Self-motivation as a Predictor of Secondary School Students' Academic Success in Biology: A Study of Secondary School Students in Anambra State

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Abstract

The purpose of the study was to ascertain if self-motivation is a predictor of secondary school students' academic achievement in Biology in Anambra State. One research question gave direction to the study while one hypothesis was tested at the 0.05 level of significance. A correlational research design was employed for the study. The population of this study was made up of 20, 138 biology senior secondary SS2 students in the 266 public secondary schools in Anambra State. The sample for the study comprised 840 SS 2 students for the 2024/2025 academic session drawn through a multi-stage sampling procedure. Face-validated Self-Motivation Questionnaire (SMQ) was used to collect data. The data collected were analyzed using multiple regression. The findings of the study revealed that self-motivation positively and insignificantly predicted secondary school students' academic achievement in biology. Based on the findings of the study, it was recommended that Biology teachers should encourage students to be self-motivated to improve their academic achievement in Biology.

Keywords: Self-Motivation, Academic Achievement, Biology

Introduction

Self-motivation is an internal force within an individual that directs them to initiate a task and keep at it until its accomplishment. Adegboyega (2018) noted that it is an inner drive that propels and influences students to learn, set aspirations, realize full potential and perform well in their academics. Going further, Adegboyega stated that self-motivation in education is capable of setting students' learning goals in motion, sustaining it and by extension, affecting their learning achievement in science subjects. According to Dramanu and Mohammed (2017), self-motivation is a central human stimulus which can influence the academic performance of students at different levels. Motivation can affect the achievement of students in core subjects such as Biology.

Biology as a basic science subject, deals with the study of living things; it attempts to understand the teeming diversity of life on earth, a diversity of level we are all part of. Biology therefore is a branch of study that assists us in comprehending the living world and the processes

by which it is numerous species, including humans, function, evolve, and interact with one another. The learning of biology in real life context is necessary for personal development and also, the development of the scientific and technological world. It is in recognition of this that the academic achievement of students in biology has become expedient.

The academic achievement of students in the subject at external examinations in recent times in biology is not encouraging. This is evidenced from WAEC Chief Examiners' Reports between 2022 and 2024 which revealed the poor performance of students in the West African Examination Council (WAEC) examinations in the subject from 2022 to 2024. Document cited by the researcher in the office of the Post Primary School Service Commission, Anambra State showed the academic achievement of students in biology in WAEC examinations in the State from 2022 to 2024 recorded that only 49.05 percent passed the subject in 2022, 49.61 percent in 2023 and 49.74 percent in 2024. This trend shows that there has been marginal improvement in students' performance in biology in WAEC examinations, the overall performance is still unsatisfactory. This is rather concerning especially to the relevant stakeholders in the educational sector such as parents, school administrators, test developers, parents among others.

Self-motivation is the human inherent proclivity toward learning and resourcefulness, novelty and challenges, and increasing and exercising one's capabilities (Asif, *et al*., 2018). Dramanu and Mohammed (2017) stated that the determinants of motivation and students' academic achievement may differ depending on culture, context, parental expectations, and personal traits. According to Adegboyega (2018), people argue about money as a source of motivation for students' academic performance. During children's secondary school stages, self-motivation to study and prodigious engagement in the classroom determine literacy development aptitudes while parents constantly checking on grades and assignments can undermine autonomous

motivation and academic achievement (Froiland, 2015). Parents can be considered as vital contributors to students' motivation to learn and perform well in secondary school subjects. It is assumed that there is variation in students' need to achieve in situations that call for excellence.

Students motivated to learn are bound to gain positive results such as improved academic achievements, minimized test anxiety, and more self-efficacy. Consequently, one conduit for promoting students' self- motivation to learn is through parents supporting students' autonomy (Froiland, 2015). Froiland added that this autonomy support could be associated with parenting style which promotes students' study habits and by extension, academic achievement. Autonomy-encouraging parenting is beneficial to students' motivation and enduring love of learning while controlling parenting fosters learners' fear of failure, anxiety, and feigning study habits. In the view of Al-Dhamit & Kreishan (2016), students' motivation improves when autonomy and competence are reinforced in the home and school environments. This experience with parents may not be significantly different from students who perceive teachers as insensitive and indifferent. Relationship with parents can play a role in determining students' motivation to study hard for improved academic achievement in school subjects. Al-Dhamit and Kreishan (2016) pointed out that self-motivated students engage in tasks because of innate fulfillment and gratification. This type of motivation is one of the key determinants of academic achievement since it leads to creativity and improved learning outcomes. According to Sini, Muzzulini, Schmidt and Tinti (2018), students who are motivated inherently have interest in learning without reliance on external pressures or desires for rewards. Similarly, Costanus, Moneva and Malbas (2020) examined family status and self-motivation in studies in the Jagobiao National High School-Senior High Department. The findings of the study revealed that family status and self-motivation had no significant correlation in studies of students' self-motivation existed regardless of family status,

broken and complete. With the above assertions by researchers much as there are many factors responsible for poor students' academic achievement, the researcher has observed from the literature reviewed that the contribution of self-motivation to students' academic achievement in biology in Anambra State has not been ascertained by empirical investigation. Thus, the current study is focused on ascertaining self-motivation as a predictor of secondary school students' academic achievement in Biology in Anambra State.

