Comparative Study of the Influence of the Home Background on Student's Achievement in Mathematics in Bensihangul Gumuz Regional State of Ethiopia.

B. J. Ojo (PhD) & Ato Yilma Tsehaw

Abstract

The purpose of this study was finding out how the various home environments in which students live affect the development of their ability to continue with school academic success. It sought to establish if there was any relationship between the home front and the students' academic achievement. Within these environments, measurable characteristics would be the home background. Socioeconomic differences were conventionally indexed by such demographic variables as household income, parents' education, occupation, and the social status.

The study was carried out X-post facto and the methods the researchers used were statistical correlation and ANOVA. Results showed that the home and its environment could predict academic achievement. The regression analyses showed no significant difference in the attitudes of students from different homes towards the learning of mathematics. The study made useful suggestions and recommendations for policy making.

Background to the Study

Academic achievement is undoubtedly a research after the heart of educational psychologists. In their attempt to investigate what determines academic outcomes of learners, they have come with more questions than answers. In recent time, literature has shown that learning outcomes have been determined by such variables as; family, school, society, and motivation factors (Aremu 2000). Academic

performance (most especially of secondary school students) has been largely associated with many factors. Most students in secondary schools in Ethiopia are daily Confronted with challenges of coping with their academics under serious emotional strains occasioned by long walk to school, poor school environment, and been taught by unmotivated teaches. Couples with this, most students encounter different problems in their academic achievement but some may not face such problems because of their backgrounds. Families with high socioeconomic status often have more success in preparing their young children for school because they typically have access to a wide range of providing their young children with high-quality child-care, books, and toys to encourage children in various learning activities at home, they also have easy access to information regarding their children's health, as well as social, emotional, and cognitive development.

Across all socioeconomic groups, parents face major challenges when it comes to providing optimal care and education for their children. For families in poverty, these challenges can be formidable. Sometimes, when basic necessities are lacking, parents must place top priority on housing, food, clothing and health care. Educational toys, games, and books may appear to be luxuries, and parents may not have the time, energy or knowledge to find innovative and less-expensive ways to foster their children's development. Families with low socioeconomic status often lack the financial, social, and educational supports that characterize families with higher socioeconomic status. Poor families also may have inadequate or limited access to community resources that promote and support children's development and school readiness. Parents may have

inadequate skills for such activities as reading to and with their children, and they may lack information about childhood immunizations and nutrition. Having inadequate resources and limited access to available resources can negatively affect families' decisions regarding their young children's development and learning. As a result, children from families with low socioeconomic status are at a greater risk of entering kindergarten unprepared than their peers from families with median or high socioeconomic status.

Various studies have revealed that a relationship existed between parental involvement and academic achievement of children. It was found that the problem of achievement is not a simple thing rather it needs considerable attention. It was also found that high and low achievers differ in their way of motivation, interest, ability, etc. it was revealed that parents of higher SES are more involved in their children's education than are parents of lower SES and that greater involvement fosters more positive attitudes toward school, improves homework habits, reduces absenteeism and dropping out, and enhances academic achievement (Stone and Sarah (1991)). Thus, some of the association between students' outcomes and parents' background is probably attributable to different levels of parental involvement in school-related activities. If this is the case, then strategies that increase parental involvement may be an effective means of improving schooling outcomes and of reducing inequalities in achievement among students with different social-class backgrounds.

Statement of Problem

Most students are at greater risk for poorer out comes in mathematics as a result of various variables like their attitude towards learning mathematics, home factors, teacher factors etc. It is therefore, instructive in the present study to investigate the relationship between home background and

mathematics achievement of students in secondary schools in Bensihangul Gumuz Regional state.

Based on the stated problem the following questions were asked to give the study a focus and direction through out.

a. What is the effect of the socio-economic status of the home on students' achievement in mathematics?
b. Does motivation have any effect on the students' achievement in mathematics?
c. What effects does a broken home have on the academic achievement of students in Asossa and Bambassi High Schools.

Hypothesis

Based on the problem stated above and in order to further our understanding of the relationship between home background variables and mathematics achievement, the following directional hypotheses were tested.

H_{01}: There will be no significant difference in the performance of students, from high income families and those from the low income families, in mathematics.

H_{02}. Achievement press of the home will have no significant impact on the Students' achievement in mathematics.

H_{03}: Environmental factors such as physical facilities, other learning Materials, and environment of the home are not significant Predictors of students' mathematics achievement.

