Study-Habit as a Predictor of Secondary School Students' Achievement in Chemistry in Anambra State

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Abstract
This study focused on study-habit as predictor of secondary school students' achievement in chemistry in Anambra state. Two research questions guided the study and two hypotheses were tested. The design of the study was correlational survey. The population of the study comprised 22,812 senior secondary school year two chemistry students in Anambra state out of which 2,250 students was involved in the study. The instrument for data collection was Study-Habit Scale validated by experts and which had Cronbach Alpha reliability coefficient of 0.77. The students' achievement was obtained from the schools' chemistry teachers' diary of the schools involved in the study. The analysis of data was done using linear regressions. The findings of the study revealed that study-habit accounted for 9.3% of students' achievement in chemistry. Also, the dimensions of note-taking habit, reading and test preparation habits were the most significant contributors to achievement in chemistry. It was recommended that teachers of chemistry should give students regular assignments and projects that could improve their study-habits as they employ the skills of note taking and reading to accomplished academic tasks and assignments.

Keywords: *study-habit, achievement, chemistry, reading, writing*

Introduction

Chemistry is one of the science subjects that is first introduced to students at the senior secondary level of education. The subject is perceived by students as abstract and difficult. A lot of instructional approaches have been developed through research that are student-centred and which can help to tackle some of the problems encountered in the teaching and learning of chemistry. Despite the depth of research in chemistry instruction and students' achievement, students' achievement in chemistry has continued to remain poor (Chikendu, 2018; Emerhiona, Ajaja, Pius, Nwanze & Izuegbuna, 2018; Nwanze, Chikendu, Konyefa & Nwanze, 2020).The problem of poor achievement in chemistry therefore need to be approached from a different angle by investigating variables relating to students. One of such variables of importance with respect to achievement is study-habit (Uchenna & Edidiong, 2020).

Study-habit is a well-planned and deliberate pattern of study, which has attained a form of consistency on the part of the students towards understanding academic subjects and passing examination (Siahi & Maiyo, 2015). It is a behaviour exhibited on scheduled, regular and planned basis includes such actions as reading, taking notes, holding study groups which the students perform regularly and habitually in order to accomplish the task of learning

(Alex, 2011 & Adeninyi, 2011). A good study-habit involves good study time management skills, study environment, test preparation habits, note-taking, reading and writing habits.

Time management especially study time is the mark of a student who studies well. When students adopt good study-habit, they buy out a dedicated schedule and un-interrupted time to apply themselves to the task of learning (Mahwish, Naima, Hira & Wajiha, 2017). Science subjects like chemistry demands a lot of effort from the students if they must pass well. Students who cannot manage their study time so that they can have ample time to study may not achieve more. A good study time must be spent also on a good study environment.

The environment where a student studies is key factor in the level of understanding and learning the students may acquire from the learning materials (Ogbodo, 2010). Environments that are full of distraction may easy engage the students' thought on things other than the learning material and waste their study time. To be good for a study, an environment must be siren, be equipped with study materials and should be able to incite students to learn given the ease of its accessibility (Bhan & gupta, 2010). Students who learn in an environment designated for study like the library may develop good test preparation habits. There are good options for study spaces in all the libraries across schools and outside schools.

Students who prepare for tests or examinations are often faced with some level of test anxiety which fades as students' confide rise from the much they could study. When a student adequate prepare for test, they come to the examination hall with expectations of attaining increased achievement (Lawrence, 2014). The test preparation motivate students to put up their skills of note-taking, reading and writing habits. Studies have shown that students who take note of important points when studying are more likely to remember them and apply them when necessary (Silverrajoo & Hassan, 2018; Tranhen, Jalil, Mohammadali & Kamran, 2015). Thus students who have better achievement adopt a wider utilization of these skills than those who do not.

Studies relating to study habit and students achievement have been widely established in literature. Rana, and Kausar (2011) assert that students who have more effective study habits get higher scores in comparison to students with ineffective study habits. Lawrence (2014) and Siahi and Maiyo (2015) examined the relationship between study habits and academic achievement of higher secondary school students. The finding shows that there was a direct positive relationship between study habit and academic achievement. Hayede, Seyede, Shadman, Minoo and Ehsan (2017) and Silverrajoo and Hassan (2018) conducted a study on the relationship between the study habits and the academic performance of medical science students. The findings of both study revealed that the correlation between study habit and academic achievement was positive and significant.

