools in both Egba and Ijebu divisions of the State. Thirty students were randomly selected from each school. A sample of three hundred and sixty (360) students was used for the study.

Instrumentation
Three questionnaires were designed and used to collect data. They are:
   i.   Students' Study Habit Questionnaire (SSHQ)

   ii.   Students' Self-concept Questionnaire (SSCQ)

   iii.   Students' Science Achievement Test (SSAT)

SSHQ and SSCQ are four-point Likert-scale type. Students were asked to indicate their opinion by ticking any of 'Strongly Agree', 'Agree', 'Disagree', and 'Strongly Disagree' in front of each statement. The SSHQ

and SSCQ have 12 and 14 items respectively. SSAT is a 50-item multiple-choice objectives test items with four options (A-D) for an item. The items cover all the topics in the Upper Basic Education integrated science syllabus. Students were not asked to indicate their names on the questionnaires so as to make the responses anonymous. The initial versions instruments were given to experts for suggestions and comments before coming up with the final versions. The Cronbach alpha reliability co-efficients of 0.702, 0.781 and 0.776 were obtained for SSHQ, SSCQ and SSAT respectively.

Examples of items on SSHQ:

I complete and submit my assignment on time.

I try to consult teachers personally if I don't understand some topics already taught

Examples of items on SSCQ:

I am confident to ask and answer questions the class

My teachers like me

I feel am a brilliant student

Examples of items on SSAT:

i. The transfer of trait from parent to offspring is known as A. fertilization B. progeny   C. heredity D. conception.

ii. Air pressure is measured with a A. thermometer B. rainguage c. barometer D. sonometer

iii. Echo is an example of ---------of sound A. refraction B. reflection C. diffraction D. dispersion.

Data Analysis

Data were analysed using t-test for research questions 1and 6, Regression analysis for research questions 2 to 4, Pearson product–moment correlation for research question 5. The research question will be answered using a two-tailed test at 0.05 level of confidence.

Results

Research Question 1

Is there any significant difference between private and public school students'

i. Study habit   ii. Self-concept and   iii. Science achievement?

In table 1, there is no significant difference between study habit and self concept of public and private school students. However, private school students performed better than public schools counterparts in science.

Research Question 2

What is the combined influence of study habit and self-concept on student science achievement?

In table 2,considering both private and public schools together, study habit and self-concept when taken together accounted for 11.7% of the variance in science achievement (R Square = 0.117, p<0.05). These two independent variables (study habit and self-concept) accounted for 14.3% and 7.0% of total variance in science achievement in public and private schools respectively. Though both independent variables are significantly predictors of science achievement, study habit is a better predictor of science achievement among public than private school students. The highest variance accounted for in science achievement by the independent variables is 14.3%. This implies that there are other student factors not considered in this study that can influence science achievement.

Research Question 3

What is the relative influence of study habit on student science achievement?

In table 3, considering both private and public schools together, study habit alone significant accounted for 6.0% of the total variance in science achievement (R Square = 0.060, p<0.05). However, study habit significant accounted for 7.7% and 3.8% of the total variance in science achievement among public and private school students respectively. Though study habit is a significant predictor of science achievement among public as well as private school students however, there is greater influence of study habit on achievement among public than private school students.

Research Question 4

What is the relative influence of self-concept on student science achievement?

In table 4, considering both private and public schools together, self-concept alone significantly accounted for 8.9% of the total variance in science achievement (R Square = 0.089, p<0.05). However, self-concept significantly accounted for 11.9% and 4.3% of the total variance in science achievement among public and private students respectively. Self-concept has a greater impact on student science achievement among public than private school students.

Research Question 5
What are the relationships among study habit, self-concept and science achievement?

In table 5, there is positive significant relationship between study habit and student science achievement (r = +0.246, p<0.05), between self-concept and student science achievement (r = +0.298, p<0.05) and also between study habit and self -concept (r = +0.284, p<0.05). The higher the self-concept, the higher the achievement of students in science. Likewise, the higher the study habit, the higher the student achievement in science.

Research Question 6
Is there any significant difference between male and female student
i. Study habit   ii. Self-concept and   iii. Science achievement?

In table 6, there is no significant difference between male and female student study habit, self-concept and science achievement. Male students are as studious as their female counterparts. Likewise, male students have equal level of self-concept as their female counterparts. Also. male students are as good as their female counterparts in science. However, the performance of male and female students in science is below average. The maximum, obtainable mark on the science achievement test is 50. The average score of male students is 19.663 while the average for the female students is 19.136.

