

**STUDENTS' INTEREST AS A CORRELATE OF ACHIEVEMENT
IN MATHEMATICS AMONG SECONDARY SCHOOL
STUDENTS IN EBONYI STATE.**

**Ifeanyi-Obiorah, Chioma .P.
&
Chukwurah, Charles, C.**

Abstract

This study investigated interest as a correlate of achievement in mathematics. It sought to find out the extent of relationship between interest and achievement among secondary school students as well as the influence of gender on secondary school students interest in mathematics. In order to carry out the study effectively, two research questions were asked and one null hypothesis was formulated and tested. Descriptive survey design was used for the study. The sample for this study consisted of 200 SS II students who were randomly selected from 10 secondary school in Abakaliki Education Zone. Purposive simple random sampling technique was also used to select 20 mathematics students from each of the schools sampled. The sample consisted of 10 male students and 10 female students. Data relevant for the study were collected using Mathematics Interest Questionnaire and Mathematics Achievement Test of the students. These items were validated by experts in science education. The reliability of Mathematics Interest Questionnaire was determined using split-half reliability method and cronbach alpha fomular was used to determine the reliability of Mathematics Achievement Test. The reliability co-efficient of 0.82 and 0.89 were obtained respectively. Pearson Product Moment Correlation Coefficient, as well as mean and standard deviation were used to answer the research questions while Z-test correlation was used to test the hypotheses at 0.05 level of significance. The findings revealed a strong positive and significant correlation between interest and achievement in Mathematics among secondary school students in Ebonyi State. The finding further revealed that an increase in student interest in Mathematics will lead to increase in academic achievement and vise-vase. The study also showed that male students have more interest in mathematics than their female counterparts. The implication of the findings is that those techniques that will improve students' interest should be adopted both by the teachers and the government in order to enhance students' academic achievement in Mathematics.

Key Words: Mathematics, Interest, Students, Correlation, Achievement.

Introduction

Mathematics is one of the subjects recognized as a major factor in scientific and technological development causing national agenda to focus in this area. According to Ketterlin- Geller, L.R; Chard. J.J; & Fieti, H [2008], the development of mathematical reasoning is the goal of Education in United States and other countries for it is an important skill for development. Low achievements in many areas are the concern for all academics and government institutions. Therefore, revisiting the way students learned and the way students achievement was performed is an effort

worthwhile to consider.

The importance of education to national development has made the Federal Republic of Nigeria to set up National Policy on Education where objectives are to prepare an individual for useful living within the society and further studies. In addition, the Federal Government realizes that education is the major avenue for attaining the country's aspiration of being among the first twenty industrialized countries of the world in the year 2020. According to

Anakpua, B.C & Okeke, N.F (2011), no country can develop productivity without functional and qualitative education. Therefore, greater attention needs to be drawn to education especially mathematics education. A sound mathematical knowledge will enable members of the society to have insight into socio- cultural changes and control of the environment in which they live in.

The world is fast turning into a global village where information and communication technology as well as the use of computers are gaining province in the scheme of things. So we would need a high degree of mathematics knowledge to cope with such technological demands and requirement. An effective mathematics teacher, according to Anakpua et al [2011], should be able to deliberately and conclusively generate desired and stimulating classroom behavior in and among his/her students, as well as arousing their interest in mathematics. In a similar view, Eraichumen (2003) posited that a sound background of mathematic is a necessary condition for the study of science related courses which is needed for scientific and technological development. The importance of mathematics in all spheres of life is recognized worldwide; hence the enormity of effort at improving the teaching and learning as well as research and development in mathematics. In Nigeria, the decorating quality of teaching and learning of mathematics in the secondary school has been of considerable concern over the past two decades. Ukpabio (1997) asked “why should the subject as edifying as mathematics be treated with disdain by students?” Why should students in the country show intense dislike for

mathematics? Ukpabio (1997) further asserted that the students have developed a mental black for the subject, thus they view mathematics as a very difficult subject. This is further collaborated by the chief examiners report in West African School Certificate Examination (2006) which showed a high failure in mathematics.

In order to alleviate the problem of poor achievement in mathematics, more research efforts need to be directed towards the factors responsible for the deplorable condition so as to put students' achievement back on track. Of many factors that contribute to achievement in mathematics, the construct under focus, in this study, is the students' interest.