Mahwish, Naima, Hira and Wajiha (2017) carried out a study on study habit and academic performance of student. The finding showed that there is significant relationship between study habits and academic performance of the students. Okeke and Ukoh (2020) examined the influence of locus of control, study habit and gender on the academic achievement of senior secondary school physics students in Ibadan metropolis. Their findings showed that locus of control, study habits and gender predicted students' academic achievement of Students, accounting for 4.1% of the variance in achievement. Haleh, Abbas and Alireza (2020) examined the relationship between study habits and academic achievement in students of medical sciences in Kermanshah-Iran. They found out that the status of study habits in 81.3% of the students was at moderate level and there was a direct and significant relationship between study habits and academic achievement. Oluwatimilehin & Owoyele (2012) investigated the relationship between study habits and student's academic achievement in core subjects at the junior secondary school level. The aim was to determine the relationship between various aspects of study habits including homework and

assignments, time allocation, reading and note taking, study period procedures, concentration, written work, examination and teacher consultation and students' achievement in English language, mathematics, integrated science and art. Findings reveal that of all the study habits' sub-scales, 'teacher consultation' was most influential while the 'time allocation' exercise, concentration, note taking reading and assignments were regarded as less integral to students' academic performances.

These studies show that not much is known on how study-habit may predict achievement in chemistry at secondary school level. Literature is scanty on how the various dimensions of study-habit may predict achievement in chemistry or other science subjects. There is the need therefore to further establish the prediction of achievement in chemistry by study-habit and its dimensions.

Purpose of the Study

The purpose of the study was to investigate study-habit as a predictor of secondary school students' achievement in chemistry. Specifically, the study determined the:

1. Extent to which study-habit predict students' achievement in chemistry
2. Relative contribution of the various dimensions of study-habit to students' achievement in chemistry

Research Questions

The following research questions guided the study.

1. To what extent does study-habit predict students' achievement in chemistry?
2. What is the relative contribution of the various dimensions of study-habit to students' achievement in chemistry?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. The extent to which study-habit predict students' achievement in chemistry is not significant.
2. The relative contribution of the various dimensions of study-habit to students' achievement in chemistry is not significant.

Method

The design adopted for the study was correlational survey. The study was carried out in Anambra state. The population of the study was 22, 812 senior secondary school year two (SS2) chemistry students in the six Education Zones in Anambra State. The sample for the study was 2, 250 SS2 chemistry students obtained using multi-stage procedure. Random sampling was used to select three out of the six education zone in Anambra State. Public senior secondary schools in each of the three selected zones were listed out in alphabetical order. In each strata, systematic sampling was used to select 15 senior secondary schools amounting to 45 schools. In each school, 50 SS2 students of chemistry were accidentally sampled for the study.

The instrument for data collection was Study Habit Scale (SHS) adopted from Gordon (2002). SHS is a 42 item scale with six dimensions namely: eight items each on time management, study environment and test preparation habit; six items each on note taking habit, reading habit and writing habit. The instrument was designed to generate information on study habit, requiring the students to rate and indicate how each habit apply to them on a five point scale. The scale ranged from Never (1) through, Rarely (2), Sometimes (3), Often (4) to Very Often (5). The instrument was validated by experts from Nnamdi Azikiwe

University, Awka. The reliability of instruments was established using Cronbach's Alpha to be 0.77/

The instrument was administered to the students through the help of 5 research assistants. The research assistants were briefed on the purpose of the study, the instruments and how to administer them as well as how to collate the students' academic achievement as contained in the chemistry teachers' diary. Each of the five research assistants worked closely with school chemistry teacher of the schools involved and the entire process was monitored by the researcher. Data obtained for the instrument was analyzed using linear regressions. The interpretation of the correlation coefficient was according Nworgu (2015) who provided a three-way guide for interpreting correlation coefficient values when a large number of pairs of scores have been correlated. They are as follows: $r = \pm.30\ and\ below$, low relationship; $r = \pm.30\ to\ below \pm 0.80$, moderate relationship and $r = \mp.80$ and above, high relationship. The null hypotheses were tested at 0.05 level of significance and the decision rule was that null hypothesis be rejected wherever Pvalue is less than or equals 0.05 ($P \leq 0.05$) and accepted wherever Pvalue was greater than 0.05 ($P > 0.05$).

Result

Research Question 1: To what extent does study-habit predict students' achievement in chemistry?

