

## Study Habits and Academic Performance of Biology Students Amid Blended Learning Experience

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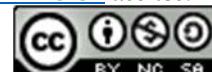
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### ABSTRACT

*The prominence gained by blended learning educational approach has led to its rapid adoption within educational setting with several scholars and studies establishing the significance of blended learning approach to quality academic performance. The current study delves into the influence of blended learning on study habits and academic performance of biology student in Abeokuta South Local Government Area, Ogun state of Nigeria. To achieve the objectives of the study, 250 respondents were sampled. The selection of students aligns with the descriptive research design of the study as the students were selected from 10 senior secondary Schools in the study Area. The data collected were summarized into tables and analyzed using descriptive statistics while Pearson Moment correlation coefficient, and a linear regression at 0.05 level of significance were utilized to test the hypothesis of the study. The results of the study indicate a 65.8% variance in students' performance in Biology amidst blended learning with the improvement showcasing the extent at which study habit improves student academic performance ( $F (1, 248) = 19.46, p = 0.001$ ). No significance difference was found to exist between gender in terms of their study habit ( $t (248) = 1.819$ , at  $P > 0.05$ ). A significant difference was observed between the study habit of Students from Private and Public secondary schools  $t (248) = 4.131$ , at  $P < 0.05$ . We recommend that educators and policymakers should work together in creating study habits and academic performance. a supportive learning environment, like blended learning approach which would help improve students*

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**1. INTRODUCTION**

The progress of any nation largely depends on the quality of its educational system. Over time, education has continuously evolved to keep

pace with the demands of a changing world. In recent years, there has been a significant rise in the adoption of blended learning, particularly in secondary schools. This approach, also known as hybrid learning, combines traditional face-to-face instruction with online education (López-Pellisa et al., 2021; Lv and Li, 2024; Gudoniene et al., 2025). Singh (2019) defines blended learning as the strategic integration of technology with various learning styles to equip students with essential skills effectively. By incorporating diverse teaching methods, strategies, and media, this approach aims to achieve educational goals and improve students' performance (Onipede et al., 2023). Ibenegbu et al. (2020) highlight benefits of blended learning to include enhanced flexibility, increased engagement, enhanced retention, and cost efficiency. However, its success depends heavily on how well students adapt their study habits to this new environment (Islam et al., 2022). Study habits are foundational to academic success, automating routines and enabling learners to focus on complex tasks (Adejumo, 2018). They shape a student's ability to manage time effectively, retain information, and excel academically (Jafari et al., 2019).

As noted by Angkarini (2021), the shift from traditional face-to-face classes to blended learning necessitates adjustments in study habits, as students must navigate increased independence and responsibility in their educational journey. Students are faced with the reality of distraction that accompanies the enhance use of digitalization (Osifo, 2019). Therefore, deliberate effort and focus is expected to be inputted by students into their academics bearing in mind that positive academic performance is a function of student ability to schedule their time, make appropriate study time, develop a positive habit of staying focus, taking note of key point, meditation on what is learnt and finally, the application of learnt concept (Rezaie-Looyeh et al., 2017). Teachers and students play essential roles in fostering effective study habits within blended learning environments, ensuring that academic goals are achieved (Islam et al., 2022; Nwanla, 2024). Continuous support, communication and proactive approach to learning can contribute to improved academic outcome in Biology (Nwanla, 2024). Teachers are expected to aid the development of a reading habit and culture among student as these habits would not only improve their academic performance but will also translate to the improvement of other spheres of the student personality development with the importance of quality reading habit more pronounce within a blended learning environment.

Several studies have focused on the significance of blended learning on students' academic performance without considering the role of study habit within a blended learning environment on the success of blended learning as an academic approach. Therefore, the current study aims to investigate the influence of blended learning on students' study habits and academic performance in Biology. The study was guided by the following research objectives are to determine the extent at which secondary school student devote their time to study, to access biology student performance academically within blended learning environment and to determine the extent at which academic performance of biology students is influenced positively from quality study habits within a blended learning environment.

### **Theoretical framework**

This study's theoretical framework is aimed at establishing a foundation for examining the link between study habits and academic performance within a blended learning is situated within the broader context of modern education, which increasingly integrates traditional and digital pedagogical strategies. To provide a robust theoretical foundation, this framework draws on key pedagogical theories relevant to blended learning, specifically Social Constructivism Theory and Active Learning Theory. These theories emphasize the dynamic interaction between learners, their environment, and the strategies they use to engage and achieve academic success.

