

## Study Habit Indicators as Predictors of Academic Performance of Chemistry Education Students in Colleges of Education in North West, Nigeria

Akpan, Joseph O., Lawal, Hadiza M., Bawa, Swafiyah  
Department of Chemistry,  
Federal College of Education, Zaria

### ABSTRACT

The aim of this study was to determine the nature and magnitude of relationship among five study habit variables and academic performance as measured by GPAs of colleges of education chemistry students. How significantly important these study habit variables were individually and when jointly taken in the prediction of academic performance (GPA) of the students was also investigated? A total 414 NCEIII students drawn from four Federal Colleges of Education in the North West Geopolitical Zone of Nigeria in the 2021/22 academic session constituted the sample for this study. Two instruments (Study Habit Assessment Questionnaire-SHAQ, and NCEIII 2<sup>nd</sup> Semester Examination Results) were used for data collection and four research questions were stated for the study. The data collected were analysed using Pearson's Product Moment Correlation Coefficient and Standard Multiple Regression Analysis. The results of the study revealed that the study habit variables correlated positively and significantly with one another but failed to do so with performance (GPA) of the students. Also, taken individually and jointly, the study habit variables could not significantly predict the performance of the colleges of education chemistry students although the descending order of importance of these predictor variables was recorded as follows: teacher consultation, concentration during the hours of study, notetaking/reading, assignment/ homework and time management/procedures. While emphasis should still be given to these study habit indicators in the learning process, there is need for further studies to expose other study factors that might statistically and significantly affect the performance (GPAs) of colleges of education chemistry students so as to deploy them in the teaching/learning process to reduce students' dwindling performance in the subject.

### ARTICLE INFO

Article History

Received: December, 2022

Received in revised form: February, 2023

Accepted: March, 2023

Published online: April, 2023

### KEYWORDS

Study habit variables, academic performance (GPA), Chemistry students in Colleges.

### INTRODUCTION

Study habits are learners' coping strategies in the learning process. They are their behavioral attitudes and

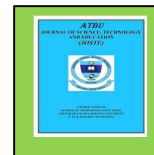
cognitive dispositions towards learning. There are bad as well as good attitudes towards learning. The learners' behavioural and cognitive dispositions

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



that result in ineffective learning are bad study habits whereas those that give rise to effective learning are good study habits. With particular reference to academic performance, good study habits are known to foster effective learning leading to good grades (Marc 2011; Ashish 2013; Ebele & Olufu 2017). In fact, study habits are known to rank highest among the various factors responsible for poor students' academic performance (Onafowokan, Sadiku & Owolabi 2000; Azeez 1989). There is no doubt about the positive effect of study habits on students' academic performance as evident in the studies of Richard, Okpara & Okpara 2000; Onwugbuzie, Slate & Schwartz 2001. From a Pakistani study, Rabia, Mubarak, Tallat and Nasir (2017) noted a significant relationship between study habits and academic performance among Pakistani students. In the Philippines, Floreta and Bushon (2019) reported the same. Saihi and Maiyo (2015) reported a positive relationship of 0.66 between study habits and academic achievement among Indian students. Oroka (2011) in Nigeria found a high and significant correlation of 0.65 between study habits and academic performance of business education students. Also, studies in Nigeria conducted by Anozie (1999), Onafowokan, Sadiku and Owolabi (2000) and Kolo (2006) pointed to five study habit indicators as being responsible for academic success of many students. These are assignment/homework, notetaking/reading, concentration during the hours of study, teacher consultation and study time management/procedures. The findings of these authors stemmed from analysis

of students' responses from how they felt their study process was affected by a number of study habit indicators in a self-reporting questionnaire. Akpan (2013), in a study of the effects of a study habit mediation package on senior secondary chemistry students' achievement and retention of electrolysis concepts in Giwa Education Zone of Kaduna State, Nigeria, however, developed a training manual and ushered students into the very act of using these five study habit indicators in learning chemistry. Findings from the experimental study showed that the academic achievement of the students improved significantly as well as their retention of chemical concepts. This study is positioned on this literature.

