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PREDICTIVE POWER OF STUDY HABITS ON SECONDARY SCHOOL BIOLOGY STUDENTS' ACADEMIC ACHIEVEMENT AND COUNSELLING IMPLICATIONS FOR SKILL DEVELOPMENT IN TEACHER EDUCATION

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Abstract

The study determined the predictive power of study habits on secondary school students' academic achievement in Biology with counselling implications for skill development in teacher education. The study adopted a correlation research design. The research work was conducted in Nnewi Education Zone of Anambra State, Nigeria. The research was guided by two research questions and two hypotheses. The population of the study comprised 2,927 senior secondary two (SS 2) Biology students from all the 49 public secondary schools in the zone. The sample size comprised 400 SS2 Biology students. The multi-stage sampling technique was employed to draw 16 public schools from the zone. Data were collected with the Study Habits Questionnaire (SHQ). The SS 2 students' first term results in Biology for 2023/2024 session was used to assess their achievement scores in Biology. The SHQ was validated by three experts from Science Education Department and Educational Measurement and Evaluation Unit in the Department of Educational Foundations, both from the Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the SHQ was determined using Cronbach alpha, with coefficient of 0.81 indicating satisfactory internal consistency. The collected data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Simple and multiple regression analyses were employed for analyses of data collected. Findings of the study revealed, among others, that study habits significantly predicted secondary school students' academic achievement in Biology. However, study habits only significantly predicted the academic achievement of female students, but did not significantly predict the achievement of male students in Biology. The study concluded that study habits affect students' achievement in Biology. Based on the findings, it was recommended among others that group guidance should be organized in schools by professional counsellors in order to create awareness on how students can develop effective study habits which can lead to skill development in teacher education and good academic achievement in Biology.

Introduction

Education is universally acknowledged as a nation's most valuable resource for achieving sustainable development, social progress, and economic competitiveness (UNESCO, 2022). Within the educational process, three key elements exist: the learner who seeks knowledge, the teacher who facilitates learning, and God, recognized in many cultural contexts as the ultimate source of wisdom and understanding. Teachers play a pivotal role in the teaching–learning process, not only as conveyors of subject knowledge but also as mentors, guides, and facilitators of holistic student development. In contemporary education systems, teachers' roles extend beyond classroom instruction to include guidance and counselling responsibilities, which are critical in addressing students' academic, emotional, and social needs (Lazarević & Lazarević, 2020). While counselling is typically remedial in nature, addressing problems after they arise, guidance focuses on preventive and developmental strategies that promote students' all-round growth and resilience (Gysbers & Henderson, 2014). Globally, education systems are increasingly shifting towards preventive, developmental approaches to counselling and student support, recognizing their role in enhancing academic achievement and personal growth (Reddy, 2021).

In Nigeria, however, teacher education continues to face challenges such as inconsistent quality, underfunding, and limited professional motivation, making teaching a less-preferred career path compared to other professions (Okeke & Okeke, 2022). This contradiction is significant because education remains central to Nigeria's national development agenda. The National Policy on Education (FRN, 2014) outlines goals that include knowledge acquisition, skill development, scientific literacy, and preparing individuals to contribute meaningfully to society. These objectives highlight the vital role of science and technology in fostering national growth. Science education, in particular,

provides students with the knowledge, problem-solving skills, and innovative capacity required for addressing real-world challenges and driving technological advancement (Silva, 2022; Danjuma, Ikpe, & Adakole, 2019).

Science education is taught across primary, secondary, and tertiary levels in Nigeria, with secondary school representing a critical stage where learners develop the foundation for advanced studies in fields such as medicine, pharmacy, engineering, and agriculture. At the senior secondary level, science subjects such as Biology, Chemistry, and Physics are compulsory and form the bedrock for higher education and global competitiveness (Ali & Shujat, 2021). Among these subjects, Biology holds a unique position because it deals with the study of life and living organisms, equipping students with knowledge applicable to health, environmental sustainability, and national development (Udegbe & Okoli, 2022). However, despite its popularity, students' academic achievement in Biology at the West African Senior School Certificate Examination (WASSCE) has remained persistently low. WAEC Chief Examiner's reports indicate that pass rates at credit level fluctuated between 33.37% and 35.66% from 2007 to 2012, improving slightly to a maximum of 61.68% between 2013 and 2016, but with no sustained upward trajectory (WAEC, 2021). These persistent underperformances call for evidence-based interventions to enhance learning outcomes.

