ACHIEVEMENT MOTIVATION AND SELF-CONCEPT AS PREDICTOR OF ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN BIOLOGY IN ANAMBRA

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Abstract

The study investigated Achievement motivation and self-concept as predictor of academic achievement of secondary school students in biology in Anambra state. Three research questions and three hypotheses guided the study. The correlational survey design was adopted for the study. The population of the study was 4,603 senior secondary school year two (SS2) biology students in Awka Education Zone. A sample of 720 SS2 biology students was involved in the study. The instrument for data collection were Achievement Motivation Scale (AMS) and Self-concept Questionnaire (SCQ) validated by three experts in Department of Science Education and Measurement and Evaluation. The student's achievement scores were obtained from school's biology student's diary. The reliability was established using Cronbach Alpha which yielded 0.713and 0.701 for achievement motivation scale and Self-concept Questionnaire respectively. The data were analyzed using Pearson Correlation Coefficients and multiple regressions. The findings of the study revealed achievement motivation and self-concept correlated students' academic achievement in biology significantly. The implication of the study was stressed. The study recommended that achievement motivation and self-concept should be enhanced by using appropriate teaching and counseling strategies.

Keywords: achievement motivation, academic achievement, self-concept, biology

Introduction

Education is no doubt the bedrock of human and national development. A nations' position in today's highly competitive global knowledge economy is directly dependent on the quality of its human capital this includes, the aggregate of skills and knowledge imparted to its citizen by its educational system (Adamu, 2017). The process of acquiring knowledge can be formal or informal. Informal education takes place in a natural setting like the home environment and it is the first type of education one is exposed to immediately after birth while formal education takes place in a consciously organized setting such as school with specified contents, objectives and skills. The relevance of education well emphasized and science oriented courses has identified biology as an important science subject towards the nations' development.

Biology has been identified as a very important subject and as a core subject taught at the secondary schools in Nigeria and prerequisite for medical field such as medicine, nursing and medical laboratory science. Biology is a natural science concerned with the study of life and living organism including the structure, function, growth, reproduction, metabolism, evolution, taxonomy and their interrelationship of all living and non-living things in our environment. Nwanguma (2011) viewed biology as the epicenter of most of all the studies in the faculties of science, health and technology. Biology is a mandatory subject for any medical science oriented course, thus it has development advancement as it concerns the field of forensic sciences, genetic engineering and medicine. Despite the importance of biology compared to other science subjects, it is very alarming to note that students' performance in the subject in both internal and external examination have continue to fluctuate over the years according to the West African Examination Council's Chief Examiners Report (2015-2019). This shows clearly that academic achievement of students' in biology has not improve, according to the percentile rating of biology students from 2015-2019 by the Chief Examiners report 57.42%, 61.68%, 55.57%, 55.10% and 55.63% respectively.

Academic achievement itself is the amount of knowledge derived from learning by the learners. Academic achievement is referred to be the observed and measured aspects of students' mastery of skills and subject contents as measured with valid and reliable test (Joe, Kpolovie, Osonwa & Iderima, 2014). It is the results of intellectual performance in schools and as an educational parameter. Academic achievement is said to be poor when the achievement falls below the expected standard (Hassan, Alasmari and Ahmed. 2015). On the other hand, an achievement that is equal to or above the standard expected of a student ca2n be termed high academic achievement. Answers (2010) stated that academic achievement is the ability to study and remember facts and being able to communicate ones' knowledge

either verbally or written on paper. In any school system, academic achievement is a priority to the student as well as the teacher. The teacher, students and the school administration must put effort to see that high academic achievement is attained. However, psychological attributes such as achievement motivation could play an important role in students' academic achievement in learning.

Achievement motivation as the drive to work with diligence and vitality, to constantly steer towards targets, to obtain dominance in challenging a difficult task and create a sense of achievement as a result (Muola, 2010). Achievement motivation is the motivation to engage achievement behaviors based on the need for achievement, expectancy of success and incentives values of success. Akpan and Umobong (2013) noted that achievement motivation is a force which encourages and stimulate the person for doing action to get success. A study carried out by Villa and Sebastian (2021) revealed that there was a significant relationship between achievement motivation and mathematics achievement also; achievement motivation was found to be the only predictor of mathematics achievement.

Mayers (2018) believes that individual who has low achievement motivation tend to choose tasks in which their probability of success is either very high or very low and by choosing this, the probability of their success in easy task is guaranteed, so that they avoid the feeling of failure of shame and remorse, they are not choosing the difficult task. While individuals with high achievement motivation are characterized by being able to compete in various circumstance, as well as bearing responsibility entrusted to them, and they expect their success to their personal effort compared to those with low achievement motivation and they put themselves in challenging situations, but within the limits of realistic and possible goals. Achievement motivation occurs within the mind of an individual, which when channeled into academic achievement produces a positive result and a feeling of one's self-concept.