#### Statement of the Problem

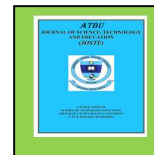
The studies of Anozie (1999), Onofowokan et al (2000) and Kolo (2006) only identified the five study habit indicators necessary for students' academic success on the basis of how the students felt these factors (indicators) among a pool of other factors in a self-reporting questionnaire affected their learning. However, Akpan (2013) in his study involving the actual deployment of these indicators in secondary school chemistry learning reported their significant effect on students' academic achievement and retention in electrolysis concepts of chemistry. What is missing in Akpan's study is how these study habit indicators relate to one another and to academic performance. Also, how might these variables individually and jointly contribute to the overall prediction of academic performance of students especially with regards to colleges of education chemistry students on whom

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



no such study has been investigated from available literature. This study is important as it seeks to fill this missing link.

### **Objectives of the Study**

The study was designed to achieve the following objectives:

1. Determine the nature and magnitude of relationship among the predictor variables (study habit indicators), namely, assignment/homework, study time management/procedures, concentration during the hours of study, teacher consultation and the dependent (predicted) variable- academic performance as measured by the GPAs of colleges of education chemistry students.
2. Find out how much these predictor variables uniquely and jointly contribute to the overall relationship/prediction of the academic performance (GPA) of colleges of education chemistry students.

### **Research Questions**

On the basis of the problem and the objectives of the study, the following research questions were stated:

1. What is the relationship among the five study habit indicators (ie assignment/homework, notetaking/reading, teacher consultation, concentration during the hours of study, study time management/procedures and academic performance of colleges of education chemistry students?
2. What is the relative unique contribution of each of these

five study habit indicators in predicting the colleges of education chemistry students' academic performance (GPA)?

3. What is the joint effect of all these study habit indicators on colleges of education chemistry students' academic performance?
4. How significantly important are these five study habit variables in predicting the academic performance of colleges of education chemistry students?

### **METHODOLOGY**

This study is aimed at determining the nature and magnitude of relationships among the five study habit indicators and academic performance as measured by GPA of colleges of education chemistry students. Since the variables are not easily manipulatable, the ex post facto research design was considered appropriate for the study.

A total of 414 NCEIII chemistry students drawn from a population of 2,000 chemistry students in four Federal Colleges of Education in the North West Geopolitical Zone of Nigeria constituted the sample size for this study. These were all final year students in the 2021/2022 academic session. All the Colleges were purposively selected for want of large of participants while the students were randomly chosen in every College. The choice of NCEIII students was a deliberate one on grounds that after many years of learning they might have developed relevant and useful coping strategies/ approaches to succeed in learning. Moreover, as they were in their final year of study and

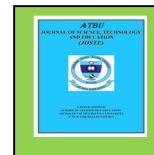
---

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



about to graduate, it was assumed that they would not play with their studies.

Two instruments were used for this study, viz, the adapted study Habit Assessment Questionnaire (SHAQ) of Oroka (2011) and 2<sup>nd</sup> Semester Examination Results of NCEIII chemistry students (ExamNCEIII) in the sampled Colleges. The SHAQ of Oroka adapted was a self-reporting questionnaire. It was designed to elicit responses from students regarding the extent to which they felt they had problems about their studies in the areas of assignment/homework, reading, listening and note-taking, concentration, teacher consultation and time scheduling. The response format had the four point Likert type of scale of strongly agree, SA (4points), agree, A (3 points), disagree, D (2points) and strongly disagree, SD (1point). The items were drawn from Bakare's (1977) Study Habit Inventory and Cook Counselling Centre (2000) study skills checklist. The content and face validity of SHAQ as reported by Oroka (2011) was established by a team of five experts in education and science and technology education from universities while its reliability index by test-retest method was 0.75. On the basis of these, the instrument was adapted for this study. The adaptations to the instrument included sorting out and subdividing its 20 scattered items into five sections representing five study habit indicators of successful students, i.e, assignment/ homework with the abbreviation (ASSH), reading /notetaking (NOTAR), concentration during the hours of study (CONH), teacher consultation(TCONS) and study time management /procedures(TMGTP). A balance was