One factor consistently linked to student achievement is study habits. Study habits encompass the structured behaviors, routines, and skills students adopt to facilitate learning, including note-taking, time management, self-regulation, and effective reading strategies (Iheakanwa, Obro, & Akpochafo, 2021). Research shows that effective study habits are positively correlated with cognitive, behavioral, and attitudinal development, as well as with long-term academic achievement (Hassan, Latiff, Muhamad, & Abdullah, 2021; Palani in Abid *et al*., 2023). Conversely, poor study habits contribute to frustration,

low motivation, and reduced academic success (Al-Jarf, 2019). Study habits have been conceptualized in terms of their effectiveness—productive habits such as task accomplishment, group study, and homework management foster achievement, whereas ineffective habits hinder academic growth (Banwari & Nemine, 2014; Itoya, 2021). Importantly, students' study habits are influenced by contextual factors such as gender, socio-economic background, school environment, and family responsibilities (Kumon, 2020; Iheakanwa *et al*., 2021).

Gender, in particular, plays a mediating role in shaping study behaviors and achievement. The World Health Organization (WHO, 2016) defines gender as socially constructed norms and roles assigned to individuals based on their sex. Studies suggest that female students often adopt more organized and collaborative study habits, such as structured note-taking and consistent reviewing, while male students may rely on independent and less structured approaches (Stanikzai, 2019; Nadia, Anees-ul-Husnain, & Asghar, 2020). These differences, combined with self-efficacy and motivation, influence academic outcomes in measurable ways (Arora & Singh, 2022).

Academic achievement itself is a multidimensional construct that reflects students' mastery of content, skill acquisition, and performance in standardized assessments and examinations (Ballotpedia, 2022). It is influenced by cognitive, affective, and contextual variables, with study habits standing out as one of the strongest predictors across disciplines (Credé & Kuncel, 2008; Itoya, 2021). Poor academic achievement not only undermines students' career aspirations but also contributes to frustration, low self-esteem, and maladaptive behaviors in school settings (Okoli & Udegbe, 2022). Thus, understanding the predictive power of study habits for Biology achievement is crucial for designing targeted interventions and informing counselling practices in secondary education.

Against this backdrop, the present study investigates the predictive power of study habits on the academic achievement of senior secondary school students in Biology in the Nnewi Education Zone of Anambra State, Nigeria. Beyond identifying predictive relationships, the study also considers the counselling implications for fostering skill development in teacher education programs. The findings are expected to contribute to policy and practice by emphasizing the role of effective study habits in improving student learning outcomes in science education.

Statement of the Problem

The majority of research studies primarily concentrate on external factors that influence student achievement, rather than focusing on the students' internal cognitive variables. Students' academic achievement has been largely associated with many factors and has been addressed from different dimensions by researchers such as from individual's level, school level (teacher factor and teaching strategies), school climate, influence of peers, inadequate planning of studies, lack of study materials, study environment and the overall study pattern developed by the student, study habits remained neglected field of study. Study habits enable the learner or student to adapt to a particular pattern of learning with a view to either performing very well or very poorly in the tests or examinations in the school.

With the innumerable advantages of good study habits, it has become worrisome that despite the efforts put by teachers in secondary schools and education stakeholders, the academic achievement in Biology in both internal and external examinations have not improved as expected. Poor achievements of students in Biology in school certificate examination have also affected students who have the desire to study science related courses. Most secondary school students have degenerated in their academic achievement due to poor study habits. Research has shown that poor study habits have direct link to

poor academic achievement. Could it be that the students are encountering problems due to their study habits? The question is how do study study habits predict academic achievement of secondary school students in Biology in Nnewi Education Zone?

Research Questions

1. What is the extent of prediction of academic achievement scores of secondary school students in Biology by study habits in Nnewi Education Zone?
2. To what extent do study habits predict academic achievement of secondary school male and female students in Biology in Nnewi Education Zone?

Hypotheses: Two hypotheses were tested at 0.05 alpha levels.

1. Study habits do not significantly predict secondary school students' academic achievement in Biology in Nnewi Education Zone.
2. Study habits do not significantly predict secondary school male and female students' academic achievement in Biology in Nnewi Education Zone.

