**The Impact of Study Habits on Acquiring Chemistry Knowledge for National Security**

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**Abstract**

*Unemployment and poverty have been identified as contributing factors to Nigeria's difficulties, including insurgency. Knowledge is considered an important resource to solve problems and has the highest capacity to establish new opportunities for Nigerians now and in the future. Numerous industries that create goods and services to meet societal needs usually involve chemistry. The application of chemistry knowledge has an impact on the world economy. This study investigates how important study habits and chemistry students' knowledge acquisition. The study was conducted among 100 students in the department of chemistry at the Federal College of Education (Special), Oyo and stratified random sampling technique was employed. A questionnaire that contains 20 items on study habit was employed, while the academic achievement of the students was measured through their scores in General chemistry 111. A descriptive correlational research design was employed for the study. A Pearson correlation was utilized to determine the strength, as well as the positive or negative direction, of relationships between the variables. Linear regression was employed to determine the extent to which academic achievement is related to study habits at a P < 0.05 statistically significant level. The analysis was carried out using R software version 3.6.2. The findings showed a link between students' study habits and academic success. Students' study habits in chemistry have been found to have a significant impact on their academic achievement. It is concluded that good study habits are crucial to acquiring chemical knowledge, and acquired chemistry knowledge is a potential resource for job creation and the eradication of poverty, thereby preventing insurgency in Nigeria. It is recommended that teachers should support and encourage their students to develop appropriate study habits. Also, in order to enhance the students’ learning outcomes, students must think about their study habits and establish positive ones.*

**Keywords:** Chemical knowledge, Insurgency, Poverty, Study habits, Unemployment

**Introduction**

Chemistry is an active science with vital importance in both the realm of nature and the realm of society. Chemistry is the study of the nature of matter and the changes it undergoes. The knowledge of chemistry is essential in many subjects, and indeed, it is central to our way of life (Brown, 2013). Over the years, chemistry has contributed through many measures such as skill development, innovation and modernization, and income distribution, which have helped in the economic development of many nations (Akajagbor& Oni, 2009). Chemistry is closely associated with the four basic needs of humans, namely: food, clothing, shelter, and medical services. Chemistry remains the most important avenue for measuring a country's socio-economic and national growth and productivity ( Okon-Enoh, 2009). The application of knowledge of chemistry usually brings to mind diverse industries engaged in the production of various goods and services that meet societal needs.

Academic achievement occupies a very important place and even becomes one of the major goals of a student's educational process. In this regard, academic achievement is one of the major factors that influence an individual’s success in any educational setting (Poggae, 2005). During learning, the goal is to generate knowledge or skills that are robustly integrated with related knowledge and easily accessible (Walck-Shannon et al.,2021). Knowledge is one of the most important factors determining the development of the global economy.

Knowledge acquisition refers to the process of acquiring new knowledge and building upon the existing knowledge when the new knowledge is gained (Abdekhoda et al, 2023).Knowledge acquisition is a pivotal concern for the students (Feroz et al., 2021). Study habits were found to influence knowledge acquisition. Study habits are the behaviors of an individual related to studies. Meanwhile, study habits are the sum total of all habits and practices that the individual uses in order to learn. Good habits and skills are believed to be helpful in enhancing efficiency in every task and bringing about good success. In education, proper study habits and skills generate proficiency as well as a high quality of learning (Dehghani & Soltanalgharaei, 2014). Crede and Kuneel (2018) defined study habits as study routines, including but not limited to the frequency of studying material and studying in a favorable environment. Study habits, from this point of view, can be said to be the regular practice of one or two study skills in order to achieve good academic performance (Wade &Schraw, 2020).

An insurgency is described as an organized, armed political conflict with a possible objective of capturing power through a revolutionary takeover and replacing the incumbent government (Muzan, 2014). Poverty and unemployment have been recognized as one of the causes of Nigeria’s problems such as insurgency (Muzan, 2014).

Poverty is defined as a lack of command over basic consumption needs, resulting in a situation where a person’s basic needs far exceed the available means of meeting them (Ravallionm&Bidani, 1994). Persistent poverty, particularly in the midst of economic growth and affluence of the upper class, will lead to feelings of frustration among the poor. It will also breed hatred, mistrust and anger. These psychological monsters lead to a loss of faith in the system, alienation and hopelessness (Muzan, 2014).At the stage of hopelessness, there is a progressive, psychological diminution of the value of life, which eventually leads to a point of indifference between life and death. At this point, hostility, antagonistic conduct and indiscriminate aggression manifest rather spontaneously and automatically (Mailafia, 2012).