### *Social Constructivism Theory*

Social constructivism, rooted in the work of Lev Vygotsky (1978), posits that learning is a socially mediated process where knowledge is constructed through interaction with others and the environment. In the context of blended learning, this theory is particularly relevant as it highlights the importance of collaboration and active engagement in both physical and virtual spaces. Blended learning environments provide a platform for learners to engage in synchronous and asynchronous discussions, group projects, and peer-to-peer interactions, which are essential for constructing knowledge. In the case of biology students, the use of collaborative tools such as discussion forums, virtual labs, and group-based problem-solving activities aligns with the social constructivist perspective. These tools not only facilitate knowledge sharing but also help students refine their understanding of complex biological concepts through interaction and feedback. Furthermore, Vygotsky's concept of the Zone of Proximal Development (ZPD) is highly applicable in blended learning. Zone of proximal development is defined as "the difference between the developmental level of the individual at that moment defined by their independent problem-solving skills and their potential developmental level to be reached as a result of adult guidance or their collaboration with their more advanced peers (Vygotsky, 1978 as cited in Gökçe, 2020). Teachers can scaffold students' learning experiences by providing just enough guidance to help them progress through challenging tasks, such as conducting experiments or analyzing biological data. The blend of online resources and face-to-face support enables students to bridge the gap between their current knowledge and their potential development.

### *Active Learning Theory*

Active learning theory emphasizes the importance of student-centered learning, where learners actively participate in the educational process rather than passively receiving information. This theory is particularly significant in the context of modern education and blended learning, as it encourages students to take responsibility for their learning through activities such as problem-solving, critical thinking, and hands-on experiences. For biology students, active learning can take various forms, such as conducting virtual laboratory experiments, engaging in fieldwork, participating in simulations, or solving real-life biological problems. The blended learning model supports active learning by providing diverse tools and resources, such as video lectures, interactive simulations, and online quizzes, which allow students to engage with content at their own pace. Moreover, active learning theory aligns with the constructivist idea that learning is most effective when students are actively involved in creating their understanding. For example, biology students analyzing case studies on ecological issues or conducting experiments to test hypotheses actively construct their knowledge, leading to deeper comprehension and improved academic performance.

### *Integration of Social Constructivism and Active Learning Theories in the Context of Blended Learning*

The combination of social constructivism and active learning theories provides a strong theoretical foundation for examining the study habits and academic performance of biology students amidst a blended learning environment. Blended learning, by its nature, fosters a student-centered approach where learners are encouraged to take an active role in their education while benefiting from collaboration and support. The interplay between these theories emphasizes the importance of both individual engagement and social interaction in achieving academic success.

### *Social Constructivism and Study Habits*

Study habits such as participating in group discussions, seeking peer assistance, and utilizing collaborative tools are grounded in the principles of social constructivism. These habits promote both academic and social growth. Mwangi (2023) asserts that effective study skills are key to achieving academic goals efficiently. Strong study habits not only enhance learning and retention but also build confidence, self-esteem, and competence. By improving time management and maintaining focus, students can optimize their study efforts. Similarly, Burns and Sinfield (2022) emphasize that well-developed study skills enable learners to manage their time effectively and balance academic and personal responsibilities. This framework supports the study's objective of examining how study habits influence biology

students' academic performance in a blended learning environment. It reinforces that effective study practices, shaped by motivational and environmental factors, play a critical role in educational success.

#### *Active Learning and Academic Performance*

Active engagement with content through practical applications, self-directed learning, and frequent assessments enhances academic performance. Students who adopt active learning strategies are more likely to retain information and apply it effectively. By incorporating these theories, this study aligns with the current pedagogical shift towards 21st-century learning frameworks, which prioritize critical thinking, collaboration, and adaptability. Blended learning, supported by these theories, provides a flexible and interactive educational environment that accommodates diverse learning preferences and fosters academic success.

## **2. METHODS**

The study adopted a descriptive survey design to investigate the relationship between quality study habits and the academic performance of biology students in a blended learning environment. This approach allowed for the systematic examination of existing conditions and the collection of data to analyze relationships between variables during the study period. The research focused on senior secondary school biology students in the Abeokuta South Local Government Area of Ogun State. The study included both public and private schools where a blended learning approach was in operation. A multistage sampling method was used to select participants. First, stratified sampling was applied to select 10 schools from a total of 67 secondary schools in the study area. Then, within each selected school, 20 biology students were randomly chosen, resulting in an initial sample size of 300 students. After excluding incomplete responses, the final sample size consisted of 250 participants.

The research instrument, titled "Students Study Habits Rating Scale," was designed by the researcher to collect relevant data. The instrument for data collection (questionnaire) comprises of two sections: Section A contains the demographic information of the participants, while Section B focused on their study habits and academic performance in biology within a blended learning environment. The scale was structured as a four-point Likert-type rating, ranging from Strongly Agree (SA) to Strongly Disagree (SD). Additionally, students' biology examination results from a recently concluded term served as a measure of academic performance. To ensure validity, the instrument underwent face and content validation by educational experts. The researcher directly administered the questionnaires to participants, with the assistance of vice principals from the selected schools, ensuring that only completed questionnaires were included in the analysis. Anonymity was maintained throughout the study to protect participants' identities. The statistical software "Statistical Package for Social Sciences (SPSS)" was used to analyse the data obtained. Data were summarized using descriptive statistics while inferential statistics (Pearson Product Moment Correlation and Independent Sample t-tests) was adopted for testing of hypothesis at a 0.05 significance level.