Methods

The study employed a correlation research design. The population of the study consisted of 2927 secondary school two (SS 2) students from all the 49 public secondary schools from Nnewi Education Zone of Anambra State. A sample size of 400 SS2 students was used. Multi-stage sampling procedure was used to draw 16 public schools from the zone. The instrument for data collection is Study Habits Questionnaire (SHQ). The SS2 students' first term result in Biology for 2023/2024 session represent their achievement scores in Biology. The instrument was validated by three experts from The Departments of Science Education and Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was determined using Cronbach alpha, with coefficients of 0.81 indicating satisfactory internal consistency. Data collection involved the direct administration of the copies of the

questionnaire to respondents by the researcher and four research assistants who are experienced secondary school Biology teachers. The collected data were analyzed using Ordinary Least Square regression analysis in the Statistical Package for Social Sciences (SPSS) version 26. Simple and multiple regression analyses were employed for analyses of data collected. Decision rule for the research question is that Adjusted R^2 was used to evaluate the strength of relationship and the contribution of the joint variables (study skills and study habits) to students' academic achievement. To determine the significance of the relationship in hypotheses testing, the decision rule was that: the calculated ANOVA p-value was compared with the stipulated level of significance (0.05) and the decision rule taken as follows: If the p-value$\leq$0.05, reject H_o, If the p-value $\geq$ 0.05, do not reject H_o

Results

Table 1: Linear regression analysis on the predictive value of study habits on academic achievement of secondary school students in Biology in Nnewi Education Zone.

Variable	R	R^2	R^2 Changed	B	Beta	%var. Added
Study habits	0.079	0.006	0.006	-0.038	-0.079	0.6

Table 1 shows that there is a low positive linear relationship between study habits and academic achievement of secondary school students in Biology in Nnewi Education Zone (r=0.079). Study habits have a R-squared change score of 0.006, which shows that study habits have 0.6 percent predictive power on academic achievement of secondary school students in Biology in Nnewi Education Zone.

Table 2: Linear regression analysis on the predictive value of study habits on academic achievement of male and female secondary school students in Biology in Nnewi Education Zone

Variable		R	R^2	R^2 Changed	B	Beta	% var. Added
Study habits	Male	0.665	0.442	0.442	0.001	0.002	44.2
	Female	0.188	0.035	0.035	-0.091	-0.198	3.5

Table 2 reveals that, there is a moderate positive linear relationship between study habits on academic achievement of male secondary school students (r=0.665), while a low positive linear relationship between study habits on academic achievement of female

secondary school students in Biology in Nnewi Education Zone (r=0.188). Study habits have a R-squared change score of 0.442 for male secondary school students and 0.035 for female, which shows that study habits have 44.2 percent predictive power on academic achievement of male secondary school students, and 3.5 percent predictive power on academic achievement of male secondary school students in Biology in Nnewi Education Zone.

Table 3: Multiple regression analysis on the significant prediction of study habits on secondary school students' academic achievement in Biology in Nnewi Education Zone.

Variable	R	R^2	R^2 Changed	B	Beta	% var. added	df	Cal. F	Pvalue	Remark
Study habits	0.079	0.006	0.006	-0.038	-0.079	0.6	398	2.474	.017	Sig.

S=significant

The result presented in Table 3 reveals the regression analysis summary on the significant prediction of study habits on secondary school students' academic achievement in Biology in Nnewi Education Zone. It revealed that at 0.05 alpha level, with 1df numerator, 398df denominator, the calculated F2.474 and a P-value of 0.017, which is less than 0.05, the hypothesis is accepted. Hence, study habits significantly predict secondary school students' academic achievement in Biology in Nnewi Education Zone.

Table 4: Multiple regression analysis on the significant prediction of study habits on male and female secondary school students' academic achievement in Biology in Nnewi Education Zone.

Variable		R	R^2	R^2 Changed	B	BETA	% var. added	df	Cal. F	Pvalue	Remark
Study Habits	Male	0.665	0.442	0.442	0.001	0.002	44.2	398	0.001	.979	NS
	Female	0.188	0.035	0.035	-0.091	-0.198	3.5		5.579	.019	Sig.

NS=not significant
S=Significant

Table 4, shows the regression analysis summary on the significant prediction of study habits on male and female secondary school students' academic achievement in Biology in Nnewi Education Zone. It revealed that at 0.05 alpha level, with 1df numerator, 398df denominator, the calculated F 0.001 for male secondary school students and F 5.579 for female secondary school students a Pvalue of 0.979 for male and 0.019 for female, this indicates that study habits does not significantly predict male secondary school students' academic achievement, but study habits is a significant prediction of female secondary school students' academic achievement in Biology in Nnewi Education Zone.

