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THE CORRELATES OF GRADE 4 LEARNERS' ACADEMIC PERFORMANCE IN MATHEMATICS

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*Abstract :*The purpose of this study was to find out the correlates of Grade 4 learners' academic performance in Mathematics in public elementary schools of Mangatarem II District, Schools Division Office I Pangasinan during the academic year 2023-2024. Descriptive-correlational method of research was used in this study with a sample of 329 Grade 4 learners. The findings revealed that among the mentioned independent variables as correlates of the learners' performance in Mathematics, the following were found to be significant: age, sex, mother's educational attainment, father's educational attainment, income of father, number of books, availability of computer, access to internet, study hours, and GPA in Math. There existed a significant relationship between the identified correlates and the performance of the learners in Mathematics. There was a significant relationship between the attitude and the performance of the learners in Mathematics. The attitude partially mediated the effect of study hours to performance. In terms of the attitudes of the learners towards mathematics, it was found to be generally neutral which means they were still undecided as to how they felt when they encounter mathematical concepts. Nevertheless, attitude was found to be significant predictor of learners' performance in Mathematics, which means learners with positive attitude performed better than their counterparts with negative attitude. Generally, the correlates used in this study played a big role in explaining the learners' performance in the subject. Implications for mathematics teaching were forwarded as well as recommendations for further research.

Keywords: correlates, academic performance, Mathematics

INTRODUCTION

Mathematics plays a crucial role in our lives, serving as the very foundation of existence. It is the essence that breathes life into the world and everything within it. Without mathematics, life would seem meaningless and futile. In essence, mathematics is the key to unlocking the mysteries of the universe and understanding the intricate patterns that govern our reality. It is not just a subject to be studied in school, but a fundamental tool that is essential for success in any field of study. From basic arithmetic to complex calculus, mathematics is a versatile and indispensable tool that empowers individuals to navigate through various challenges and opportunities in life. In conclusion, the importance of mathematics cannot be overstated, as it is the cornerstone upon which all knowledge and progress is built.

Intermediate algebra, a crucial mathematics course for secondary students, presents a significant challenge for many. Students often struggle with this subject, citing it as one of the most difficult parts of their high school years. Some resort to copying solutions provided by their teachers to tackle math problems. However, when faced with problems lacking examples or solutions, students' abilities vary. Those with strong intellectual capabilities may excel, while others may struggle due to limited background knowledge. The key question that emerges is: what factors truly impact students' performance in mathematics? This query prompts a need for scientific exploration and investigation. Hence, the researcher is keen to delve deeper into this complex and multifaceted topic to uncover the underlying factors influencing students' success in algebra.

Several statistical surveys conducted by different agencies and institutions show evidences of students' low performance in mathematics, in both local and international setting.

Various factors play a significant role in influencing academic achievement, as highlighted in research literature. These factors include the characteristics of the learner, their family background, the school environment, and the region in which they reside. While all these factors are important, it has been argued that the individual learner holds the most direct responsibility for their academic outcomes.

This argument is deeply rooted in child-centered learning theory, which underscores the unique position of the individual learner in the educational process. In this approach, students are empowered to progress academically at their own pace, emphasizing their autonomy and agency in their learning journey. As self-activated makers of meanings, students play an active role in shaping and determining their learning experience.

Therefore, it can be said that the characteristics of the student greatly influence the process of learning, ultimately impacting their academic achievement. By recognizing the importance of individual learners and their unique qualities, educators can better support students in their academic endeavors.

This study, then, put learning into a socio-cultural context based upon the assumption that the unique privileges of individual learners may well be compromised by his/her socio-cultural aspect in which individual learner interacts with personal characteristics, family, and environment. As a matter of fact, personal, family and environment have long been identified as factors that have important influences on students' academic outcomes.

Wolleat, et al., stated that achievement in math has been one of the most significant sex-related differences observed in late adolescent and adulthood. She said that males have been more visible than females in mathematics-related activities. Although, according to her, research on cognitive factors related to mathematics achievement is inconclusive, the study of non-cognitive factors has yielded some interesting results; this was concluded from the findings of several studies that much of the variance in adult achievement in mathematics can be accounted for by differential course taking in high school and college. This differential in the studying of mathematics, she further said, contributes to sex differences in mathematics achievement beginning in high school and increasing after the high school years.

