Academic Locus of Control, Study Habits and Secondary School Students Academic Achievement in Mathematics

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*Abstract:-*The purpose of the study was to investigate the influence academic locus of control, study habits and secondary school students' academic achievement in mathematics. To achieve the aim of the study two research questions were asked and two null hypotheses formulated to guide the study. Survey research design was adopted for the study. Five hundred and seventy-five SS11 students were randomly selected from public secondary schools in Calabar Municipality, Cross River State. The selection was done through simple random and stratified sampling techniques. Academic Locus of Control and Study Habit Questionnaires (ALOCSH) and achievement test were used for data collection. The internal consistency of the instrument and achievement test with Cronbach alpha reliability coefficient was 0.81 and 0.75 respectively. Data collected were analyzed using independent t-test and analysis of variance statistical techniques. And hypotheses were tested at .05 level of significance. The result of the analysis revealed that internal academic locus of control and study habit had influence on academic achievement. Based on the findings, it was recommended among others that in order to boost study habits and enhance academic achievement, the students should be regularly counselled by the school counsellor on how to develop study skill strategies.

Keywords: Academic locus of control, study habit, achievement, students, secondary school

I. INTRODUCTION

Education which involves the acquisition of knowledge, abilities, skills, values, beliefs leads to progress and development of individuals, communities and nations. These essential knowledge, skill, abilities, value are usually acquired through learning and academic achievement. Academic achievement is an important aspect of education that determines the promotion of student from one grade to another. Academic achievement is a multifaceted construct that comprises the achievement of students in academic subjects in relation to their knowledge, attaining ability or degree of competence in school work .Academic achievement can be measured by standardized tests or through examination conducted for measuring knowledge and skills obtained in subjects given in educational institutions (Sharma and Ranjan, 2018). Amalu (2017) stated that it prepares students for future career and also them enter competitive fields and can also affect students' opportunities for further education and future occupation. It is influenced according to kapur (2018) by academic and non-academic factors such as general intelligence interest, achievement motivation, locus of control, teaching styles, study habits etc.

Locus of control is a psychological construct. The concept was originally developed by Julian Rotter in 1954. It is the degree to which people believe that they have control over the outcome of events in their lives, as opposed to external forces beyond their control. Choudhury and Borooah, (2017) referred to as the extent to which individuals believe that they can control events that affect them .It is often viewed as an inborn personality component that is shaped by childhood experience .(Joelson, 2017). Locus of control is divided into two categories namely internal and external locus of control. (Rotter,1966).Individuals with internal locus of control believe that they can control their life events because their behaviour is determined by internal factors such as hard work, decision making, problem solving skills, effort and persuasion, they hold internal factors responsible for their success or failure and as a result, they become more self-reliant in achieving their goal. Those with external locus of control believe their behaviour is the result of external factors such as fate, luck, chance and people around them. In academic setting, the manifestation of students' belief, regarding their control over academic matters is referred to as academic locus of control. It has been observed that students can analyzing their academic outcome It then means that students who attribute success to internal factors are likely to expect future successes and those that attribute failure to internal factors may expect future failure unless they consider themselves capable of actively addressing those factors.(Mali, 2013).. They attribute their academic outcome to internal factors (intelligence, hard work and ability) and as such score higher on standardized tests and are less absent from school because they believe that attendance and studying are important, they also feels capable of their personal development, feels more competent and feel that they are in-charge of their academic learning. Individuals with external locus of control believe their behaviour is the result of external factors. They limit further improvement of their own skills, abilities, strength a weaknesses and believe that grades obtained do not reflect effort and ability but are influenced by external factors such as luck, fate, chance examination system,

biased attitude of the teacher and biased marking and as such do not attach any importance to studying and attending classes. They view life as uncontrollable and difficult to cope with (Shinole and Joshi, 2011; Mali, 2013).

Another variable in the present study was study habits which are useful for learning throughout one's life. It is very vital for acquisition of good grades. Hassan, Sadaf, Aly and Baig (2018) see study habits as study practices that include the frequency of studying, sittings, rehearsals of learned materials, review of material, studying in a favourable surroundings and self- testing. It refers to the extent to which the learner engages in routine act of studying effectively in achieving high performance in exam score. Various aspects of study habits include home work and assessment, time allocation for study, reading and note taking, study period procedure (Oluwatimilehin & Owoyole, 2012).So, study habits can be regarded as strategies of work that involves such activities as taking notes, using the library, improving reading ability, building vocabulary, writing term papers and taking examination

