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Students' Self-Concept and Their Achievement in Basic Science

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Abstract
The study investigated the relationship between students' self-concept and their academic performance in Basic Science. It further examines gender difference in students' performance. The study adopted ex-post factor research design and made use of 300 students all from Public Schools. The adapted Version of Adolescent Personal Data Inventory (APDI) and Students Achievement Test in Basic showed Science (SATBS) were employed as instruments for the study. The result showed that there was no significant relationship between the secondary school student's self-concept and their academic performance in Basic Science. It also showed that there was no significant difference between the self-concept of male and female students in Basic Science as well as their performances. These results have implication for curriculum planning, classroom practice, and students' academic attainment.

Introduction

Self- concept is the cognitive or thinking aspect of self that is self-image related (Purkey, 1988). It is also the totality of a complex, organized and dynamic system of learned beliefs, attitudes and opinions that each person holds to be true about his or her personal existence.

Franken (1994) in his research work states that self-concept is the basis for all motivated behavior, because it gives rise to possible selves and it is

possible selves that create the motivation for behavior. Academic self-concept is one aspect of self-concept because it relates to how well students do in school or how well students learn. Byrne (1990) showed that academic self-concept was more effective than academic achievement in differentiating between low-track and high-track students. Self-concept encourages students or learners to develop in the study of Basic Science and this will provide necessary information for provoking inquisitive spirit of secondary school students.

It will also provide the necessary framework for parents and teachers to encourage wards to build self-confidence in themselves at school and work. It gives the policy makers and educational administrators an insight of the kind of policy to adopt to achieve optimal academic benefit for the overall interest of the country

The study of the subject matter exposes students to appreciate the concept of the fundamental unity of science and also gives them the understanding and opportunity of embracing the role and function of science in everyday life and the world in which they live (FME, 1985:3). However, nowadays, what we see is students not appreciating or embracing the study of science.

It is a truism that the way you present your self is the way you will be seen and advised. Self-concept is purely a case of how and what you think about yourself, it could be negative or positive.

As widely believed by many, that improved self-concept in a subject will lead to greater happiness and academic achievement (Purkey, 1988).

With regards to Marsh, H (1992) opinion, he says that general or global self-concept is the self-perception of an individual. Distinct from this is the academic self-concept, which is the self-feeling regarding ability in school, work or academic pursuit.

According to P.O Yara (2010) self-concept we enable student to build self-confidence in themselves both at school and at work and will equally stir them to pursue academic excellence.

There is a consensus of opinion on the significance on the learners' self-concept and their academic performance.

A student (male or female) who feels about his or her level of education, level of knowledge and awareness of the world around and opportunities for advancement has a positive self-concept and likely to perform better in his or

her study than his or her counterparts who are associated with negative self-concept.

More so, the study of Basic Science provides substantial opportunities for learning for broad range of student.

It is a valuable and viable alternative to the core sciences because it engages a greater diversity of student, it reflects the unifying concepts and principles of science, thereby exposing to the reality of the natural world and equally allowing the students to think comprehensively about an increasingly complex world.

To this effect, the researcher comes to the mainstream of this research title and the study investigates the relationship between students' self-concept and their academic performance in Basic Science. It further examines gender difference in students' performance.

Research Questions

The study provides answers to followings questions:

1. Is there any significant relationship between secondary school students' self-concept and their academic performance in Basic Science?
2. Is there any significant difference between the self-concept of male and female Basic Science students?
3. Is there any significant difference between the performance of male and female students in Basic Science?

Research Methodology

The study is ex-post factor type. There, hundred respondents were employed using simple random sampling to select JSS2 students from six public schools out of fifteen taken cognizance of four geographical locations in Olorunda Local Government Area of Osun State. The instruments used for data collections was adolescent personal data inventory (AFDI) and Students Achievements Test in Basic Science (SATIS).

A measure of construct validity and internal consistency reliability of the instruments produced a Cronbach coefficient alpha value of 0.6 while Basic Science test made use of 50 items, multiple-choice with four options with detailed considerations of table of specification for Basic Science Behavioral objectives. The face and content validity was established through expert's

judgments. Data analysis made use of t-test, Pearson correlations coefficient and analysis of variance statistics.

Results

Research Questions I: *Is there any significant relationship between secondary school student's self-concept and their academic performance in Basic Science?*

Table 1: shows that the Pearson Coefficient(R) between self-concept and academic performance of the sampled students 0.008 and its p valued is 0-884.

The p value is greater than 0.05 alpha level of significance, hence, it can be concluded that there is no significant relationship between Basic Science students' self-concept and their academic performance. The finding suggests that some students with certain potentialities may not believes in themselves but through hard work, persistence and perseverance in study they finds them self performing, where as reversed is the case with the self-confident students.

Research Questions 2: *Is there any significant difference between the self-concept of male and female Basic Science students?*

Table 2 shows that t298 showing the mean difference between the self-concept of male and female Basic science students is 0.440 with its p value equals 0.660.

P valued is found to be greater than 0.05 alpha level this conclusion can be drawn that their is no significant difference between the self-concept of male and female Basic Science students. However, male students concept is found to be superior with mean of 59.53 than their female counter parts with mean of 58.989.