On the other hand, Tatsuoka et. al., as cited by Moenikia, indicated that there is difference between females and males in math motivation, attitude towards math and math achievement. It was supported by The U.S. Department of Education as cited by Thomas, who made an analysis of the Third International Mathematics and Science Study data in English-speaking countries, the data revealed that males outperformed females in 3 of the 25 countries at the fourth-grade level, in 8 of the 39 countries at the eighth-grade level, and in 18 of the 21 countries participating in their final year of secondary school.

Socio economic status of the family of the students, on the other hand, also affects their performance in school, especially in intermediate algebra. Apolonio revealed that several investigations have shown that the socio-economic status appears to be of crucial importance in determining a learner's academic achievement. She said that, this is also one of the variables which affected the performance of the respondents in her study. She stated that based on the geographical and statistical analysis of 2003 survey data, it shows that educational inequalities among black school age children were substantial and systematically associated with socio-economic status. Children of more affluent, better educated and metropolitan parents progressed better in schools, thus attaining higher levels of education and also outperformed others who had progressed in terms of cognitive outcomes (measured by literacy and numeracy test scores).

Maternal and paternal characteristics are another key factor that affects academic achievement. According to Bahadurin et al, Mothers who are more educated and higher self-esteem have children who received higher test scores. On the other hand, smaller family size of a student has been linked with his/her higher academic achievement. Eamon, found out that students with fewer siblings are likely to receive more parental attention and have more access to resources than children from large families.

Finally, students' foundation on the basic concepts also affects their present performance in intermediate algebra. Thus, learning the pre-requisite subjects are necessary in order for a student to perform well in the present mathematical subject. It was confirmed by Lee as he stated that each student's previous knowledge and experience with the object or even under investigation will either facilitate or hinder his or her attempt at each skill. Unfamiliar contexts will increase task complexity; whereas familiar will reduce it.

The present study was similar to that of Cajindos because the independent variables of the latter study included the student-related factors such as sex, time spent in studying math, parents' educational attainment, parents' occupation, family size, study, habits and attitude towards mathematics are also included in the independent variables of this study. A descriptive-correlational method of research was used in this piece of work as what Cajindos applied in her study. However, this study differed from that of Cajindos, since the respondents of the latter were freshman college students, while the present study used second year high school students as the respondents of the study. The students' performance in Intermediate Algebra served as the dependent variable, whereas, Cajindos study was about the student's achievement in trigonometry.

The present study was similar to that of Bassey, et al., since this study used high school secondary students as respondents. This also included gender and students' attitudes towards mathematics as independent variables which were the same to that of Bassey. However, it differed from the other independent variables that this study has utilized just like achievement motivation which was present to that of Bassey but not included in the present study as independent variable.

This study also shared similarities with the study of Lamsis on the independent variables such as students' socio-demographic characteristic and parents/guardian's socio-demographic characteristic and this study also used descriptive research which was similar to that of Lamsis. However, it differed from that of Lamsis in other independent variables used such as the school characteristic which was not included in the present study.

This study was related to that of Barry since the students' socio-economic status was included in the independent variables. However, socio economic status of the respondents served only as one of the predictors in the present study while Bassey's study focused on the effects of socio-economic status on academic achievement of the students.

This study also ran parallel with the one conducted by Crosby in some of the independent variables such as the previous academic performance, financial aid familial support. However, it differed from the said related study in some other independent variables and the dependent variable used by the mentioned study such as the students' success in post-secondary education, the present study used students' performance in intermediate algebra as dependent variable.

This study was also similar to that of Balbalosa, mainly because the study habit as one of the predictors of the present study was also the focus of the mentioned related study as a predictor of students' performance in mathematics. However, the studies differed already in other aspects.

This study was also parallel to the one conducted by Poquiz, since it dealt with the selected variates affecting the performance of the students in intermediate algebra such as age, sex, socio-economic status, parents involvement and attitudes of the students towards intermediate algebra and also descriptive-correlational design was also used in this study just like that of

Poquiz' study. It differed, however, because the mentioned study used the college students as respondents, while this study used the Grade 4 learners. Also, attitude served as a predictor of the said related study while in this study it served as the mediator variable.