Table 1: Extent of Prediction of Students' achievement in chemistry by study-habit

Model	R	R^2	Adjusted R^2	Std. Error	Decision
1	.093[a]	.009	.008	14.650	Low positive relationship

a. . Predictors: (Constant), Study-habit

Table 1 shows a low positive relationship (R = 0.093) between students' study-habit and students' achievement in chemistry. The R-Square value of 0.093 indicates that 9.3% of the variance in students' achievement in chemistry was predicted by their study-habit.

Research Question 2: What is the relative contribution of the various dimensions of study-habit to students' achievement in chemistry?

Table 2: Relative contributions of the dimensions of study-habit to achievement in chemistry

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	71.263	3.771		18.899	.000
	Time Management	.148	.333	.035	.446	.656
	Study Environment	.229	.180	.057	1.270	.204
	Test Preparation Habit	.094	.313	.022	.299	.005
	Note taking Habit	.194	.316	.044	.614	.039
	Reading Habit	.299	.186	.072	1.608	.008
	Writing Habit	.159	.266	.037	.596	.551

a. Dependent Variable: Achievement

Table 2 shows every unit rise in time management habit increases achievement in chemistry be 0.148, where study environment increases achievement by 0.229, test preparation habit by 0.094, note taking habit by 0.194, reading habit by 0.299 and writing habit by 0.159. The

table shows that reading habit ranked highest in contributing to students' achievement in chemistry followed by study environment, note taking habit and writing habit.

Hypothesis 1: The extent to which study-habit predicts students' achievement in chemistry is not significant.

Table 3: ANOVA on Significance of the extent to which study-habit predicts achievement in chemistry

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4193.311	1	4193.311	19.538	.000[b]
	Residual	482462.2it2	2248	214.618		
	Total	486655.593	2249			

a. Dependent Variable: Achievement

b. Predictors: (Constant), Study-habit

Table 5 shows that at 1df numerator and 23049df denominator, the F-value is 19.538 with a Pvalue of .000 which is less than 0.05. The null hypothesis was rejected. Therefore, the extent to which study-habit predicts students' achievement in chemistry is significant.

Hypothesis 2: The relative contribution of the various dimensions of study-habit to students' achievement in chemistry is not significant.

Data relating to hypothesis two is contained in Table two. It shows that test preparation habit with a t-value of 0.299 has a pvalue less than 0.05, note taking habit with a t-value of 0.614 has a pvalue which is less than 0.05 and reading habit with a t-value of 1.608 also has a pvalue which is less than 0.05. Thus, test preparation, note taking and reading habits are the only dimensions of study-habit which contributes significantly to achievement in chemistry.

Discussion

The finding of the study showed that a low positive relationship existed between students' study habit and achievement in chemistry. Study habit accounted for 1% of the variance in students' achievement in chemistry. The study also showed that only three out of the six dimensions namely: test preparation habit, note-taking habit and reading habit significantly improved achievement in chemistry. Reading habit was the most significant contributor to achievement in chemistry. This is because without reading, a student has nothing to write in examination or test to improve achievement. Reading facilitates understanding and give students the confidence that their effort will yield positive results. Reading is the ability to understand words contained in a document and make use of the knowledge for personal growth and development. This implies making meaning out of recorded information either printed or non-printed in the life of an individual. Once a student has been taught how to read and develops the love for it, he can explore the wealth of experience and knowledge through reading.

The reading habit is followed by note taking habit as the second most significant contributor to achievement in chemistry. As students take down notes during study time, they expose themselves to learning experiences which enables the acquired information to reach the long-term memory. Thus, what is learnt through note taking is note easily forgotten but easily recalled. The findings of the study is in line with the findings of Rana, and Kausar (2011), Siahi and Maiyo (2015), Hayede, Seyede, Shadman, Minoo and Ehsan (2017) and Silverrajoo and Hassan (2018), Mahwish, Naima, Hira and Wajiha (2017), Okeke and Ukoh (2020) and Haleh, Abbas and Alireza (2020). The finding of the study however contradicts the findings of Oluwatimilehin & Owoyele (2012) that note taking reading and assignments were regarded as less integral to students' academic performances.

Conclusion

The study concludes that study-habit predicts achievement in chemistry. Test preparation, note taking and reading habits are the most important part of study habit which significantly influences students' achievement in chemistry.