An unemployed person, like a poor person, is usually unhappy. The idleness created by unemployment can lead to antisocial conduct to occupy time. Even if the person is educated and skilled, it can lead to frustration, aggression, and serious conflict. In itself, unemployment is, of course, a very potent cause of poverty. It has been noted that among several other ills, poverty breeds anger, hatred, envy, and conflict (Muzan, 2014). However, these problems can be overcome through the application of chemistry knowledge.

Bhan and Gupta (2020) studied the relationship between students study habits and their academics. It was observed that there was no impact of study habits on academics. Ogbodo (2020) observed that good study habits lead to the development of a great influence on learners’ thinking, attitude, growth, and development among higher school learners, and this in turn improves their academic performance. The study conducted by Marc (2017) also established impact of good study habits to a successful academic future. In this study, therefore, an investigation on how good study habits could help in acquiring chemistry knowledge that can serve as a tool in economic development and the eradication of insurgency in Nigeria was carried out. Ava et al. (2023) examined the impact of study habits on the academic performance of senior secondary high school students amidst blended learning. The study found that there was a significance between the study habits and academic performance of the senior high school students.

**Statement of the Problem**

Academic achievement determines the level of knowledge students have acquired, whereas the acquired knowledge determines the influence a student can have on the advancement of a country. One of the key elements influencing the growth of the global economy is knowledge. Knowledge acquired by chemistry students which could be applied for national development is determined by the level of their academic achievement. Poor academic achievement has recently increased at both the secondary and college levels of schooling which requires an urgent solution. Many factors have been looked into by researchers as potential causes of poor academic achievement, and good study habits have been considered as one of the solutions to the problem. Numerous studies have found that students who develop good study habits are more likely than those who develop terrible study habits to acquire knowledge in their studies. The impact of study habits on students' academic achievement in chemistry at Nigerian colleges of education, however, is little documented. Therefore, this study examined how chemistry knowledge could be acquired through good study habit.

**Aim and Objectives of the Study**

The main aim of this study is to examine effect of students’ study habit on their academic achievement in chemistry at Federal College of Education (Special), Oyo, Oyo State, Nigeria.

The specific objectives are to:

1. Examine students’ study habits in chemistry

2. Investigate the academic achievement scores of the students in chemistry.

3. Evaluate the effect of the students’ study habits on their academic achievement

**Research Questions**

The following questions shall be contending within the study:

i. What is correlation between the students’ study habit and their academic achievement in chemistry?

ii. What is the contribution of study habit to the students’ academic achievement?

**Methodology**

**Research Design and Population of Study**

Descriptive survey research design was employed with the use of questionnaire to obtain data from the respondents. Total number of 100 students was selected from 100, 200 and 300 levels in the chemistry department using stratified random sampling technique.

**Instrumentation**

**Study Habit**

Study habit as independent variable has been identified as part of the most important factors that predict students’ continuous academic achievement. The students’ study habit was examined through self-designed questionnaire titled students’ views on their study habits. The questionnaire consists 20 items that were statements about various study habit with responses anchored based on the four Likert points-Strongly Agree (4), Agree (3), Strongly Disagree (2) and Disagree (1) .

**Academic Achievement**

The academic achievement of students in chemistry was obtained by considering their scores in General chemistry I.

**Procedure**

The questionnaires which contains demographic and study habit questions were administered to the randomly selected respondents. Enough time was given to the respondents to complete the questionnaire. The respondents were allowed and encouraged to express their honest feelings without any bias. The questionnaires were retrieved from the respondents immediately after the completion.

**Data Analysis**

The research questions were answered through descriptive statistics of mean and standard deviation, skewness and kurtosis while linear regression analysis was used in testing the hypotheses at 0.05 level of significance.