Statement of the Problem

This study attempted to discover the correlates of Grade 4 learners' academic performance in Mathematics in Mangatarem II District, Schools Division Office I Pangasinan during the school year 2023-2024.

Specifically, it sought to answer the following sub-problems:

1. What is the socio-demographic profile of the respondents in terms of:
   - 1.1 Age;
   - 1.2 Sex;
   - 1.3 Educational attainment of mother;
   - 1.4 Educational attainment of father;
   - 1.5 Monthly income of mother;
   - 1.6 Monthly income of father;
   - 1.7 Number of brothers;
   - 1.8 Number of sisters;
   - 1.9 Number of books available at home;
   - 1.10 Availability of computer;
   - 1.11 Internet access;
   - 1.12 Number of study hours daily;
   - 1.13 Assistance from other persons;
   - 1.14 Assistance from parents;
   - 1.15 GPA in Mathematics subject.
2. What is the attitude of the Grade 4 learners towards Mathematics?
3. What is the level of academic achievement of the Grade 4 learners in Mathematics?
4. To what percent do the predictors contribute to the total variance in the academic achievement of Grade 4 learners in Mathematics?
5. What independent variables significantly predict Mathematics academic achievement of the Grade 4 learners?
6. Does attitude toward the subject predict the Mathematics academic achievement of the learners?
7. Does attitude mediate the relationship between independent variables and Mathematics academic achievement of the Grade 4 learners?

METHODOLOGY

Research Design

The descriptive-correlational method of research was used. It provided the means by which all the factors that correlate learners' academic performance in Mathematics were described and compared as if the relationships between and among variables were significant. Descriptive research involved collection of data in order to test hypotheses or to answer questions concerning the current status of the subject of the study.

Sources of Data

This study was conducted in Mangatarem II District, Schools Division Office I Pangasinan. The respondents of this study were the Grade 4 learners who were randomly selected from all elementary schools of the said District.

Instrumentation and Data Collection

To obtain the level of performance of the learners, SF10 was used. This form was also known as the learners' permanent record. It contains the following information: learners' name, place of birth, parents/ guardian, general average of the learner during his previous year.

The data on socio-demographic profile of the respondents were obtained using researcher-made questionnaires. The grade in Grade 4 Math of the respondents was obtained from the SF10 or the permanent records of grades of the respondents.

The attitude of the Grade 4 learners was determined through the use of the scale patterned from that of Pelonia's unpublished master's thesis.

In order to answer the problems stated, the researcher used the survey questionnaire to gather necessary data from the learners of Grade 4 in Managatarem II District. The researcher asked permission from the Schools Division Superintendent down to the principal of each school to conduct the study. Thus, the questionnaires on personal profile of the learners as well as the instrument to determine their attitudes towards mathematics were distributed to the respondents.

After administering the questionnaire, the researcher used Microsoft excels in tallying the data. Meanwhile, SPSS descriptive statistics was used in analyzing the frequency of each of the correlates of learners' performance as well as in determining the attitude and the academic achievement level of the learners in their Grade 4 Mathematics subject. On the other hand, in order to determine the percentage that the predictors contribute to the total variance of the learners' academic achievement in Mathematics, to find out the factors which affect learners' academic achievement and to determine the effect of attitude on the learners' academic achievement and in mediation analysis, the researcher utilized a multiple regression analysis through the SPSS linear regression.

Tools for Data Analysis

In this study, the researcher used the following statistical measures to analyze the data for the problems.

Hierarchical regression analysis was used to determine the relationship between the dependent and independent variables. The software Statistical Package for the Social Sciences (SPSS version 16) was utilized in all statistical analyses in this study.

On the other hand, the purpose of multiple regression was to predict a single variable from one or more independent variables. Multiple regression with many predictor variables is an extension of linear regression with two predictor variables. A linear transformation of the X variables is done so that the sum of squared deviations of the observed and predicted Y is a minimum. The

computations were more complex, however, because the interrelationships among all the variables must be taken into account in the weights assigned to the variables. The interpretation of the results of a multiple regression analysis is also more complex for much the same reason.