#### ***Hypotheses***

- H<sub>01</sub>***: Gender does not have a significant difference in the study habits of biology students amidst a blended learning experience
- H<sub>02</sub>***: There is no significant difference in study habits of students from public and private senior secondary schools amidst a blended learning experience
- H<sub>03</sub>***: There is no significant relationship between study habits and performance in Biology of senior Secondary students amidst a blended learning approach

## **3. RESULTS AND DISCUSSION**

**Table 1: Respondents Distribution by Gender**

<b>School Type</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Male	123	49.2
Female	127	50.8
Total	250	100.0

The table above shows the students' distribution by gender. Out of the total of 250 respondent, the female respondents had slightly more frequency with 127 respondents

representing 50.8% of the total sample size while the remaining 123 (49.2%) are male. This implies that female students constitute the largest proportion of the study but the differences in their number is not adequate to constitute any form of gender biases.

**Table 2. Respondents' School Type**

School Type	Frequency	Percentage (%)
Private	143	57.2
Public	107	42.8
<b>Total</b>	<b>250</b>	<b>100.0</b>

Table 2 above shows the respondents' distribution based on the school category they attend. The majority of the students (143 respondents) involve in the study attended private school with the prior mentioned frequency amounting to 57.2% of the total respondents involved in the survey while 107 (42.8%) are from public schools.

**Table 3. Duration of time devoted to daily study**

Time duration	Respondents	Percentage (%)
2-3 hours	47	18.8
1-2 hours	164	65.6
Less than 1 hour	39	15.6
<b>Total</b>	<b>250</b>	<b>100</b>

Table 3 reveals the duration of time the respondent devotes towards their study on a daily basis. A total of 164 respondents indicated that the devote between 1 and 2 hours of time daily to study while 39 students indicated that the devout less than 1 hours of their time to studying on a daily basis.

**Table 4. Percentage distribution of Students' Average Academic Grades**

Scores Obtain	Freq. (%)	Grades
70 & Above	64(25.6%)	A(Distinction)
60-69	90(36.0%)	B(Good)
50-59	64(25.6%)	C(Credit)
40-49	19(7.6%)	D (Pass)
39 & Below	13(5.2%)	F(Fail)
Mean	47.67	
Std.D	6.205	

Table 4 reveals the academic achievement of student in biology based on their individual school assessment. The table implies that a majority of the students were above the average grade of credit with a cumulative percentage of 87.2%.

**Table 5. Regression summary and ANOVA of Study Habit and Students' Academic Performance Amidst Blended Learning Experience**

**Multiple R = .528<sup>a</sup>, R. Square = .670 Adjusted R Square = .658 Standard Error = 4.199**

**Analysis of Variance**

Source of Variance	SS	Df	MS	F	Sig.	Remark
<b>Regression</b>	823.418	1	823.418			
<b>Residual</b>	10490.180	248	42.299	19.46	.000 <sup>b</sup>	Sign. (P<0.05)
<b>Total</b>	11313.598	249				

Table 5 shows students' study habits and academic performance in Biology amidst blended learning. The table reveals multiple correlation coefficients (R) of the combined independent variable with students' performance in Biology amidst blended learning in secondary school are 0.588. The adjusted R<sup>2</sup>, which estimates the variance accounted for in the combined independent variable to the dependent variable measure is 0.658 which translates to 65.8% variance in students' performance in Biology amidst blended learning in the study area, was accounted for by the independent variable (students' study habits). The table, in addition, shows the regression equation (F<sub>(1, 248)</sub> = 19.46, p = 0.001).

**Hypothesis One:** Gender does not have a significant difference in the study habits of biology students amidst a blended learning experience

**Table 6. T-test showing the difference between male and female students study habits amidst a blended learning experience**

Gender	N	Mean	Std. Deviation	Df	t	Sig	Decision
Male	124	46.95	6.538	248	1.819	.070	Not Sign. (P<0.05)
Female	126	48.37	5.799				

Table 6 above shows the statistical difference in study habit based on gender. From the table above, Gender does not have a significant difference on the study habits of biology students amidst a blended learning,  $t (248) = 1.819$ , at  $P>0.05$  level of significance. Therefore, the null hypothesis was upheld.