**Results**

Pearson moment correlation and linear regression analyses were applied in finding effect of study habit on the students’ academic achievement in chemistry. The independent variable is study habit while the students’ academic achievement is considered as the dependent variable. Analysis of the results are given in the Tables

**Table 1.**Descriptive statistics of independent and dependent variables

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vars | N | Mean | SD | Min | Max | Range | Skew | Kurtosis |
| Academic achievement | 100 | 45.46 | 13.42 | 16.3 | 93 | 76.7 | 0.75 | 0.85 |
| Study habit | 100 | 49.56 | 8.01 | 35.0 | 79 | 44.0 | 1.48 | 3.14 |

The mean of academic achievement of the students as shown in Table 1 is 45.46 and standard deviation (*SD)* is 13.42 with skewness of 0.75 while the mean of study habit of the students is 49.56, standard deviation (*SD)* is 8.01 with skewness of 1.48.

Table 2: Pearson product moment correlation between academic achievement and study habit in Chemistry

|  |  |  |  |
| --- | --- | --- | --- |
| Vars | Academic achievement | Study Habit | P |
| Academic achievement | 1 | 0.2352 | 0.0185 |
| Study Habit | 0.2352 | 1 | 0.0185 |

Correlation is significant at the 0.05 level

Academic achievement is found in Table 2 to have a positive correlation with Study Habit [*Rs*= 0.24, *p* < 0.05]. Figure 1 below depicts the relationship between study habits and students’ academic achievement in chemistry. This shows that there is low and positive relationship between study habits and academic achievement

Table 3: Regression analysis of contribution of study habit to the students’ of academic achievement in chemistry

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Estimate | Std. Error | t-value | Pr(>|t|) |
| Intercept | 25.9165 | 8.2644 | 3.1360 | 0.0023 |
| Study Habit | 0.3944 | 0.1646 | 2.3950 | 0.0185 |

Multiple R-squared: 0.05531, Adjusted R-squared: 0.04567

The residual standard error of 8.26 as shown in Table 3 established the model as a good model. This model also shows that with increase in study habit there would be increase in students’ academic achievement. The R-square value of 0.055 represents the total variability of the dependent variable as explained by the independent variables. The value revealed that study habit in learning explains 5.5 % of the total variability in academic achievement of students in chemistry.

**Discussion**

The information was gathered from the general chemistry scores and the answers to the questionnaire about study habits. According to the descriptive statistics, the students’ achievement results show that the students' level of study habits is vary (Table 1). The independent variable contributed to the students' academic success in chemistry, as seen by the greater mean value of study habits than academic performance.

The importance of Pearson moment correlation was taken into account in order to respond to the first query. According to the analysis, study habits were found to positively correlate with students' academic success. This is consistent with studies Mark & Howard (2019) and Sigh (2017) which showed a positive association between the students' academic performance and self-efficacy.

The second research objective was answered through regression analysis. The R-squared value revealed that study habits contribute to the students’ achievement in chemistry. That is a percentage variability in students’ academic achievement could be explained by study habit. When the independent variable is constant, students’ academic achievement was predicted to increase. Study habit is predicted to increase the academic achievement of the students. Academic achievement is therefore expected to rise for every improvement in students' study habits in learning. This study discovered that a student's academic success was influenced by their level of study habits. As a result, it is reasonable to assume that a student's study habits are one of the aspects that affect their academic success in chemistry and, ultimately, their ability to learn.

**Conclusion**

Learning dictates how much knowledge one acquires, and knowledge influences how the world's economy and culture will evolve. The results of the study revealed a low and positive relationship between effective study techniques and chemistry learning outcomes and it is concluded that students' success in chemistry is greatly influenced by their study habits. In light of the considerable association between study habits and learning achievement, study habits are taken into account as one of the variables necessary for the acquisition of chemistry knowledge which could be applied for the production of goods and services for Nigeria economic development. When there is economic development through the application of chemistry knowledge, there will be employment, poverty will be reduced, and insurgency will be abated.

**Recommendation**

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

* + 1. Teachers should support and encourage their students to develop appropriate study habits.
    2. To enhance their learning outcomes, students must think about their study habits and establish positive ones.
    3. Rooms should be created for guidance in schools to enlighten students on how to develop positive study habits which could be helpful in enhancing their ability to acquire chemistry knowledge.
    4. Chemistry teachers should be well trained to be able teach in a way that will arouse students’ interest for reading.

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