Methodology

The population of this study consists of students who are in High schools of grades 9 and 10 in Asossa zone,

Beneshangul Gumuz regional state. Two schools were taken for this study: Assosa and Bambassi High schools . The number of students in these schools is 4128. It was from this population that a sample of 300 students was drawn through a randomized lottery system from two high schools. The sample includes 120 grade 9 students (40%) and 180 grade 10 students (60%). The test instrument used for the study was a three- page questionnaire titled "Students' Home Background on mathematics Achievement Rating Scale" which was completed by the students.

The questionnaire was translated into Amharic to avoid any problems the respondents may encounter because of language difficulties. Data collected for the study was analyzed using the computer SPSS. The computerized statistical method used here were the Pearson correlation and ANOVA (F-test).

Results and Interpretation

The results of the analyses on the study are presented in the tables below:

H01: There will be no significant difference in the performance of Students, from high income families and those from the low Income families, in mathematics.

Table 1a: Showing the performance of students from both rich and poor families

Variables	Mean	Standard Deviation	N	My parents are rich	Successful in mathematics result
My parents are rich	2.42	0.945	300	1.000	0.203
Successful in mathematics result	2.64	1.078	300	0.203	1.00

Table 1b: A Regression Analysis on variables – ANOVA

Model R = 0.203 R^2 = 0.041	SS	df	MS	F	Sig. F
Regression	10.987	1	10.987	12.785	0.000
Residual	256.093	298	0.859		
Total	267.080	299			

In Table1a, the inter-correlation matrix of the variables scores was computed. In the table, there was a positive and significant relationship of 0.203 between students from rich homes and the others from poor homes.

From the analysis of variance in table 1b, it was observed that the calculated F=12.785, P<0.05 (since Sig F = 0.000) when the variable, "My parents are rich', regressed with the students 'success in mathematics result'. Since Sig F= 0.000, there is a significant difference in the performance of students, from different homes, in mathematics. This indicates that the home determines to a large extent the performance of students in mathematics. Thus the null hypothesis is rejected.

Table 2: Showing the Analysis Of Variance (ANOVA) motivation effect on the students' achievement in mathematics

Model R= 0.384 R^2 = 0.148	SS	MS	df	F	Sig.F
Regression	51.336	7	7.334	7.233	0.000
Residual	296.060	292	1.014		
Total	347.396	299			

In Table 2, the inter-correlation matrix of the predictors (Family member good interest in mathematics, Parents motivate me to be clever in mathematics, Parents reward me each time I perform excellently, Parents always check school works in mathematics. Supportive mathematics teacher at home, Suitable place to study mathematics at home, Parents arrange time to me to study mathematics) and dependent variable (Success in mathematics result) scores are computed. In the table, there is a positive and significant relationship between success in mathematics result and all the predictors.

H_{02}: Achievement press of the home will have no significant impact on the students' achievement in mathematics

Table 3a: means (X), standard deviation (SD) and inter correlation matrix of the achievement press and students' achievement in mathematics

Variables	No	X	SD.	Successful in maths result	Sisters and brothers are educated	Success of others motivate me	My parents are literate
Successful in maths result	300	2.64	1.078	1.000	0.238	0.227	0.271
Sisters and brothers are educated	300	2.82	1.085	0.238	1.000	0.237	0.467
Success of others motivate me	300	3.41	0.901	0.227	0.237	1.000	0.135
My parents are literate	300	2.58	1.093	0.271	0.467	0.135	1.000

Table 3b: Showing regression analysis – ANOVA

Model R=0.345 R^2 = 0.119	SS	df	MS	F	Sig F
Regression	41.287	3	13.762	13.308*	0.000
Residual	306.109	296	1.034		
Total	347.397	299			

*P<0.05

Table 3a, shows the computation of the Pearson correlation of the predictors (My parents are literate, Success of others motivates me, Sisters and brothers are educated) and dependent variable (Successful in mathematics result) .

In the table, there is a positive and significant relationship between the dependent variable and all the predictors.

Table 3.b, shows the multiple regression analysis of the predictors and dependent variable. From this analysis of variance, it is seen that the calculated F value = 13.308 and sig F = 0.000 these indicated that both literate parents, Success of others, educated sisters and brothers are good predictors of successful result in mathematics. Therefore, achievement press of the home has a significant impact on the students' achievement in mathematics. Hence, the null hypothesis is rejected.

H_{03}: Environmental factors such as physical facilities, other learning Materials, and environment of the home are not significant Predictors of students' mathematics achievement.