also struck by equalizing items in the various sections (six items per section) thus increasing the number of items in SHAQ from 20 to 30. With these adaptations, SHAQ was subjected to revalidation and reliability testing. Three experts (Ph.D holders) in science education from Federal College of Education, Zaria, validated the instrument. The reliability index of the instrument by test-retest approach was found to be 0.70 while its internal consistency reliability estimate by Cronbach's alpha was 0.95. The 414 copies of SHAQ were administered to the students in all the colleges by the researchers with the aid of research assistants at the beginning of the 2<sup>nd</sup> semester of 2021/2022 academic session during the normal college working hours. All the administered copies were retrieved, processed manually and the data stored in the computer for analysis.

NCE III examination questions and marking schemes are usually moderated by seasoned and qualified external examiners. Therefore, the results of such examinations in all the Colleges were judged to be of high standard for use in this study. The NCEIII 2<sup>nd</sup> semester chemistry courses whose examination raw scores were transformed to GPAs by various colleges for use in the study were CHE 321(Chemical Kinetics-2credit units), CHE322 (Chemistry of Alkanols, Carbonyl Compounds & Monocarboxylic Acids-2credit units), CHE323 (Natural Products & Amines-1credit unit), CHE324 (Chemical Equilibrium & Thermodynamics-2credit units) and CHE325 (Chemistry Practicals V-1credit unit). The computed 2<sup>nd</sup> semester examination GPAs of these courses were collected at the end of the

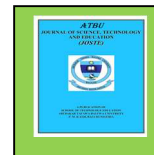
---

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



2nd semester/ sessional examinations from the examination offices of the sampled colleges by the researchers/ assistants who made personal visits to these colleges. Care was taken to ensure that only those students who responded to the administered SHAQ ab initio had their examination GPAs used for the study. The GPAs collected were equally entered into the computer for data analysis.

The data collected for the study were processed using SPSS version 26. Pearson's Product Moment Correlation

Coefficient was used to obtain the inter-correlations among the independent and dependent variables while standard multiple regression analysis was employed to determine the unique and joint contributions of the predictor variables to the predicted variable. Standardized beta coefficients were used to assess the significant importance or otherwise of the independent variables to the prediction of academic performance (GPA). The analysis and the results are presented in Tables 1-8 as follows.

**Table 1:** Inter-correlations among study habit variables and performance (GPA)

	ASSH	TMGTP	NOTAR	CONHS	TCONS	GPA
ASSH	1.00					
TMGTP	.295*	1.00				
NOTAR	.241*	.424*	1.00			
CONHS	.165*	.374*	.527*	1.00		
TCONS	.344*	.433*	.406*	.399*	1.00	
GPA	.043ns	.033ns	.053ns	.004ns	.088ns	1.00

\*Significant @ 0.01 level (two tailed), ns = not significant.

From Table 1, the pattern of relationship shows that all the independent variables correlated positively and significantly with one

another. However, none of the independent variables correlated with performance as measured by students' GPAs.

**Table 2:** Using assignment/homework (ASSH) to predict performance (GPA).

Analysis of Variance					
Source of Variation	SS	Df	MS	F-ratio	Sig
Regression	1.244	1	1.244	0.751	0.387ns
Residual	681.086	412	1.657		
Total	682.33	413			

ns = not significant @ 0.05 confidence level

From Table 2, it is seen that the total variance in performance (GPA)

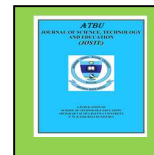
accounted for by assignment/homework is 0.18% which

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



is very low and also statistically not significant. Therefore assignment/homework is not an

important predictor of performance (GPA).