Recommendations

The following recommendations are made based on the findings of the study:

1. Orientation on good study skills, note taking and reading skills as well as skills of test preparation should be conducted occasionally for secondary school chemistry students.
2. Teachers of chemistry should give students regular assignments and projects that could improve their study-habits as they employ the skills of note taking and reading to accomplished academic tasks and assignments.

References

Adeninyi V (2011). Studying to Pass: Implication for Students. Lagos: Macmillan.

Alex G (2011). *Definitions of study habits*. Retrieved from www.answers.com.

Bhan, K.S. and R. Gupta, 2010. Study habits and academic achievement among the students belonging to scheduled caste and non- scheduled caste group. *Journal of Applied Research in Education, 15*(1), 1-9.

Chikendu, R.E. (2018). *Effects of instructional computer animation on secondary school students' achievement and interest in chemistry in Awka education zone.* Unpublished PhD Dissertation, Nnamdi Azikiwe University, Awka.

Emerhiona, F., Ajaja, O.P., Pius, P. O., Nwanze, A. C. & Izuegbuna, A. G. (2018). Effects of problem and discovery-based instructional strategies on students' academic achievement in chemistry. *International Journal of Innovative Research and Advanced Studies (IJIRAS), 5*(6), 209-214.

Enekwechi, E.E., Okeke, O.C.S., Nwanze, A.C. & Chikwendu. A.A. (2019). Improving students' participation in chemistry learning through the use of flipped classroom instruction. *International Journal of Innovative Research and Advanced Studies (IJIRAS), 6*(2), 105-110.

Haleh, J., Abbas, A. & Alireza, K. (2020). Relationship between study habits and academic achievement in students of medical sciences in Kermanshah-Iran. *Advances in Medical Education and Practice, 10,* 637-643.

Hayede, R.L., Seyede, F.S.F., Shadman, R.M., Minoo, M.C. & Ehsan, K.N.L. (2017). The relationship between the study habit and the academic performance of medical science students. *Journal of Holistic Nursing and Midwifery, 27*(2), 65-73.

Konyefa, B.I. & Nwanze, A.C. (2020). Integrating Whatsapp application into learning process: Effects on pre-service teacher's interest in chemistry in colleges of education. *International Journal of Innovative Research and Advanced Studies (IJIRAS), 7*(9), 121-125.

Lawrence, A.S.A. (2014). Relationship between study habits and academic achievement of higher secondary school students. *Indian Journal of Applied Research, 4(6),* 143-145.

Mahwish, R., Naima, M., Hira, T. & Wajiha, N. (2017). A study on study-habit and academic achievement of students. *International Journal of Asian Social Science, 7*(10), 891-897.

Ogbodo, R.O., 2010. Effective study habits in educational sector: Counseling implications. *Edo Journal of Counseling, 3*(2), 230-242.

Okeke, U.K. & Ukoh, E.E. (2020). The influence of locus of control, study habit and gender on the academic achievement of senior secondary school physics students in Ibadan metropolis. *African Journal of Teacher Education, 9,* 21-48.

Oluwatimilehin, J.T.B., & Owoyele, J.W. (2012). Study habits and academic achievement in core subjects among junior secondary school students in Ondo state, Nigeria *Bulgarian Journal of Science and Education Policy (BJSEP), 6*(1), 155-169.

Rana, S.H. & Kausar, R. (2011). Comparison of sutudy Habits and academic performance of pakistani british and white british students. *Pakistan Journal of Social and Clinical Psychology, 9,* 21-26.

Siahi, E.A., & Maiyo, J.K. (2015). Study of the relationships between study habits and academic achievement of students: A case of Spicer Higher secondary school. *International Journal of Educational Administration and Policy Studies, 7(7),* 134-141.

Silverrajoo, P., & Hassan, A. (2018). Relationship between study habit and academic achievement among health science students. *International Journal of Academic Research in Business and Social Science, 8(7),* 763-780.

Tranhen, T., Jalil, K., Mohammadali, H., Kamran, S.A. (2015). Correlation of study habit with academic achievement among students attending the national medical science Olympiad. *Journal of Advances in Medical Education (JAMED), 1(1),* 30-37.

Uchenna, K.O. & Edidiong, E.U. (2020). The influence of locus of control, study-habit and gender on the academic achievement of senior secondary school physics students in Ibadan metropolis. *African Journal of Teacher education, 9,* 21-48.