Research Questions

1. What is the predictive value of self-motivation on the academic achievement of secondary school students in Biology?

Hypothesis

One null hypothesis was tested at 0.05 level of significance:

1. Self-motivation does not significantly predict secondary school students' academic achievement in Biology.

Method

A correlational research design was adopted for the study. The population of the study was made up of 20, 138 biology senior secondary SS2 students in the 266 public secondary schools in Anambra State. The sample for the study comprised 840 SS 2 students for the 2024/2025 academic session. Multi-stage sampling procedure was employed. Simple random sampling technique was adopted to obtain three zones (Awka, Onitsha and Nnewi) out of the six education zones in Anambra State. Thereafter, simple random sampling technique was employed to draw eight secondary schools from each of the three zones which summed up to 24 schools. Then, simple random sampling technique was utilized to draw 35 SS2 students from each of the 24 schools to give rise to the sample size. Data were collected using a face-validated Self-Motivation Questionnaire (SMQ). SMQ was adapted from the Students' Motivation in the Learning of Biology scale by Offor (2017) which was made up of 15 items. The adaptations made were the re-wording of some items to serve the purpose of the study. It was constructed in such a way that the

respondents responded by choosing one of four response categories namely: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The reliability of SMQ was tested using Cronbach alpha method. This was done by administering the SMQ to a group of 40 students with similar characteristics in Enugu State which is not within the study area. The determination of the internal consistency of the items in SMQ was carried out using Cronbach alpha statistics to obtain an alpha coefficient value of 0.80. This value was considered adequate to confirm the SMQ as reliable as it is consistent with the recommendation of Shrestha (2021) that the adequate threshold value for Cronbach alpha should be >0.70. The administration of SMQ was facilitated by the researcher through the help of 24 research assistants who were SS 2 Biology teachers of the sampled schools. On-the-spot delivery approach was utilized by the researcher for the administration of SMQ through the help of research assistants and to facilitate immediate retrieval of the copies. The research question was answered using standardized beta coefficients while hypothesis was tested using t-test of significance of beta coefficients. The hypothesis was tested at 5% level of significance with the decision rule that the null hypothesis was rejected if p-value was less than the alpha level of 0.05; otherwise the null hypothesis was not rejected.

Results

Table 1: Unstandardized and Standardized Coefficients Predicting Secondary School Students' Academic Achievement Contributed by the Variance in Self-Motivation Scores

Model	**Unstandardized *B***	**Std Error**	**Standardized β**
Constant	61.786	3.191	
Self-Motivation Scores	.078	.078	.036

The regression coefficients presented in Table 1 show that standardized regression coefficients (β) for self-motivation is .078.

Table 2: **Test of Significance of Unique Contributions of Self-Motivation Scores to Secondary School Students' Academic Achievement Scores**

Model	Unstandardized *B*	Std Error	Standardized β	T	p-value	Decision
Constant	61.786	3.191		19.365	.000	Significant
Self-Motivation Scores	.078	.078	.036	1.001	.317	Not Significant

Table 2 shows that self-motivation scores with a β value of .036 did not significantly predict secondary school students' academic achievement, $t(2,779) = 1.001$, $p=.317$. Since the p-value is more than 0.05 (level of significance), the null hypothesis is not rejected.

Discussion

The finding of the study indicated that an increase in self-motivation leads to an increase in academic achievement scores of students in biology. This goes to show that a high self-motivation is considerably responsible for high academic achievement in biology. In other words, when a student is self-motivated, he/she exert self-efficacy in testing situation which leads to high academic achievement in biology. The finding of the present study aligns with the position of Costanus, Moneva and Malbas (2020) that motivation of student deals with their innate behavior and attitude to achieve better academic performance. This is a confirmation of the fact that the more motivated a student is, the greater the tendency to record high academic achievement. Corroborating this, Adegboyega stated that self-motivation in education is capable affecting students' learning achievement in science subjects. This re-inforces the pivotal role of self-motivation in the improvement of students' academic achievement across science subject lines. Accordingly, Dramanu and Mohammed (2017) found that self-motivation can influence the academic performance of students at different levels

Conclusion

Based on the findings of the study, it was concluded that self-motivation positively predicted secondary school students' academic achievement in biology. In addition, self-motivation did not significantly predict secondary school students' academic achievement in biology

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Biology teachers should encourage students to be self-motivated so as to improve their academic achievement in Biology.
2. Biology students should sustain their self-motivation in biology lessons to improve their academic achievement in the subject.

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