Interest is an individuals' behavioural tendency to be attracted towards a certain class or classes of activities. It is the strength of a persons' attitude. It is a state of curiosity about something, an influence due to personal importance or capability. Chen. A. & Ennis. C. D. (2004), asserted that interest is defined as an important motivational construct that influences students' engagement and achievement in learning. Hidis, S; & Harackiewicz, J.M (2000), further asserted that interest has been found to play an energizing role in cognitive functioning. Hidis et al (2000), also said that “the level of a persons' interest has respectively been found to be of a powerful influence on learning”. Xiang, P; Chen, A & Bruone, A (2005), also reported that interest emerged as the most important intrinsic motivation construct for predicting future intention. Xiang, et al (2005), found that interest seemed to override the effects of both extrinsic

rewards and other intrinsic motivation sources. Supporting this view, Okoye, C.M; Okongwu, C.T; & Nweke S. O (2015), asserted that a major determinant of students' academic achievement is interest. If this is true, then academic achievement can be predicted from the interest of children in academic activities. Okoye et al (2015), asserted that students who are interested in their learning activities are likely to report high competence beliefs and choose high school courses that are related to their interests. Given this great importance of students' interest for their learning process, it is highly problematic that interest substantially decline during secondary school according to Frenzel, A.C; Gael, T., Peknin, R; & Watt, H. M. G (2010). Frenzel et al (2010), posited that this decline occurs particularly in mathematics. Frenzel et al [2010,] went further to assert that studies highlighting gender difference in students' interest in mathematics indicate lower interest of girls compared to boys.

Achievement is the act of performance and accomplishment. Academic achievement is a measure of students' cognitive abilities. Okoye et al (2015), defined academic achievement as the measure of what the learner has learned or what skills the learner has mastered. Learning in general and mathematics learning in particular is expected to produce individuals that are capable of solving their problems as well as those of the society.

According to Igbokwe (2007), several studies have been carried out to unravel the complex determinant of academic achievement. However, these studies have not addressed the question as to why

student's achievement has remained poor. The search for an explanation of students' poor achievement in mathematics is, therefore, far from being resolved and continues to be one of the most contentious issue in education. The problem of this study posed as question is what is the relationship between students' interest and their achievement in mathematics in secondary school in Ebonyi State? Specifically, the study sort to determine the influence of gender on students' interest in mathematics.

Research Questions

Two research questions guided the study. They are:

1. what is the relationship between interest and achievement among secondary school students in mathematics based on gender?
2. what is the influence of gender on secondary school students' interest in mathematics?

Hypothesis

Ho: There is no relationship between interest and achievement among secondary school students in mathematics based on gender.

Method

The study employed a descriptive survey design as well as correlation design. As pointed out by Adeyemo (2001), the approach involves interpretation of facts without manipulating variables. The study was carried out in Abakaliki Education zone. The population of the study consisted of all the 1,800 female SS II students and 1,473 male SS II students from the ten [10] public schools in the zone. The sample size consisted of two hundred [200] SSII students who were randomly selected from the ten (10)

secondary schools in the zone. Purposive simple random sampling technique was used to select ten (10) male student and ten (10) female mathematics students from each of the schools sampled. Students Interest Questionnaire [SIQ] as well as Mathematics Achievement Test [MAT] were used to assess the student interest in mathematics.

The instrument [SIQ] was validated by experts in Science Education and Measurement and Evaluation. The reliability of Mathematics Interest Questionnaire was determined using split-half reliability method and cronbach alpha fomular was used to determine the reliability of Mathematics Achievement Test. The reliability coefficient of 0.82 and 0.89 were obtained respectively. Research questions one [1]

was answered using Pearson Product Moment Correlation Coefficient while Z - test statistic was used to test the hypothesis at 0.05 level of significant. Research question two [2] was answered using mean and standard deviation. A score of 50% and above indicates high achievement in the 2nd instrument while 49% and below indicate low achievement scores. Mean of 2.5 and above indicates positive interest while mean of 2.49 and below indicates negative interest in mathematics.

Results

Research question 1: What is the extent of relationship between interest and achievement among secondary school students in mathematics based on gender.

Table 1 (i): General Correlation Coefficient of male students' interest

School	A	B	C	D	E	F	G	H	I	J	Grand Mean	SD	R
Interest	--	32.40	30.00	29.20	20.00	29.40	20.00	28.90	20.00	29.70	25.96	4.95	0.8043
Achievement	66.20	64.10	68.00	69.00	64.80	65.70	67.6 0	72.00	66.00	69.30	65.25	4.18	

Table 1(ii): General Correlation Coefficient of female students' interest

School	A	B	C	D	E	F	G	H	I	J	Grand Mean	SD	R
Interest	20.00	35.10	25.00	29.40	20.00	27.80	24.00	27.50	20.00	28.60	25.74	4.68	0.513
Achievement	56.20	54.10	58.85	60.00	59.54	54.80	55.65	57.55	62.00	57.55	56.92	2.43	

The variables in research question I are students' interest scores and their achievement in mathematics. The Pearson Product Moment Correlation Coefficient, $r = 0.8043$ was obtained for male students. This measured the extent of association between two or more variables. This shows a positive strong correlation between the two variables for male students, indicating that there is a very high relationship between interest and achievement in mathematics among secondary school male students. However, this implies that interest and achievement in mathematics change in the same direction. This result suggests that male students' interest predicts what

their achievement in mathematics would likely be.