Discussion of Findings

This study found that there is a very low positive linear relationship between study skills and academic achievement of secondary school students in Biology in Nnewi Education Zone. More so, is a very low positive linear relationship between study skills on academic achievement of male and female secondary school students in Biology in Nnewi Education Zone. This aligns with the study of Ajai, Shiaki and Bulus (2020) which stated that the secondary school science students in the Jalingo metropolis have poor study habits and weak academic achievement. More so, the finding is in agreement with the findings of Hafiz (2012) who found that females have better study habits than the male, though, the academic achievements of males is better than the females. This study conforms with the finding of Ajai, Shiaki and Bulus (2020) which revealed among others that the secondary school science students have poor study habits and weak academic achievement.

Similarly, study habits significantly predict secondary school students' academic achievement in Biology in Nnewi Education Zone. This finding conforms with the study of Abisola and Kudirat (2017) which found that there is significance relationship between

note taking, students' use of library, time allocation for study and students' academic achievement in mathematics. In the same vein, study habits do not significantly predict male secondary school students' academic achievement, but study habits are a significant prediction of female secondary school students' academic achievement in Biology in Nnewi Education Zone. This conforms with Tambaya, Yunusa and Matazu (2016), who reported that there were no significant differences in the achievement of male and female students in Biology, Chemistry and Physics. The study further conforms with the findings of Taiye (2021) which reported that there is significant difference in the mean achievement of secondary school students in Biology based on gender.

Counselling Implications for Skill Development in Teacher Education

The transition from childhood to adulthood is a difficult one, even for the most balanced child. Apart from the influence of the family, the other major influence on the young person's life is the school and the school environment. The most that other influences can attempt to do is to help each young person to cope with the changes and wrought associate with adolescence, to develop a sense of responsibility and to make definite and considerable personal decisions particularly in terms of education.

The teaching profession in Nigeria has several problems which range from school indiscipline, subject of incompetence of teacher in teaching to the decline quality in teacher training. In Nigeria, the teaching profession is perceived as one of the poorest jobs, hence, a few learners come to this profession. There is shortage of competent teachers in new areas along with poor quality of teachers. The implication is that teacher education in Nigeria needs guidance services.

Guidance is applicable to all aspects of human life i.e., physical, mental, vital, emotional and spiritual and in all stages of development from infancy to adulthood. The main objective of guidance therefore, is to help individual to utilize the basic

potentialities to the maximum for adequate adjustment in the environment. Obviously, guidance lays emphasis on individual and his all-round development as a person rather than his intellectual or vocational training alone. The essence is to help the individual to be functional part of his or her group and enhance the individual's contributions to the group's outputs. In order to promote the maximum outputs by each individual and by the group as a whole, the teacher with guidance point of view tries to know each student, his or her abilities, attitudes and motives which are very necessary for the student to effectively develop his or her skills.

The aims of guidance and counseling service in schools is to assist the student in fulfilling his/her basic physiological needs, understanding themselves and developing associations with peers, balancing between permissiveness and controls in the school setting, realizing successful achievement, and providing opportunities to gain independence. The purpose of guidance and counselling therefore, is to provide emphasis and strength to educational programmes and skill development in particular.

Guidance and counselling is an important educational tool in shaping the orientation in a child from negative ideas planted in the child by his/her peers and refocusing the mind of the child on needed life skills. Hence the need school for the counsellor to assist the students in moulding their future through counselling therapy. The school counsellor is a role model and highly respected by students. The counsellors by their training are expected to be friendly with the students, listen to their complains, short comings and proffer guidance to them in the course of moulding the students in the right parts to take in their life pursuit. It is in realization of the above that all educational services which can promote teaching and learning in schools are given prominent attention by educational planners.

Counselling services are among the school educational services for skill development. It is believed that guidance and counselling services in school shall guide students to develop necessary skills, assess and improve educational programmes; enhance teaching and improve the competence of the teacher and reduce cost for the children.

Conclusion

Based on the findings of this study, it was concluded that a very low positive linear relationship existed between study habits and academic achievement of secondary school students in Biology in Nnewi Education Zone. This implies that study habit used by SS2 students affect their achievement in Biology in Nnewi Education Zone irrespective of gender. Guidance and counselling services are therefore needed for skills development of the students.

Recommendations

Based on the findings of the study, it was recommended that;

1. Group guidance should be organized in schools by professional counsellors in order to create awareness on how students can develop effective study habits which could lead to good academic achievement in Biology and a functional school library should be mounted in all the secondary schools in the state.
2. Teachers, parents, guardians and the school management should collaboratively guide students on how to develop good study habits.
3. Enhancing students' study habits are relevant, especially in note-taking, reading ability, and health, thus improving their academic achievement.
4. Students should be provided with support by school administrators to ensure the development of effective study habits as they go through different levels of study. This can help to improve their learning and academic achievement in Biology.

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