**Table 3:** Predicting Performance (GPA) from time Management/procedures (TMGTP)

Analysis of Variance					
Source of Variation	SS	Df	MS	F-ratio	Sig
Regression	0.758	1	0.758	0.458	0.499ns
Residual	681.594	412	1.654		
Total	682.352	413			

ns = not significant @ 0.05 confidence level

Table3 shows that TMGTP accounted for 0.12% of the variance in performance (GPA). This is also very low and not significant at 0.05

probability level. Study time management/procedures is not an important predictor of performance (GPA).

**Table 4:** Using note-taking/reading (NOTAR) to predict performance (GPA)

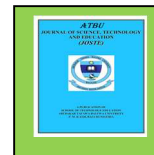
Analysis of Variance					
Source of Variation	SS	Df	MS	F-ratio	Sig
Regression	1.950	1	1.950	1.181	0.278ns
Residual	680.40	412	1.651		
Total	682.35	413			

ns = not significant @ 0.05 confidence level

From Table 4, the total variance in performance as expressed by GPA accounted for by note-taking/reading (NOTAR) is 0.30%. This is also very low

and statistically not significant. Note-taking/reading is therefore not a good predictor of GPA in Chemistry.

Corresponding author: Akpan Joseph, O.  
 ✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)  
 Department of Chemistry, Federal College of Education, Zaria.  
 © 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



**Table 5:** Using concentration during the hours of study (CONHS) to predict performance (GPA)

Multiple R = 0.004  
R square = 0.000016  
Adjusted R square = -0.002  
Standard Error = 1.28692

Analysis of Variance					
Source of Variation	SS	df	MS	F-ratio	Sig
Regression	0.11	1	0.11	0.007	0.935ns
Residual	682.34	412	1.650		
Total	682.45	413			

ns = not significant @ 0.05 confidence level

The total variance in performance (GPA) accounted for by concentration during the hours of study is 0.00%. This shows that concentration during the hours of study is not a good predictor of GPA.

**Table 6:** Using teacher consultation (TCONS) to predict performance (GPA)

Multiple R = 0.088  
R square = 0.0077  
Adjusted R square = -0.005  
Standard Error = 1.2819

Analysis of Variance					
Source of Variation	SS	df	MS	F-ratio	Sig
Regression	5.310	1	5.310	3.231	0.073ns
Residual	677.042	412	1.643		
Total	682.35	413			

ns = not significant @ 0.05 confidence level

Teacher consultation accounted for 0.77% of the total variance in performance (GPA). This is low and also statistically not significant. This means teacher consultation cannot predict the academic performance (GPA) of colleges of education chemistry students.

**Table 7:** Joint effect of ASSH, TMGTP, NOTAR, CONHS & TCONS on performance (GPA)

Multiple R = 0.102  
R square = 0.0104  
Adjusted R square = -0.002  
Standard Error = 1.28798

Analysis of Variance					
Source of Variation	SS	Df	MS	F-ratio	Sig
Regression	7.159	5	1.432	0.863	0.506ns
Residual	675.171	408	1.659		
Total	682.33	413			

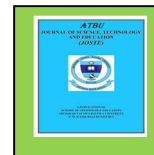
ns = not significant @ 0.05 confidence level.

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved



From Table7, the total variance accounted for by the five study habit variables taken together is 1.04%. This is also not statistically significant. The individual % contributions by all the predictor variables add up to 1.37% which is 0.33% more than 1.04%.

Therefore, in order to further determine the relative significance and importance of the study habit variables in the prediction of performance, beta weights (standardized regression coefficients) were employed (Table 8).