**Hypothesis Two:** There is no significant difference in study habits of students from public and private senior secondary schools amidst a blended learning experience

**Table 7. T-test showing the difference between Private and Public School Students' Study Habits amidst Blended Learning Experience**

School Type	N	Mean	Std. Deviation	Df	t	Sig	Decision
Private	143	47.87	6.931	248	4.131	.001	Sign. (P<0.05)
Public	107	44.83	4.053				

Table 7 above shows that a significant difference was found between private and public school students' study habits amidst blended learning,  $t (248) = 4.131$ , at  $P<0.05$  level of significance. Students from private schools had a high level ( $M = 47.87$ ,  $SD = 6.931$ ) of study habits amidst blended learning experience compared to public school students ( $M = 44.83$ ,  $SD = 4.053$ ). Therefore, the alternate hypothesis retained while the null hypothesis rejected.

**Hypothesis Three:** There is no significant relationship between study habits and performance in Biology of senior Secondary students amidst a blended learning approach

**Table 8. Pearson Correlation between Study Habits and Academic Performance in Biology amidst Blended Learning in Secondary School**

Study Habits	Academic Performance	
	Correlational Coefficient	0.701**
Sig.(2-tailed)		0.000
N		250

The above table shows the level of relationship between two variables, students' study habits and their academic performance in biology. With a correlation coefficient is  $r = 0.701$ , it indicates a positive significant relationship between quality study habit and students' academic performance within a blended learning environment. Therefore, the stated null hypothesis was rejected while the alternate hypothesis was upheld.

The findings of this study reveal several important insights into the relationship between study habits and academic performance in biology within a blended learning environment. The majority of students achieved above-average grades in their previous biology assessments, with 87.2% scoring within or above this range. This result highlights a generally positive trend in academic performance, suggesting that the integration of blended learning methods may help students achieve better results. Furthermore, the study revealed that study habits significantly impact students' performance in biology, accounting for 65.8% of the differences in their results. It also revealed that 65.6% of student within blended learning environment devote 1 to 2 hours daily to quality studying. Several other academic scholar's research also emphasize the significance of quality study habit on academic performance. The current study took step in establishing that study habit not only have significant influence on study habit but within a blended learning setting, the role of study habit becomes more prominent bearing in mind that blended learning emphasized an educational model that is tailored towards student centred as such student are encouraged to be more self-engaging in their academic process, thus, placing a huge demand on quality

study habit. The findings contrast with those of Jafari et al. (2019), who reported no such significant relationship between study habit and student's academic performance.

The study further reveals that gender had no significant influence on students' study habit which implies that the duration of time devoted to quality study is not a factor of gender, despite female students exhibiting slightly higher study habits than their male counterpart. The study conducted by Bhan and Gupta (2010) and Singh (2019) also reach similar conclusion as the current study. Their studies indicates that gender had no significant impact on the development of quality study habit, hence, implying that both sex are almost equally responsible for the development of quality study habit. However, contrary view was shared by studies conducted by both Olutola and Dosunmu (2016), which reported higher study habits among female students. Hypothesis two revealed a significant difference in study habits between students in private and public schools, with private school students exhibiting higher levels of study habits in the blended learning context. This result suggests that school type plays a critical role in shaping students' study habits. The result should come as no surprise when the social economic status of student from private school are compared with those from public student. The social-economic status ensures that student in private schools are more equipped in terms of access to online facilities and the level of their digital literacy. Rusticus et al. (2022) reported that better learning environment supported student's learning.

Finally, hypothesis three established a positive and significant relationship between study habits and academic performance in biology to be precise. Students with stronger study habits tend to perform better academically, laying emphasis on the importance of fostering good study practices in a blended learning setting. This finding is consistent with studies by Kaur and Singh, 2020; Walck-Shannon et al. (2021); Abid-Nisar et al. (2023); and Aljaffer et al. (2024), which also highlighted the significant impact of study habits on academic achievement. However, it contrasts with the work of Lalhruiatlhuangi and Lallianzuali (2020), who found no significant relationship between these variables. Overall, these findings underscore the importance of effective study habits in achieving academic success, particularly in the context of blended learning. They give an insight into the need for schools, educators, and parents play a key role in developing consistent and productive study routines that enhance students' ability to engage with and retain academic content.

#### 4. CONCLUSION

The findings of this study showcases how important study habits are in influencing students' performance in biology, especially in a blended learning setting. The results indicate that students with quality study habits tend to achieve higher academic success, reinforcing the need to develop effective learning strategies. While no significant difference was found in the study habits of male and female students, a notable disparity exists between students in public and private schools, with the latter demonstrating more effective study practices. Given the positive correlation between study habits and academic achievement, educators, parents, and policymakers should work together in creating a supportive learning environment, like blended learning approach which would help improve students study habits and academic performance. Schools should integrate structured study skills programs into their curricula, and parents should play an active role in monitoring and guiding students' learning activities. Ultimately, fostering disciplined and adaptable study habits will be instrumental in maximizing the benefits of blended learning and enhancing students' overall academic performance.

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