Table4a: Influence of environmental factors on students' mathematics achievement

Variables	Successful in math result	Parents arrange time to me to study math	Suitable place to study math at home	Supportive math teachers at home	Work to pay school expense	Hawking before or after school
Work to pay school expense	-0.112	-0.266	-0.289	-0.138	1.000	0.523
Hawking before or after school	0.007	0.177	0.129	0.092	0.923	1.000
Successful in math result	1.000	0.239	0.256	0.051	-0.112	-0.007
Parents arrange time to me to study math	0.239	1.000	0.703	0.415	-0.266	-0.177
Suitable place to study maths at home	0.256	0.703	1.000	0.500	-0.289	-0.129
Supportive maths teacher at home	0.051	0.415	0.500	1.000	0.138	-0.092

Table 4b: Showing the multiple regression of variables – ANOVA

Model R=0.294 R^2 = 0..086	SS	df	MS	F	Sig F
Regression	29.978	5	5.996	5.553	0.000
Residual	317.418	294	1.080		
Total	347.397	299			

In table 4a, the Pearson correlation of the predictors: Hawking before or after school, Work to pay school expenses, Supportive mathematics teachers at home, Suitable place to study mathematics at home, Parents arrange time to me to study mathematics and dependent variable (successful in mathematics result) scores are computed. In the table, there is a positive and significant relationship between successful in mathematics result and all the predictors.

In Table 4.b a multiple regression analysis on the data obtained on predictors and dependent variables were run. From the analysis of variance in table performed on multiple regression, the calculated F value = 5.553 and sig F=0.000.Sig F=0.000 shows that with an error less than 0.05, the calculated value of F is higher than the critical value of F. This indicates that the environmental factors (Hawking before of after school, Work to pay school expenses, Supportive mathematics teachers at home, Suitable place to study mathematics at home, Parents arrange time to me to study mathematics) of the home were significant predictors of students mathematics achievement. Therefore the mull hypothesis is rejected.

Discussions

One of the findings of this study shows that mathematics performance of students from different homes (High Income Families and Low Income/poor families) is different. The

variables 'my parents are rich' and student's success in mathematics result show a positive relation of 0.203 as it is indicated in Table 1.a. As it is also observed in table 1.b, the incomes of the family contribute about 4% of the students' performance in mathematics. That is income of the family is one of the factors which is responsible for the performance of students in mathematics. Thus, according to this study the home is a predictor of students' performance in mathematics. Based on this evidence one can say that the families socioeconomic status is the basis for the academic performance of students. This finding is supported by Joshi (1996) when he concluded that parents who are educated and have high SES can offer academic follow up support which is necessary when learning mathematics because of the sequential nature of the subject.

It is assumed that parental involvement would always provide the desired necessary climate conductive to student's mathematics achievement. This study assumed that the parental involvement as a responsibility would reflect on student's performance.

In this study, the analysis of parental involvement and successful result in mathematics indicated that there is a positive and significant relation between them. Analysis has shown that the parental involvement could significantly predict mathematics achievement of secondary school students. The family is both the first and most influential teacher. It is both the first and socializing agent and the most influential; it is responsible for educating the children during their early years. This finding is supported by Evans (1978) when he reported that there is a positive relationship between involvement of

parents and children's academic performance. Thus it is not out of research context to assert that the degree of parental involvement of the parents in the education of their wards would determine the degree of their children academic achievement. This assertion is consistent with the view of Schickedanz (1995) when he reported that children whose parents are passive perform poorly academically. So also, the fact provided by The Children Aid Society (2003) that higher parental involvement is associated with higher educational expectations, enrolment in gifted and talented programs, and positive perceptions of schools, lend a good support to the assertion.

One of the assumptions of this study was that there would be no significant difference in student's mathematics achievement and achievement press of the home. Even if the hypothesis of this study is sated in a null form, the findings of this research have shown that achievement press of the home significantly predicts mathematics achievement of secondary school students.

As was revealed, all the predictors which refers to achievement press of the home (sisters and brothers are educated, success of others motivate me, and my parents are rich) have a significant and positive relation with successful result in mathematics.

Therefore, achievement press is a variable in the home background which is considered to be one factor in determining students' mathematics achievement. This is because of the fact that the student tends to develop a tendency towards his/her brother or sisters education level in the home.

In the analysis of hypothesis, the predictors for environmental factors are the items from the questionnaire (3), My parents arrange a timetable for me to study mathematics, (4) I have a suitable place to study mathematics in my house, (5), I have a

supportive mathematics teacher in my house, (23), I normally work to pay my school expenses, and (24), I normally hawk by going to school and/or after school, and these items versus item (18) I am successful in my mathematics result were regressed .