**Table 8:** Relative importance & statistical significance of predictor variables on performance (GPA)

Variables	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig	Remarks
	B-value	Standard Error				
TMGTP	0.022	0.149	0.009	0.146	0.884	NS
ASSH	0.035	0.157	-0.012	-0.223	0.824	NS
NOTAR	-0.100	0.133	-0.046	-0.753	0.452	NS
CONHS	0.118	0.128	0.056	0.922	0.357	NS
TCONS	-0.23	0.158	-0.091	-1.521	0.129	NS

NS= Not significant at 0.05 confidence level.

The independent variables here are also all statistically not significant in the prediction of academic performance (GPA). However, the descending order of relative importance of the variables as seen in this Table 8 is arranged as follows:

- i. Teachers consultation (TCONS)
- ii. Concentration during the hours of study (CONHS)
- iii. Notes taking / reading (NOTAR)
- iv. Assignment / homework (ASSH)
- v. Study time management / procedure (TMGTP)

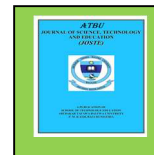
**DISCUSSION**

From the findings of this study, it is evident that the five study habit variables (i.e ASSH, TMGTP, NOTAR, CONHS, TCONS) believed to be

responsible for academic success of students correlated positively and significantly with one another ( $p < 0.01$ ). However, the variables did not correlate at all with academic performance (GPA) of colleges of education chemistry students used in this study (Table 1). Multiple regression analysis run to evaluate the relative contribution of each of the independent variables to the prediction of academic performance as expressed by students' GPAs shows that assignment/homework contributed 0.18% (Table 2), study time management/ procedures gave 0.12% (Table 3), note-taking/ reading made up 0.30% (Table 4), concentration during the hours of study contributed nothing (0.00% Table 5) while teacher

Corresponding author: Akpan Joseph, O.  
 ✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)  
 Department of Chemistry, Federal College of Education, Zaria.  
 © 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved





consultation gave 0.77% (Table 6). The order of importance of the variables in the prediction of performance was also established. However, all their contributions to the prediction were low and statistically not significant ( $p < 0.05$ ). The total variance accounted for by the combined effect of all the independent variables was 1.04%. This was also not statistically significant ( $p < 0.05$ ). Therefore, the independent variables could not statistically predict the performance (GPA) of the colleges of education chemistry students. The findings of this study are contrary to the findings of Floreta and Bushon (2019), Rabia *et al* (2017, Akpan (2013), Oroka, 2011, Onwughbuze *et al.*, (2011), Richard *et al.*, (2000) all of whom reported positive and significant relationship between study habits and academic performance. With regards to specific predictor variables, the present study lends credence to the study of Macnaul *et al* (2021) that assignment has no statistically significant effect on students' academic outcome. It differs from the findings of studies by Cyril (2014) on time management and Ozcakmak (2019) on notetaking/reading who both reported significant impact of these study habit variables on academic performance.

## CONCLUSION AND RECOMMENDATIONS

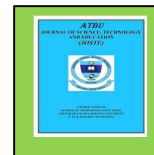
The present study made an attempt to identify the nature and magnitude of relationship among five study habit variables that might be relevant to academic performance (GPA) of colleges of education chemistry students. Findings of the study revealed that:

- i. The five study habit variables (i. e. assignments/homework, study time management/procedures, notetaking/reading, concentration during the hours of study and teacher consultation) correlated positively and significantly with one another but failed to correlate with the students' performance (GPAs).
- ii. The total variance in performance (GPAs) accounted for by individual study habit variables and by the combined effect of all the variables was very low and also not statistically significant.
- iii. Although these study habit variables could not statistically predict the academic performance (GPAs) of the colleges of education chemistry students, their descending order of importance as seen in the study was teacher consultation, concentration during the hours of study, notetaking/reading, assignment/homework and study time management/ procedures (Table 8).