RESULTS AND DISCUSSION

Profile of the Respondents

Age. As shown in Table 1.1, 91 or 27.7% were 9 years old, 194 or 59.0% were 10, 44 or 13.3% of the Grade 4 learners were 11 and above. Most of the Grade 4 learners were 10 years old. This finding shows that the learners are usually at their early adolescent stage.

Table 1.1 Age of the Respondents

AGE	FREQUENCY	PERCENT
9	91	27.7
10	194	59.0
11-above	44	13.3
Total	329	100.0

Sex. Table 1.2 shows that 123 or 37.4% were male respondents while 206 or 62.6% were female learners. Most of the Grade 4 learners are females.

Table 1.2 Sex of the Respondents

SEX	FREQUENCY	PERCENT
Male	123	37.4
Female	206	62.6
Total	329	100.0

Educational Attainment of Mother of the Respondents. The results in Table 1.3, show that 76 or 23.1% of the mothers of the respondents were elementary level, 28 or 8.5% were elementary graduates, 91 or 27.7% were high school level, 58 or 17.6% were high school graduates, 40 or 12.2% were college level, and 36 or 10.9% were college graduates. Most of the mothers of the respondents were high school level.

Table 1.3 Educational Attainment of Mothers of the Respondents

EDUCATIONAL ATTAINMENT	FREQUENCY	PERCENT
Elementary Level	76	23.1
Elementary Graduate	28	8.5
High School Level	91	27.7
High School Graduate	58	17.6
College Level	40	12.2
College Graduate	36	10.9
Total	329	100.0

Educational Attainment of Fathers of the Respondents. In table 1.4 101 or 30.7% of the fathers of the respondents were elementary level, 23 or 7.0% were elementary graduates, 85 or 25.8% were high school level, 58 or 17.6% were high school graduates, 28 or 8.5% were college level and 34 or 10.3% were college graduates. Most of the fathers of the respondents attained elementary level of education.

Table 1.4 Educational Attainment of Fathers of the Respondents

EDUCATIONAL ATTAINMENT	FREQUENCY	PERCENT
Elementary Level	101	30.7
Elementary Graduate	23	7.0
High School Level	85	25.8
High School Graduate	58	17.6
College Level	28	8.5
College Graduate	34	10.3
Total	329	100.0

Monthly Income of Mothers. As shown in Table 1.5, 279 or 84.8% of the mothers of the respondents had an income of ₱5000 and below, 18 or 5.5% had an income of ₱5001-10,000, 14 or 4.3% had ₱10,001-15,000 income, 11 or 3.3% had an income of ₱15,001-20,000, and seven or 2.1% had above ₱20,000 monthly income. Most of the mothers of the respondents had a monthly income of ₱5,000 and below.

Table 1.5 Monthly Income of Mothers of the Respondents

INCOME (IN PESOS)	FREQUENCY	PERCENT
Above 20,000	7	2.1
15,001 - 20,000	11	3.3
10,001 - 15,000	14	4.3
5,001 - 10,000	18	5.5
5,000 and below	279	84.8
Total	329	100.0

Monthly Income of Father. As shown in Table 1.6, 211 or 64.2% of the father of the respondents had an income of ₱5000 and below, 61 or 18.5% had an income of ₱5001-10,000, 26 or 7.9% had ₱10,001-15,000 income, 15 or 4.6% had an income of ₱15,001-20,000 and 16 or 4.9% had above ₱20,000 monthly income. Most of the fathers of the respondents had a monthly income of ₱5,000 and below.

Table 1.6 Monthly Income of Fathers of the Respondents

MONTHLY INCOME (IN PESOS)	FREQUENCY	PERCENT
above 20,000	16	4.9
15,001 - 20,000	15	4.6
10,001 - 15,000	26	7.9
5,001 - 10,000	61	18.5
5,000 and below	211	64.2
Total	329	100.0

Number of Brothers. It is shown in Table 1.7 that 54 or 16.4% of the Grade 4 learners have no brother, 209 or 63.5% have 1-3, 61 or 18.5% have 4-6 brothers and 5 or 1.5% have 7-9 brothers. Most of the respondents have 1-3 brothers, while only a few of them have 7-9 brothers.