Self-concept is a general term used to refer to ones' self. Self-concept is personal and every individual whether with special needs or not has concept which is usually as a result of the extent of cognitive development for adequate perception of self and one's interactions with his or her environment (Shrestha, 2014; Marshal, 2015). An individual physical and psychological well-being can be connected as fully taking ownership as a person. Shrestha (2014) observed that what we think of ourselves is greatly influenced by what others think of us and that, self-concept is built upon the social interaction with family, friend and society. Guay, Ratella, Soy and litalien (2010) in a study found that students who perceived themselves as academically competent obtained higher grades because their academic self2-concept led them to be more autonomously motivated at school. In another study carried out by Crawford (2013) found out in his study that student's self-concept influences their

academic performance; however, the level of effort exerted by students in learning to a large extent contributes significantly to students' self-concept in boosting their academic performance. The proximity of students obtaining a high academic achievement in biology could be attributed to some psychological variables (achievement motivation and self-concept). Studies have not showed how achievement motivation and self-concept may affect students' academic achievement in biology, thus this present study seeks to determine the extent psychological variable such as achievement motivation and self-concept can predict academic achievement of secondary school students in biology in Anambra state.

Purpose of the Study

The purpose of the study was to investigate Achievement motivation and self-concept as predictor of academic achievement in biology, specifically the study sought to determine,

1. Relationship between achievement motivation and academic achievement among senior secondary school students in biology in Anambra state.
2. Relationship between self-concept and academic achievement among senior secondary school students in biology in Anambra state.
3. The joint correlation between achievement motivation, self-concept and academic achievement of secondary school students' in biology.

Research Questions

The following research questions guided the study.

1. What is the relationship between achievement motivation and academic achievement among senior secondary school students in biology in Anambra state?
2. What is the relationship between self-concept and academic achievement among senior secondary school students in biology in Anambra state?
3. What is the relationship among achievement motivation, self-concept and academic achievement of secondary school students' in biology?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between achievement motivation and academic achievement in biology among senior secondary school students in Anambra state.
2. There is no significant relationship between self-concept and academic achievement in biology among senior secondary school students in Anambra state.

3. There is no significant relationship among achievement motivation, self-concept and the academic achievement scores of students' in biology.

Methods

The design adopted for the study was correlational survey. The population of the study consists of 4,603 SS 2 biology students in Awka education zone. The sample for the study is 720 SS2 biology students obtained through multi stage sampling technique. The instruments for data collection were achievement motivation scale and self-concept Questionnaire. The achievement motivation scale which was developed and standardized by Prof Pratibha Deo and Dr Asha Mohan (1985) as suggested by McCelland and Akinson was adapted for this study. AMS is a 50item scale and self-concept questionnaire was designed and standardized by Robson (1989) which consists of 30 items was also adapted for the study. The instruments were validated by three experts. The reliability of instruments was established using Cronbach's Alpha. The instrument was administered to 30 students in Onitsha North Education Zone. The scores generated were subject to Cronbach's Alpha computation. The reliability coefficient obtained for n-Ach and SCQ was 0.713 and 0.701 respectively. The instrument was administered to the student through the help of research assistant. Data generated from the study was analyzed using Pearson Product moment correlation and multiple regressions. The null hypothesis was tested at 0.05 level of significance.

Coefficient (r)	relationship
0.80 and above	high
above 0.30 –below 0.80	moderate
0.30 and below	low

Result

Research Question One: what is the relationship between achievement motivation and academic achievement among secondary school students in biology.

Table 1: Pearson Product moment correlation coefficient (r) between students' Achievement Motivation and their Academic Achievement in Biology.

Variable	N	Academic Achievement (r)	Remark
Achievement motivation	720	.080	low positive relationship

Table 1 shows a low positive relationship between achievement motivation and academic achievement of secondary school students' in biology. This is evident in the Pearson product moment correlation coefficient of r =.080

Research Question Two: what is the relationship between self-concept and academic achievement among secondary school in biology.

Table 2: Pearson product moment correlation coefficient (r) between students' Self-concept and their academic achievement in biology.

Variable	N	Academic Achievement	Remark
Self-concept	720	.078	low positive relationship

Table 2 shows a low positive relationship between secondary school students' self-concept and academic achievement in biology. This is the evident in the Pearson product moment correlation coefficient of r = .078.

Research Question Three: What is the relationship among achievement motivation, self-concept and academic achievement of secondary school students' in biology?

Table 5: Multiple correlation coefficient of students' achievement motivation, self-concept and their academic achievement in biology.

Model	R	R square	Adjusted R square	Remark
`1	.091	.008	006	low positive relationship

The multiple correlation coefficient R=.091 in table 5 suggests that students' achievement motivation and their self-concept in the academic achievement have a low relationship.

Hypothesis 1: there is no significant relationship between achievement motivation and academic achievement of secondary school students' in biology.

Table 3: Significant Relationship between achievement motivation and academic achievement of secondary school. Students' in biology.

Variable	N AcademicAchievement (r)	α-level	p-value	Decision
Achievement motivation 720 .080		0.05	.033	significant

Table 3 revealed that there is a statistical significant relationship between achievement motivation of students and their academic achievement in Biology. This is so because the p-value .033 is less than the level of significant 0.05, therefore the researcher rejected the null hypothesis and concluded that, there is a significant relationship between them.