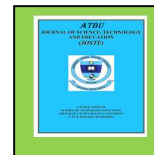
It is recommended that while emphasis should still be given to these study habit variables, more studies should be conducted to corroborate or refute the findings of this study and expose other factors that might statistically and significantly affect the performance (GPAs) of colleges of education chemistry students so as to deploy them in the teaching/learning process to reduce students' dwindling performance in the subject.

## REFERENCES

- Akpan, J. O. (2013). Effects of a study habit meditation package on



- senior secondary chemistry students' achievement and retention of electrolysis concepts in Giwa Education Zone, Kaduna state, Nigeria. Unpublished Ph.D. dissertation, Ahmadu Bello University, Zaria.
- Anozie, F. S. (1999). An investigation into secondary school students' study habit problems in physics. Unpublished B.Sc(Ed) project, Lagos State University.
- Azeez, G. (1989). Study problem behavior of students. Unpublished monograph department of guidance and counseling, University of Ibadan.
- Bakare, C. G. M. (1977). *Study habits inventory manual*. Ibadan. Psycho-educational productions.
- Cook Counselling Centre (2000). *Study skill checklist and study skills inventory*. Virginia Division of students' affairs, Virginia Polytechnic Institute and University.
- Cyril, A. V. (2014). Time management and academic achievement of higher secondary school students. *I-manager's Journal on school educational technology* 10(3),38-42.
- Ebele, U. E. & Olufu, P. A. (2017). Study habit and its impact on secondary school student' academic performance in biology in the Federal Capital Territory, Abujah. *Academic journals* 12 (10), 583 – 588, [http:// www.academicjournal.org/ERR](http://www.academicjournal.org/ERR).
- Floreta, F. T. & Bushon, J. B. (2019). Study habits and achievements of learners with parents working locally and abroad. *Science International* 31 (3), 483 – 488.
- Kolo, I. A. (2006). Metacognitive inclination in the study habit patterns of highly intellectually endowed Nigerian Secondary Students. *International Journal of Research in education* 3 (1), 1-9.
- Macnaul, H., Garcia, R., Cividini-motta, C., & Thacker, I. (2021). Effect of assignment choice on students' academic performance in an online class. *Behaviour Analysis in Practice* 14, 1074-1078.
- Onafowokan B. A. O. (1998). A casual interaction of some learners' characteristic of conception of heat and temperature among integrated science students in Lagos state. Unpublished Ph.D dissertation, university of Ibadan.
- Onafowokan B. A. O. Sadiku S.O & Owolabi, T (2000). Study habit problems of secondary school science student: implication for teachers. Paper proceedings of 41<sup>st</sup> Annual conference of science teachers Association of Nigeria, 384-388.



- Onwuegbuzie, A. J; Slate, J.R. & Schwartz (2001). Role of study skills in graduate level educational research courses. *Journal of Educational Research* 94(4), 238- 248.
- Oroka, V. O. (2011). The influence of study habits and creativity on academic performance of business education Delta State tertiary institution. *International Journal of Modern Perspective OF Development and Society* 1 (2) 17 – 36.
- Ozcakmak, H. (2019). Impact of note-taking during reading and during listening on comprehension. *Educational Research and Reviews* 14 (6), 580-589.
- Rabia, M., Mubarak, N., Tallat, H & Nasir, W (2017). A study on study habits and academic performance of students. *International Journal of Asian Social Science*, 7 (10) 891- 897.
- Richard, E., Okpara, A. O. & Okpara, C. O. (2000). Academic efforts and study habits among students in a macroeconomic course. *Journal of Education* 75 (4), 21 – 29.
- Siahi, E. A. & Maiyo, J. (2015). Study of relationship between study habits and academic achievement of students a case of Spicer Higher Secondary School. *Indian Academic Journal* 7 (7), 134 – 141.

---

Corresponding author: Akpan Joseph, O.

✉ [josephaman2000@gmail.com](mailto:josephaman2000@gmail.com)

Department of Chemistry, Federal College of Education, Zaria.

© 2023. Faculty of Tech. Education, ATBU Bauchi. All rights reserved