The Pearson Product Moment Correlation Coefficient, $r = -0.513$ was obtained for female students. This shows a negative weak relationship between interest and achievement in female students in mathematics. The two variables change in opposite direction and this result suggests that female students' interest cannot predict what their achievement in mathematics would likely be.

Research Question 2: What is the influence of gender on students' interest in mathematics

Table II: Influence of gender on students' interest in mathematics

S/ N	Items	X male	SD	X Female	SD
1	Mathematics is an interesting subject	3.43	0.84	2.88	0.84
2	I Work hard to pass mathematics	2.92	0.65	2.94	0.65
3 J	I am calm and relaxed when studying mathematics	2.88	0.70	2.84	0.89
4	I do my mathematics homework on daily basis	2.94	0.32	3.27	0.32
5	Mathematics is a worthwhile and necessary carrier	3.24	0.07	2.78	0.07
6	I wish to be a mathematics graduate	2.97	1.15	2.94	1.15
7	I devote most of my time studying mathematics	2.98	0.87	2.75	0.87
8	I never fear mathematics problems	2.89	0.84	3.26	0.84
9	I never miss mathematics lessons	2.33	0.17	2.43	0.67
10	I like teaching other students mathematics	2.99	0.81	2.86	0.48
11	Mathematics is difficult to understand	3.54	1.03	3.51	1.03
12	Mathematics concerns are abstract	2.28	1.09	2.35	1.09
13	Geometry aspect of mathematics scares me away	1.88	1.17	2.43	1.17
14	I do not need mathematics	2.44	0.98	1.36	0.98
15	I hardly participate during mathematics classes	2.35	1.05	2.44	1.05
16	I dislike studying mathematics	..	0.92	2.38	0.92
17	Studying mathematics make me feel bored	1.96	1.11	1.89	1.11
18	Mathematics lessons give me enough stress	2.43	0.78	1.27	0.78
19	I dread / fear mathematics	2.37	1.14	2.38	1.14
20	I do not regret choosing mathematics as my best subject	2.43	0.73	1.93	0.73
	Grand mean	2.68			2.54

From Table 2 it was observed that male students have higher interest in mathematics than female students with the mean difference of 0.14.

Hypothesis Testing

[Ho], There is no significant relationship between interest and achievement in mathematics among secondary school students.

Table 3: Z - test Correlation Analysis for Ho [Male]

N	r	u	Z _{cal}	Z _{tab}	Decision
10	0.8043	0.05	19.17	1.96	reject H ₀

The result of the Z - test correlation analysis for Ho shows that the calculated Z - value [19.17] is greater than the critical z- value [1.96] at 0.05 level of significance, which led to the rejection of

Table 3: Z - test Correlation Analysis for Ho [Female]

N	r	u	Z _{cal}	Z _{tab}	Decision
10	-0.513	0.05	18.70	1.96	reject H ₀

The result of the Z - test correlation analysis for Ho shows that the calculated Z - value [18.70] is greater than the critical z- value [1.96] at 0.05 level of significance, which led to the rejection of the null hypothesis Ho. Therefore, there is a significant correlation between interest and achievement in mathematics among secondary school female students.

Discussion of the Findings

The result in Table 1 showed that students' interest and achievement in mathematics are related with the correlation coefficient of 0.9475. This shows that an increase in student' interest in mathematics leads to increase in their achievement and vice - versa.

Table 2 revealed that male students have higher interest in mathematics than their female counterparts with the mean difference of 0.14. This finding is in line with findings of Frenzel et al [2010], who reported that male students have more interest than their female counterpart in mathematics. The educational implication of the study is that mathematics teachers will realize that increasing students' interest in mathematics enhances their academic achievement. Hence teachers should adopt a technique that will improve

the null hypothesis Ho. Therefore, there is a significant correlation between interest and achievement in mathematics among secondary school male students.

students' interest in order to enhance students' academic achievement.

Conclusion

There is a significant relationship between secondary school students' interest and their achievement in mathematics. Gender also influences students' interest and achievement in mathematics in favour of male students.

Recommendation

hematics teachers should apply teaching method that will arouse students interest in the class room. They should make use of discovery method of teaching and problem base learning techniques in the classroom.

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