Research Question 3: *Is there any significant difference between the performance of male and female students in Basic Science?*

Table 3 present t_{298} equals 107 and p equal u .915. P value is found to be greater than 0.05 alpha levels. Therefore, it can be conclude that there is no significant difference between the performance of male and female students in Basic Science. However, female students are found to be slightly better with mean score of 16.134 in Basic Science than their male counterparts with mean score of 16.074.

Discussion

The study shows that their is no significant relationship between secondary school students' self-concept and their academic performance in Basic Science, the reason mighty be that some students who might have gotten erroneous idea about themselves and their academic performance were encouraged wrongly, the essence of this led them to hard work and determinations in the study they themselves performing however reverse is the case with the self-confidents students.

Ebeh (2000) claimed that high self-concept in a subject promotes happiness in the leaning of the subject, social acceptance and achievement, where as, low self-concept in a subject may contribute to failure in the subject, some educators believe that improved self-concept in a subject will lead to greater happiness and academic achievements (Owolabi, 1988 and Ojokhata, 2000). Afuwape and Aanu (2010) conducted a study on enhancing Basic Science for Higher Studies; Teacher-Students opinion and found out that students and teacher are positively disposed, an opportunity for both young and old to have the knowledge of science.

The research question two that has no significant difference might be that both male and female were now at competitive level of awareness to their level of educational aspiration and many researchers have provided reports that there are no longer distinguishing differences in the cognitive, affective and psychomotor skill achievement of students in respects of gender (Bilesanmi-Awoderu, 1999 and Afuwape Oludipe, 2008).

Akinsola (1994) was of the opinion that a student must believe in himself or herself in order to perform successfully in school. Utoh (2004) asserted that teacher's self-concept has a significant effect on the student's self-concept. He further claimed that the nature of teacher self-concept focuses on what teacher and her profession.

More specifically, teachers feeling about his or her level of formal education, level of knowledge and awareness of the world around, dispositions of everyday living, job satisfactions; appreciation of society amount of work done; opportunity for advancements usefulness to the community and level of responsibility shouldered. It is thus explicable that teachers that are characterized by positive self-concept are likely to have better and greater influence on their students and their academic improvements. However, counterparts who are associated with negative self-concept has little or nothing to offer positively in advancing student self-awareness of

themselves, Adegbile et.al (2001) opined that a competent teacher should blend some elements of motivation with his methods of teaching which eventually influencing student's self-concept and their attitude toward leaning and academic pursuits.

Research question 3: states that there is no significant difference between the performance of male and female students in Basic Science.

The reason for this might be as a resort of motivational drive received from different categories of interaction such as their teachers, parents and peer groups, their high level of understanding to educational awareness might also be another attending factor.

In one study carried out by (Eriba and Sesugh, 2006) they found that boys outperformed girls in science and mathematics achievements. Some other research studies reported that males are becoming the disadvantaged gender in schools, and fewer males are interested in science (Alkhateeeb, 2001; Blever and Waltz, 2002; Weaver-Hightower, 2003; Omoniyi, 2006); He further asserted that eventual achievement by learners is predicted on personal effort than sex variable, in the work of Olukemi (1998) research as shown that the cognitive power necessary for science endeavor is not foreign to the females. It was further asserted that science ability correlates highly with general intelligence in which no consistent sex differences were found.

Okebukola (1984) also found that gender does not seem to account for much variance in Biology achievement.

Onafowokan (1998) reported that there was no gender related difference in science achievements; Ige (1998) found no significant main effect of gender on student's learning outcomes in secondary school ecology. Iruegbu (1998) also found no significant main effect of gender on student's achievements in energy concepts in physics.

From the above-motioned studies and results, it could be said that the traditional advantage of males over females seems to be narrowing; in as much gender difference and achievements in science is inconclusive, studies will continue to be carried out on it.

Recommendations and Conclusion

The findings of this study revealed that's students' self-concept was not sensitive to achievements in Basic Science, no gender difference both in concept and achievement, consequently there is need for students to be encouraged toward his/her educational attainment, every individual is equal and have potentials for greater height,

Gender difference is not a barrier for educational attainments and as such students of both sexes must be encouraged to perform highly in their academics, students must be optimistic, diligent and full of zeal for academic excellence.

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Table 1: Correlation between Self-concept and Academic Performance

Parameter	Value
Pearson Correlation (R)	0.008
N	300
Sig (p)	0.884

Table 2: T-test Comparison of Students' Self-concept Based on Gender

Gender	N	Mean	SD	t	df	Sig(p)	Remark
Male	121	59.537	9.279	.440	298	.600	NS.
Female	179	58.989	11.399				

NS; mean Difference not significant at 0.05alpha level

Table 3: T-test Comparison of Students' Academic Performance Based on Gender

Gender	N	Mean	SD	t	df	Sig(p)	Remark
Male	121	16.074	4.768	.107	298	.915	NS
Female	179	4.752	4.752				

NS= means difference not significant at 0.05alpha level.