Table 1.7 Number of Brothers of the Respondents

NUMBER OF BROTHERS	FREQUENCY	PERCENT
0	54	16.4
1-3	209	63.5
4-6	61	18.6
7-9	5	1.5
Total	329	100.0

Number of Sisters. Table 1.8 shows 37 or 11.2% of the learner's respondents have no sister, 218 or 66.2% have 1-3 sisters, 61 or 18.5% have 4-6 sisters and 6or 1.8% have 7-9 sisters. Most of the respondents have 1-3 number of sisters, while only few of them have 7-9 sisters.

Table 1.8 Number of Sisters of the Respondents

NUMBER OF SISTERS	FREQUENCY	PERCENT
0	37	11.2
1-3	218	66.3
4-6	68	20.7
7-9	6	1.8
Total	329	100.0

Number of Books Available at Home. As shown in Table 1.9, 104 or 31.6% of the learner did not have any book at home, 193 or 58.7% had 1-2 books at home, 16 or 4.9% had 3-4 books, 10 or 3.0% had 5-6 books and 6 or 1.5 percent had seven or more books as reference materials in Mathematics that were available in learners' homes.

Table 1.9 Number of Books Available at the Respondents' Home

NUMBER OF BOOKS	FREQUENCY	PERCENT
0	104	31.6
1-2	193	58.7
3-4	16	4.9
5-6	10	3.0
7 and above	6	1.8
Total	**329**	**100.0**

Availability of Computer. The results shown in Table 1.10 revealed that 293 or 89.1% of the learners said that they did not have any computer at home, while only 36 or 10.9% of them had computers available at home.

Table 1.10 Availability of Computer In the Respondents' Homes

AVAILABILITY OF COMPUTER	FREQUENCY	PERCENT
Not Available	293	89.1
Available	36	10.9
Total	329	100.0

Internet Access. The data presented in Table 1.11 show that 235 or 71.4% of the Grade 4 learners had no access to internet, while only 94 or 28.6% of them had access to internet.

Table 1.11 Internet Access of the Respondents

ACCESS TO INTERNET	FREQUENCY	PERCENT
No Access	235	71.4
Have Access	94	28.6
Total	329	100.0

Number of Study Hours Daily. It is shown in Table 1.12 that of all the Grade 4 learners, 53 or 16.1% of them had no time to study Mathematics, 226 or 68.7% had (1) hour in studying the subject, 43 or 13.1% had (2) study hours, six or 1.8% had (3) hours in studying and one or 0.3% of them had (5) hours in studying the subject, daily. Most of the respondents devoted (1) hour of studying math daily, however only (1) of them spent five hours everyday in studying the subject.

Table 1.12 Number of Study Hours Daily of the Respondents

NUMBER OF HOURS	FREQUENCY	PERCENT
0	53	16.1
1	226	68.7
2	43	13.1
3	6	1.8
5	1	0.3
Total	329	100.0

Assistance from other Persons. As shown in Table 1.13, 139 or 42.2% said that there were other people helping them in studying the subject, while 190 or 57.8% had claimed that no other people help them in studying math subjects.

Table 1.13 Assistance from other Persons in Studying Mathematics

ASSISTANCE FROM OTHER PERSONS	FREQUENCY	PERCENT
No Assistance	139	42.2
With Assistance	190	57.8
Total	329	100.0

Assistance from Parents. Table 1.14 shows that 147 or 44.7 % of the Grade 4 learners said that their parents did not help them in studying Mathematics, while, 182 or 55.3 % agreed that they were assisted or mentored by their parents in studying the Mathematics subject. Most of them received help from their parents in dealing with the subject.

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Table 1.14 Assistance from Parents in Studying Mathematics

PARENTS' ASSISTANCE	FREQUENCY	PERCENT
Without Parents' Assistance	147	44.7
With Parents' Assistance	182	55.3
Total	329	100.0

General Percentage Average of the Grade 4 learners. The data shown in Table 1.15 reveals that two or 0.6% of the Grade 4 learners got a General Percentage Average in their Grade 3 math of 65-74, 133 or 40.4% got a GPA of 75-79, 181 or 55.0% got a GPA of 80-88 and 13 or 4.0% of them got the GPA of 89-95. Most of the Grade 4 learners got 80-88 GPA in their Grade 3 Math, while only few of them got the GPA of 65-74.