Of utmost importance to this study was the influence of academic locus of control, study habits on academic achievement of secondary school students. A study by Olaitan and Morobuyo (2014) on the contribution of test anxiety, study habits and locus of control to academic performance using 580 final year students of the Federal Polytechnic Ilaro and Moshood Polytechnic Abeokuta Ogun State revealed that test anxiety, study habits and locus of control predicted academic performance. A similar study carried out by Mashayekhi, Faramarzpoor, Mashayekhi, Rafati and Mashayekhi (2015) on the relationship between locus of control, study habits with academic achievement. 220 under graduate students of Azad University of Jiroft randomly selected from both colleges of Humanities and Agriculture were used as sample. Result showed a significant positive correlation between study habits with academic achievement while scores of locus of control had significant negative correlation with academic achievement. Ebele and Olofu (2017) examined the impact of study habits on secondary school students' academic achievement in biology in the Federal capital territory Abuja, using sample size of 1050 school students drawn from 30 schools. The result indicated that there is a significant relationship between study habits and students academic performance. An exploratory study on the relationship between study habits and academic achievement among health science students by Silverrajoo and Hassan (2018) with sample size of 150 (125 females and 25 males) showed no significant relationship between the two.

The study of Cetinkalp (2010) on the relationship between academic locus of control and achievement goals among physical Education teaching program students using 588 students (269 females and 317 males) from 9 state university in Turkey. Result indicated that learning approach goals and learning avoidance goals were positive predictor of ILOC. The result also showed that ELOC was substantially predicted by the performance goal and the learning approach. A study carried out by Hasan and Khalid(2014) an academic locus of control of high and low achieving students, with a sample of 187(126 high and 61 low) achieving BSc final year students revealed that both high and low achieving students both hold an internal academic system towards academic situations. Khir, Redzuan, Hamsan and Shahrimin(2015) study to identify locus of control and its link to academic achievement of Orang Asli students in Malaysia. A total of 402 students from 10 secondary schools in the states of Perak and Pahang were used as sample. Locus of control showed significant difference according to various levels of academic achievement. Choudhury and Borooah (2017) conducted a study on the relationship between locus of control and academic achievement of undergraduate college students of Guwahati City of Assam, India. The sample of the study was 240 male and female undergraduate students from various degree colleges. The result revealed that there was no significant positive correlation between external locus of control and academic achievement, while there was significant positive correlation between internal locus of control and academic achievement. The study of Oluwatimilehim and Owoyole (2012)on the relationship between study habits and academic achievement on core subjects at the junior secondary school level In addition the study determined the relationship between various aspects of study habits. The finding revealed a low positive relationship between study habit and subscales of students' performance in English language.

From the above, discussion the present study was aimed at investigating whether or not academic locus of control(internal and external) and study habits were significantly influence the academic achievement of secondary school students in Calabar education Zone. This present study would be helpful to teachers and guardians for taking some intervention efforts to students for better academic achievement.

Statement of the problem

Mathematics is a compulsory subject at the basic and secondary level of education in Nigeria. It is a fundamental subject that is necessary for the understanding of other fields of science and technology and for gaining admission into tertiary institutions in Nigeria. Observations have shown that students at the secondary school level perform poorly in mathematics tests and examinations. Presently, poor performance in maths in Cross River State has become a source of concern to parents, teachers, government and other stakeholders and has made many students not to gain admission into tertiary institution. Failure in mathematics according to Bello and Ariyo (2014) could be as a result of low self concept, locus of control, negative attitude towards maths, habits in studying and phobia. The further stated that these factors can affect students and hamper their accomplishment level in the pursuit of mathematics excellence. Some schools organize extra lessons for

mathematics, encourage students to engage in mathematics competitions, some organized seminars and workshops for mathematics teachers on the effective method of teaching mathematics, state government pay some allowances to mathematics. Despite the effort of these education stakeholders to improve the performance of students in mathematics, the situation still remain the same and this was the motivation behind the research study to investigate academic locus of control, study habits and secondary school students' achievement in mathematics.

Purpose of the study

This study investigated academic locus of control, study habits and academic achievement in Mathematics among secondary school students in Calabar Education Zone. Specifically, the study investigated:

1. The influence of academic locus of control on students' academic achievement in Mathematics.
2. The extent to which study habits can influence students' academic achievement in Mathematics.

Research questions

The following research questions served as guide to the study

1. How does academic locus of control influence students' academic achievement in Mathematics?
2. To what extent do study habits influence students' academic achievement in Mathematics?