Discussion
Self-concept has to do with how a person perceive himself or herself while study habit has to do with level of students' willingness to study which

manifests inform of timely completion and submission of assignment, consultation with teachers and ability to engage in personal study without allowing distraction. These two independent variables no doubt should aid achievement in science. Zucho and Printrich (2001) reported that self-concept leads to enhanced engagement in learning tasks. Self-concept is highly influential to academic performance. Other researchers like Anderman, Anderman and Griesinger (1999) and Harackiewiez, Baron, Trauer, Carter and Elliot (2000) also support this view.

The positive significant relationship between each of the independent variables and science achievement is rather not surprising. Many years ago, Parliker (1972) had reported that self-concept correlates positively with personal, social and overall adjustment. More recently, Barker, Dowson and McInerney (2006) reported that self-concept is a significant predictor of goal orientation. Poor performance in schools has been traced to poor study habit. Bardon (1996) noted that if study skills are not improved students will continue to perform poorly in tests and may not be able to realize their full potential.

In Nigeria, many people prefer to put their children in private schools because they are perceived to be better in teaching students than public schools. It is rather not surprising that in this study students in private schools performed better than their counterparts in public schools. Tooley and Dixon (2005) reported that many poor students whose parents can scarcely meet their basic needs are now attending private schools. Perhaps, the influx of students into private schools much more that they can cope with may later affect standard. The findings between public and private school students' academic achievement may vary from subject to subject or from school to school. Another factor which may also negatively affect public schools in Nigeria is commitment of teachers. Though public school management also employs qualified teachers, however, the job commitment and level of supervision are not as high as what obtain in public schools. Teachers stay longer on the job in public more than private schools. There are more experienced teachers in public than in private school in Nigeria.

Conclusion and Recommendations

Private schools have greater challenge of improving student science achievement than public schools. Student self-concept and study habit are statistically not different between public and private school students. The

school teachers and counsellors have the responsibilities of assisting the students through teaching and training on how to improve their study habit and self-concept. Many students at the junior secondary school level in Nigeria offer integrated science because it is compulsory. Many students change to arts or commercial classes the moment they are given opportunity to choose their subjects. To enhance greater enrolment in science and also improve science achievement, parents, teachers and counsellors have a lot to do to ensure students have good academic self-concept and study habit. Materials that make science study easy should be provided to make learning easy.

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Table 1: Comparison of study habit, self-concept and science achievement of private and public school students

Variables	School Location	N	Mean	Std. Dev	Std. Error	Df	T	p	Remark
Study habit	Public	184	32.848	11.840	0.873	358	1.390	0.166	NS
	Private	176	31.011	13.223	0.997				
Self-concept	Public	184	30.380	11.187	0.825	358	1.946	0.052	NS
	Private	176	28.108	10.960	0.826				
Science achievement	Public	184	18.165	7.656	0.564	358	3.400	0.001	*
	Private	176	20.592	5.704	0.430				

* Significant ($p < 0.05$)

Table 2: Combined influence of study habit and self-concept on science achievement

School Type	R	R^2	Adjusted R^2	Standard Error	F	P	Remark
Private and Public	0.342	0.117	0.112	6.475	23.669	0.000	*
Public only	0.379	0.143	0.134	7.125	15.143	0.000	*
Private only	0.264	0.070	0.059	5.534	6.463	0.002	*

* Significant (p<0.05)

Table 3: Relative influence of study habit on science achievement

School Type	R	R^2	Adjusted R^2	Standard Error	F	P	Remark
Private and public	0.246	0.060	0.058	6.670	22.981	0.000	*
Public only	0.278	0.077	0.072	7.374	15.287	0.000	*
Private only	0.196	0.038	0.033	5.610	6.943	0.009	*

* Significant (p<0.05)

Table 4: Self-concept as a predictor of science achievement

School Type	R	R^2	Adjusted R^2	Standard Error	F	p	Remark
Private and Public	0.298	0.089	0.086	6.568	34.950	0.000	*
Public only	0.346	0.119	0.115	7.204	24.695	0.000	*
Private only	0.207	0.043	0.037	5.597	7.804	0.006	*

* Significant (p<0.05)

Table 5: Relationships among study habit, self-concept and science achievement

	Study habit	Self-concept	Science achievement
Study habit	1.000		
Self concept	0.284*	1.000	
Science achievement	0.246*	0.298*	1.000

*Significant (p<0.05)

Table 6: Comparison of male and female student study habit, self-concept and science achievement

Variables	Gender	N	Mean	Std. Dev	Std. Error	Df	T	p	Remark
Study Habit	Male	184	32.239	12.972	0.956	358	0.446	0.656	NS
	Female	176	31.648	12.125	0.9563				
Self-concept	Male	184	31.444	12.972	0.814	358	0.526	0.589	NS
	Female	176	30.648	12.000	0.768				
Science achievement	Male	184	19.663	7.043	0.519	358	0.726	0.468	NS
	Female	176	19.136	6.697	0.505				

NS = Not Significant (p>0.05)