Table 1.15 GPA of the Learners in their Grade 3 Mathematics

GPA FIRST YEAR	FREQUENCY	PERCENT
65 - 74	2	0.6
75 - 79	133	40.4
80 - 88	181	55.0
89 - 95	13	4.0
Total	329	100.0

Learners' Attitude towards Mathematics. Presented in Table 2 are the data which show that 43 or 13.1% of the Grade 4 had negative attitudes towards Mathematics, 153 or 46.5% of them were neutral and 133 or 40.4% of the respondents had positive attitude towards the subject.

Table 2. Learners' Attitude towards Mathematics

ATTITUDE	FREQUENCY	PERCENT
Negative	43	13.1
Neutral	153	46.5
Positive	133	40.4
Total	329	100.0

Level of Performance of the Grade 4 learners in Mathematics. Shown in Table 3 are the data of the frequency distribution of the level of performance of the learners in Mathematics. It shows that seven or 2.1% of the Grade 4 learners failed in the subject, 206 or 62.6% were poor, and 22 or 6.7% were good in Mathematics. Most of the respondents performed well in their Grade 4 Mathematics, while only a minimal number of them failed in the subject.

Table3. Level of Performance of the Learners in Mathematics 4

Relationship between the Independent and the Dependent Variables

LEVEL OF PERFORMANCE	FREQUENCY	PERCENT
Failed	7	2.1
Poor	96	28.6
Good	206	62.6
Very Good	22	6.7
Total	329	100.0

Predictors' Contribution to the Total Variance in the Performance of the Grade 4 learners *in Mathematics.* Regression analysis was utilized to test the effect of the independent variables on academic achievement of the learners in Mathematics. The analysis reveals that with an F-value of 20.396 and significance value of 0.000, the null hypothesis was rejected, which means that there was a significant relationship between the predictors and the academic achievement of the learners in Mathematics.

Table 4. Predictors' Contribution to the Total Variance in the Performance of the Grade 4 learners in Mathematics

Regression summary

R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
.703[a]	.494	.470	3.081

Analysis of Variance

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIFICANCE VALUE
Regression	2904.729	15	193.649	20.396	.000[a]
Residual	2971.696	313	9.494		
Total	5876.426	328			

This study found out that age of the Grade 4 learners was a significant predictor of their academic achievement in Mathematics 4. This finding confirms Piaget's Developmental Theory which emphasized that intellectual ability of a child is qualitatively different at different ages. It further means that a more mature academic achievement has greater capability to learn Mathematics.

Table 5. Regression Analysis on the Independent Variables that Predict the Learners' Academic Achievement in Mathematics

INDEPENDENT VARIABLES	B	SIGNIFICANCE VALUE	INTERPRETATION
Age	0.433	0.009	Significant
Sex	1.697	0.000	Significant
Educational Attainment of Mother	0.521	0.000	Significant
Educational Attainment of Father	0.569	0.000	Significant
Monthly Income of Mother	-0.088	0.634	Not Significant
Monthly Income of Father	0.466	0.019	Significant
Number of Brothers	0.025	0.820	Not Significant
Number of Sisters	0.134	0.216	Not

			Significant
Number of Books Available at Home	0.352	0.007	Significant
Availability of Computer at Home	1.757	0.019	Significant
Internet Access	2.353	0.000	Significant
Number of Study Hours Daily	1.229	0.001	Significant
Assistance from Other Persons	-0.412	0.260	Not Significant
Assistance from Parents	-0.184	0.609	Not Significant
GPA in Grade 3 Math	0.579	0.000	Significant

Relationship between Attitude and the Learners' Performance in Mathematics

Attitude as Predictor of Learners' Performance in Mathematics 4. Table 6 shows regression analysis on the effect of attitude on the learners' academic achievement in Mathematics 4. The analysis revealed that the conceptual model was significant with an F-value of 7.672 and significance value of 0.006. The null hypothesis was rejected, which means that there was significant relationship between the attitude and the academic achievement of the Grade 4 learners in Mathematics.