Statement of hypotheses

This study was guided by the following null hypotheses:

1. Academic locus of control does not significantly influence students' academic achievement in Mathematics.
2. There is no significant influence of study habits on students' academic achievement in Mathematics.

II. METHODOLOGY

The study used survey research design. The population of the study consist of 2329 senior secondary school SS11 students in Calabar Municipality in 2016/2017 academic session (Cross River Secondary Education Board) in 10 public secondary school. The sample comprised 575 SS11 students randomly selected through simple random and stratified sampling techniques from the zone. The instrument tagged Academic Locus of Control and Study Habit Questionnaire (ALCSHQ) and Achievement Test were used for data collection. The instrument was developed by the researcher and validated by experts in measurement and evaluation in the Faculty of Education, University of Calabar. The reliability estimates for the instruments were determined using Cronbach Alpha reliability estimate and the reliability coefficient of 0.81 for the ALCSHQ and 0.75 for achievement test were obtained. Section A sought information on

respondents' personal data such as age, sex, school. Section B had 10 items on academic locus of control such as, while section C comprised items on study habits. Each item was weighed on a four point modified Likert-type rating scale which ranged from Strongly Agree(SA), Agree(A), Strongly Disagree(SD), Disagree(D). The achievement test consists of 20 questions in mathematics. The questionnaire and the achievement test were administered to the respondents with the help of two assistants who were briefed on how to guide the respondents to tick the responses and answer questions in mathematics. The copies of the questionnaire were correctly filled and returned. Independent t-test and Analysis of Variance Statistics were used to analyze the data.

III. PRESENTATION OF RESULTS

The major variables in this study were academic locus of control, study habits and academic achievement in Mathematics. The independent variables are academic locus of control and study habits while the dependent variable was academic achievement in Mathematics. The mean scores and standard deviations of the variables are presented in Table 1.

TABLE 1: The mean scores and standard deviations of the subjects in the variables (N=575)

SN	Variable	$\bar{x}$	SD
1.	Academic locus of control	29.37	11.91
2.	Study habits	30.09	12.48
3.	Academic achievement in Mathematics	13.68	5.88

As presented in Table 1, the result showed that the mean score obtained by the subjects as regards to academic locus of control was 29.37 with a standard deviation of 11.91 while the mean score obtained by the subjects as regards to study habits was 30.09 with a standard deviation of 12.48 and the mean score obtained by the subjects as regards their academic achievement in Mathematics was 13.68 with a standard deviation of 5.88.

Hypothesis one

Academic locus of control does not significantly influence students' academic achievement in Mathematics. The independent variable is academic locus of control which was classified into two (internal and external) while the dependent variable is students' academic achievement in Mathematics. Respondents who scored 10 – 25 in the ten items that measured academic locus of control were classified as having external academic locus of control while those that scored 26 – 40 in the ten items that measured academic locus of control were classified as having internal academic locus of control. The hypothesis was analyzed using Independent t-test analysis tested at .05 level of significance and the result is presented in Table 2.

TABLE 2: Independent t-test for academic locus of control and students' academic achievement in Mathematics

Academic locus of control	N	Mean	SD	t-value	Sig.
Internal	249	16.22	5.68	9.689*	.000
External	326	11.74	5.26		

*Significant at 0.05 alpha level; p<0.05.

The result of the analysis in Table 2 revealed that the mean performance of 16.22 was obtained by the 249 subjects who had internal academic locus of control while the mean performance of 11.74 was obtained by the 326 subjects who had external academic locus of control. The result indicated that the mean difference was statistically significant since the obtained t-value of 9.689 with a p-value of .000 met the criteria for significant at 0.05 level of significance since the p-value is less than 0.05. With this result, it was concluded that subjects who had internal academic locus of control were significantly better in their academic achievement in Mathematics than those who had external academic locus of control.

Hypothesis two

There is no significant influence of study habits on students' academic achievement in Mathematics. The independent variable is study habits which was classified into three (poor, average and good) while the dependent variable is students' academic achievement in Mathematics. Respondents who scored 10 – 19 in the ten items that measured study habits were classified as having poor study habits while those that scored 20 – 30 in the ten items that measured study habits were classified as having average study habits and those that scored 31 – 40 in the ten items that measured study habits were classified as having good study habits. The hypothesis was analyzed using One-way Analysis of Variance tested at .05 level of significance as presented in Table 3.