From the results of the findings in table 4a, the researcher discovered that the items 3, 4 and 5 shows positive significance relation with successful result in mathematics, that is, the availability of one favors the situation for the successful result in mathematics. Where as items 23 and 24 have a negative relationship with item 18. This indicates that working to pay school expenses and hawking before or after school hinders students' mathematics achievement. They lost their time to do such practices out of their school time, this leads to them to be in scarcity of enough time and favorable conditions to study and to do their mathematics home works, this situations influence their success in mathematics. From here one can generalize that students of such kind are faced a big problem not only in their academic achievement but also with their lives.

Thus this finding indicated that environmental factors of the home have influence on the students' achievement in mathematics. It contributes about 8.6% of the performance as it is indicated in Table 4.b, $R^2 = 0.086$.

In general, the following figure shows the extent to which how the home background influences the students' mathematics achievement.

Students' mathematics achievement

Income of families
4.1%

Parental involvement
14.8%

Environmental factors of the home
8.6%
Achievement press of the home
11.9%
Inter-personal relationship
(15.5%)

Conclusion and Recommendation

The parental involvement in the education of children have been emphasized by this study, the results confirmed that the most accurate predictor of student achievement is the extent to which the family is involved in the child's education, therefore on their part, parents should try to encourage, motivate and sustain positive attitudes towards mathematics learning in their children. Parents should give enough attention to their children learning and effective performance in mathematics. There is also the need on the part of the school to set up 'mathematics club' in every secondary schools whose will be:

- to develop a love for mathematics
- to help students develop positive attitude towards mathematics
- to stress the importance of mathematics to students.

The result of this study indicated that students coming form different homes have different performance in mathematics. It is therefore inferred that the school of such students should give due considerations this difference. The schools could communicate with families about school programs and students' progress and needs. That is both the home and the school need to cooperate in making the learners to be well adjusted academically. Parents could have to note that their interpersonal relationships and direct interest in the

academics of their children could bring a better academic performance. Thus effort should be made by them to be positively disposed to academics of their children.

The need for total poverty eradication program by the government cannot be over-emphasized at this point. The need to empower people economically through an open economic policy that will guarantee peoples participation in the on-going educational reforms programme which will in turn lead to the development of the nation's economy.

There is a great need to review the present practice of education, that is, to make the education broad based in such a way that, children from poor background can be allowed to attend elitist schools without being hindered through scholarships and grants from the government. Preferential treatment should be discouraged in the schools. Every child should have equal right to qualitative education.

Child labor to be eradicated by the government. This should be legislated against and be considered as a capital offence. Education should made compulsory and free at all levels to enable the participation of all and sundry.

Poverty is not only having devastative effects on children education, but it is having a terrible effect on the homes. Most of the homes that are broken were found to have been as a result of the inability of the husband to cope with the financial burdens of the home. This has led to many children dropping out of school, premature death of the parents, proximity to HIV/AIDS problems, etc.

The girl child education should be given a serious thought by the government. Legislation or an edict making it compulsory should be promulgated by the government.More female

teachers should be recruited to teach in the secondary schools in order to serve as an encouragement to the girl child.

Since the present study was limited to senior secondary schools, similar studies could be carried out in other sectors of education. This study might be a pointer in such direction.

References

Aremu, A.O. (2000): *Impact of Home and School on Primary School Pupils Academic performance. Nigeria :* Ibadan University .

Stone, N. M and Sara S. McLanahan. (1991): Family Structure, Parental Practices and High School Completion. Chicago

Evans (1978): *Appraising Attitudes in the Learning of Mathematics.* London ; SAGE Publications.

Henderson, A., & Barla, N. (1994): *A New Generation of Evidence: The Family is Critical to Student Achievement.* Washington, D.C. Center of Law and Education.

Hemhill, L. (1991): Home and School Influences on Academic Achievement. Cambridge ; Harvard University .

Joshi, R. N (1996): Why our Students Fail Mathematics Achievement. Cambridge; Cambridge University Press

Onwuamanam, D.O (1991):Foundations of Sociology Psychology of Education. Ado-Ekiti; Ondo state university.

Schickedanz,J.A (1995): Family Socialization and Academic Achievement. New York ; The Psychological Corporations.

The Children aid Society (2003): Fact Sheet on Parental Involvement in Children Education: Benefits and Definitions of Parental Involvement. Cambridge ; Cambridge University Press.