Hypothesis 2: There is no significant relationship between self-concept and academic achievement of secondary school students' in Biology.

Table 4: Significant Relationship between Self-concept and academic achievement of secondary school students' in Biology.
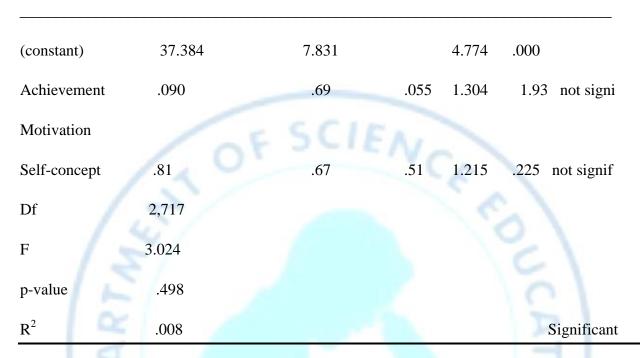
Variable	N	Achievement (r)	α-level	p-value	Decision
Self-concept	720	.078	0.05	.038	significant

Table 4 revealed that there is a statistical significant relationship between self-concept of students and their academic achievement in Biology. This is so because the p-value, .038 is less than the level of significant 0.05, therefore the researcher rejected the null hypothesis and concluded that, there is a significant relationship between them.

Hypothesis 3: There is no significant relationship among achievement motivation, self-concept and the academic achievement score of students in biology.

Table 5: multiple regression analysis of achievement motivation, self-concept and the academic achievement score of students in biology.

Model	unstandardized Coefficient		standardized coefficient	T	Sig	decision
	B	Std Error	beta			

(constant)	37.384	7.831		4.774	.000	
Achievement Motivation	.090	.69	.055	1.304	1.93	not signi
Self-concept	.81	.67	.51	1.215	.225	not signif
Df	2,717					
F	3.024					
p-value	.498					
R^2	.008					Significant

A multiple regression was run to ascertain the joint relationship of achievement motivation and self-concept on the academic achievement of secondary school students in Biology. These variables statistically significantly jointly related to the contribution of students' academic achievement, $F_{(2,717)}= 3.024$, p= $.049<0.05$, $R^2= .008$. Independently, both variables did statistically significantly contribute to the students' academic achievements since their respective p-values .193 and $.225>0.05$ and the unstandardized coefficient B=.090 and .081 which means that for each increase in achievement motivation and self-concept there is an increase in the academic achievement of the students.

Discussion

The findings of the study revealed that achievement motivation and academic achievement shows a low positive relationship. Hence, there is a significant relationship between achievement motivation and academic achievement. The positive and significant relationship between achievement motivation and academic achievement can be attributed to little effort of motivation imputed by each student's desire for significant accomplishment, mastering of skills and setting high standard goals can contribute to their academic achievement in biology and other science subjects. The findings of the study support that of Anaya (2015) that achievement motivation is positively related to academic achievement. The findings of the study also lend credence to the findings of Villa and Sebastian (2021) that there is a relationship between achievement motivation and academic achievement.

The findings of the study revealed that self-concept and academic achievement shows a low positive relationship. The result of the study is better explained by the theory of self-concept by Karls Rogers, that self-concept is a social product and central ingredient in personality and personal adjustment, developing out of interpersonal relationships andcontinuously striving for consistency. He also believed that for every individual, there is a tendency towards self-actualization and development as long as this is permitted and encourages by an inviting environment. Academic achievement of a student can be attributed to little effort of the self-confidence towards self. The finding of the study is in line with the study of Sulaiman, Aqeel &Adibah Binti (2019) that self-concept is related to academic achievement. The finding of the study is in credence with the findings of Okafor, Obialor& Osuafor (2020) that there is positive significant relationship between secondary school student's self-concept and academic achievement in biology.

The findings of the study revealed that achievement motivation and self-concept have a low positive relationship on academic achievement. The result of the study can be attributed to the fact that high self-confidence and persistence employ by the students' can help in the high academic achievement of students in biology. The finding of the study is in line to the findings of Eirene & Somuya (2017) that achievement motivation and self-concept has a significant positive relationship to academic achievement. The findings of Awan, Noureen & Naz (2011) support the 2findings of the present study that achievement motivation and self-concept are significantly related to academic achievement.

Conclusion

The study concluded that achievement motivation and self-concept are significantly related to the academic achievement of students in biology. The study also establishes that achievement motivation and self-concept cannot be treated as separate entities, but as an independent collective.

Recommendations

In the light of the study, the following recommendations were made.

1. Biology teachers should encourage the development of achievement motivation and self-concept in biology by using of appropriate teaching and counseling strategies.
2. **Well-** package seminars and workshop should be organized regularly for teachers, students and counselors on achievement motivation and self-concept. This will create opportunities for exchange of ideas among them

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