TABLE 3: One-way Analysis of Variance for study habits and students' academic achievement in Mathematics

Study habits	N	Mean	SD
Poor	194	11.11	5.58
Average	206	13.50	4.76
Good	175	16.75	6.00
Total	575	13.68	5.88

Source of variance	Sum of squares	df	Mean square	F	Sig.
Between groups	2937.961	2	1468.980	49.681*	.000
Within groups	16913.159	572	29.568		
Total	19851.120	574			

*Significant at 0.05 alpha level; p<0.05.

The result of the analysis in Table 3 revealed that the mean performance of 11.11 was obtained by the 194 subjects who had poor study habits while the mean performance of 13.50 was obtained by the 206 subjects who had average study habits and the mean performance of 16.75 was obtained by the 175 subjects who had good study habits. The result further revealed that the calculated F-ratio of 49.681 was obtained with a p-value of .000 at .05 level of significance with 2 and 463 degrees of freedom. With the obtained result, the F-ratio was statistically significant since the p-value is less than 0.05 and the hypothesis which states that there is no significant influence of study habits on students' academic achievement in Mathematics was rejected. The result then implied that the subjects who had good study habits performed significantly better than others followed by those who had average study habits while those that had poor study habits had the least performance.

Since students' academic achievement in Mathematics was significantly influenced by study habits, the source of the difference was determined using Fisher Least Significant Difference (LSD) Post Hoc Test multiple comparison analysis as presented in Table 4.

TABLE 4: Fisher LSD Post Hoc Test for study habits and students' academic achievement in Mathematics

Study habits	N	Mean	Mean difference	Sig.
Poor	194	11.11	-2.39*	.000
Average	206	13.50		
Poor	194	11.11	-5.64*	.000
Good	175	16.75		
Average	206	13.50	-3.25*	.000
Good	175	16.75		

*Significant at 0.05 level; p<0.05.

The result of the Fisher LSD Post Hoc Test analysis as presented in Table 4 revealed that the mean performance by the 194 subjects who had poor study habits was significantly lower than the mean performance by the 206 subjects who had average study habits (MD=-2.39; p<.05) and also significantly lower than the mean performance by the 175 subjects who had good study habits (MD=-5.64; p<.05). The result finally revealed that the mean performance by the 206 subjects who had poor study habits was significantly lower than the mean performance by the 175 subjects who had good study habits (MD=-3.25; p<.05). Based on these, the source of the difference was basically from all the various categories of study habits.

IV. DISCUSSION

The result indicated that the students who had internal academic locus control were significantly better in their academic achievement in mathematics than those who had external locus of control. The result is not surprising because the students with academic internal locus of control believe in their ability to study and they attribute their success or failure to their own action for example internal locus of control student who performs better in a test is motivated to study harder since they believe that success in a test or examination is dependent on the efforts they put in studying. Students with external academic locus of control who perform

well in a test or examination may attribute their success to luck, simple questions and several other factors and they are less likely to make the effort needed to learn. They are also more likely to experience anxiety, since they believe that they are not in control of their lives. This finding is in line with the findings of Choudhury and Borooah 2017; Hasan and Khalid 2014, who stated in their separate studies that academic internal of control has a positive relationship with academic achievement, while the external has no positive relationship with academic achievement.

The result also revealed that the subjects who had good study habits performed significantly better than others followed by those who had average study habit, while those that had poor study habit had the least. This finding is in consonance with the finding of Agba, 2013, Marc, 2011 who maintained that good and effective study habit provides a key to educational success. Students with good study habits are organized, self-disciplined and self-directed in their academic pursuit. They study with specific approach, attend classes regularly and on time, take down notes and further elaborate on them, do their class assignments, ask important questions, often read and are often well prepared for tests and examinations. And as a result of these behaviours, they have good scores in mathematics. While those of them who are not serious and who do not have particular pattern of studying always perform poorly in mathematics.

V. CONCLUSION

Based on the result of this study, it was concluded that internal locus of control and good study habits are very essential issues in academic achievement of secondary school students in Calabar Municipality Cross River State. Therefore the secondary school students in should be made to understand that for them to be successful in their academic pursuits, they need to believe in their abilities to succeed and at the same have good techniques for studying.

VI. RECOMMENDATIONS

Based on the finding, the following recommendations were made:

1. In order to boost their study habit and enhance academic achievement, the students should be regularly counselled by the school counsellor on how to develop effective study skill strategies.
2. Seminars should be organized regularly for teachers and students on academic and personal factors that influence academic achievement. This may go a long way in helping the student improve in their academics.
3. The students should be motivated by providing them with good learning experiences that will enable them study harder for good performance in mathematics.

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