Table 6. Attitude as Predictor of the Learners Performance in Mathematics 4

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIFICANCE VALUE
Regression	134.702	1	134.702	7.672	0.006[a]
Residual	5741.723	327	17.559		
Total	5876.426	328			

PREDICTOR	β	SIGNIFICANCE VALUE
Attitudes Towards Mathematics	0.943	0.006

Test of Relationship between Independent Variables and Performance with Attitude as Mediator

Mediation Analysis. Shown in Table 7 is the regression analysis on the independent variables and learners' academic achievement with attitude as mediator.

However, it is shown in the same table that mediation analysis did not continue to the following independent variables, namely: age; sex; educational attainment of mother; educational attainment of father; monthly income of father; number of books; availability of computer; internet access; and GPA in Grade 3 Math.

Table 7. Mediation Analysis between the Correlates and the Learners' Performance in Mathematics 4 with Attitude as Mediator

STEPS	INDEPENDENT VARIABLES	DEPENDENT VARIABLES	p	SIGNIFICANCE VALUE	INTERPRETATION
Regression 1	Age	Performance	0.742	0.000	Significant
Regression 2			0.048	0.173	Not Significant
Regression 1	Sex	Performance	0.521	0.000	Significant
Regression 2			-0.019	0.440	Not Significant
Regression 1	Educational Attainment of Mother	Performance	0.521	0.000	Significant
Regression 2			-0.019	0.440	Not Significant
Regression 1	Educational Attainment of Father	Performance	0.569	0.000	Significant
Regression 2			-0.018	0.460	Not Significant
Regression 1	Monthly Income of Father	Performance	0.466	0.019	Significant
Regression 2			-0.005	0.873	Not Significant
Regression 1	Number of Books	Performance	0.352	0.007	Significant
Regression 2			0.027	0.231	Not Significant
Regression 1	Availability of Computer	Performance	1.757	0.019	Significant
Regression 2			-0.234	0.066	Not Significant

Regression 1	Internet Access	Performance	2.353	0.000	Significant
Regression 2			0.097	0.273	Not Significant
Regression 1	Study Hour	Performance	1.229	0.001	Significant
Regression 2	Study Hour	Attitude	0.220	0.000	Significant
Regression 3	Attitude	Performance	0.991	0.002	Significant
Regression 4	Attitude	Performance	0.807	0.013	Significant
	Study Hour		1.051	0.004	Significant
Regression 1	GPA in Grade	Performance	0.664	0.000	Significant
Regression 2	5 Math		0.001	0.875	Not Significant

Note: Mediation of Attitude is present between study hour and Performance

Recommendations

The teacher must establish a link with the parents through home visitations, to have casual conversations with parents about the academic performance of the learners in school, where the teacher would inject in the discussion of those significant factors (i.e. age, financial matter, study hour, books, computer, access to internet and assistance from other persons/parents) that affect the learners' academic achievement in Mathematics in general. This should be done so that the parents would realize the importance of monitoring the success of their children and would gain insights as to what factors contribute to the academic achievement of their children in school. Through this, they could find means to have these factors bring positive effects to their children and their studies.

Parents should serve as extensions of teachers outside the classroom by assisting their children in studying the subject or by seeking other persons to help their children in studying Mathematics. This is because continuity of learning is necessary to develop the right attitude of learners towards learning.

Parents, aside from sending their children to school, should provide the means by which their children be given can gain access to reference books, computer and access to internet, since these contribute much to the academic achievement of the learners in Mathematics.

Teachers must utilize different strategies in teaching Mathematics and motivate the learners' interest to develop positive attitude towards the subject. This can be done through by injecting different tricks in teaching Mathematics, giving problem solving activities as part of their projects and assignments for which they would spend at least 2-3 hours dealing with Mathematical concepts everyday.

The teacher should give assignments or projects to the learners that would enable them to conduct in books or computer and find way to have an internet access since these are significant predictors of the learners' academic achievement in Mathematics.

Lastly, a similar study should be done utilizing the variables which significantly predicted learners' Mathematics academic achievement. Variables such as motivation, math anxiety, and other behavioral factors can be included as predictor variables of Mathematics performance.

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