MODELLING THE RISK FACTORS AFFECTING STUDENTS' ATTITUDE AND PERFORMANCE IN MATHEMATICS

OMOSIGHO, Donatus Osaretin

The Federal Polytechnic Ado-Ekiti

E-mail: etindon@yahoo.co.uk

&

RAJI, Yakubu Mohammed

The Federal Polytechnic Ado-Ekiti

E-mail: rajiyakubu311@gmail.com

RAJI, Ismail Iyande

The Federal Polytechnic Ado-Ekiti

E-mail: iiraji2007@gmail.com

Abstract

The study was designed to investigate some of the factors affecting students' attitude and performance in mathematics. A descriptive survey was deployed while a random sampling technique was used in selecting four hundred and sixty students from two departments each across the four schools in the Federal Polytechnic Ado-Ekiti. The data collected was analysed using Chi-square, Pearson Product Moment Correlation and Multiple Regression. The study revealed that there is a significant correlation between the variables; teachers' affective support, parental involvement, classroom management and students' attitude and performance in mathematics. Also, all the variables contributed significantly to students' attitude and performance in mathematics with teachers' affective support contributing the most while parental involvement contributed the least.

Key words: parental involvement, teachers' affective support, classroom management, students' attitude and performance.

INTRODUCTION

One primary goal of an undergraduate education in mathematics is the transition of students to more expert-like conceptions of and ways of thinking about mathematics. This is more than learning the requisite subject content knowledge – students should gain domain-specific ways of thinking and an appreciation for the place of the subject relative to other academic pursuits. But in contemporary times, many students struggle with mathematics and performed abysmally low in their examination in most jurisdictions. In Nigeria, students' performance in Mathematics at the tertiary institution especially in their first year of study has not been encouraging for some time now

Mathematics ability is crucial for the economic success of societies (Lipnevich, MacCann, Krumm, Burrus & Roberts, 2011). It is also important in the scientific and technological development of countries (Enu, Agyman, & Nkum, 2015). This is because mathematics skills are essential in understanding other disciplines (Patena & Dinglasan, 2013). It is accepted universally that a strong foundation in mathematics is a pre-requisite for many careers and professions in today's growing technological society. The implication for any country,

especially a developing country like Nigeria, is that progress in industrial and technological development calls for a workforce that is well-grounded in mathematics.

Mathematics plays a fundamental role in scientific, economic and technological advancement of any nation, therefore, the demand for tremendous mathematical knowledge can never be overemphasized, and thus, future biologist, physicist, chemist, engineers, economist and other professionals would cease to emerge if the problems of poor performance in mathematics in schools are not tackled. Discussing factors that affects student's underachievement will require us to visit the concepts of poor academic performance as exemplified by these eminent scholars. Bakare (1994) described poor academic performance as any performance that falls below an expected standard. While according to Aremu (2013), poor performance is a performance adjudged by the examinee or testee as falling below an expected standard. The interpretation of this expected standard is better appreciated from the perpetual cognitive ability of the evaluator.

The body of knowledge in mathematics is holistically procedural and systematic, which helps to equip students with lifelong skills such as thinking skills, reasoning skills, communication skills, collaborating or team skills, tolerance, information searching skills, decision making skills, and information utilization skills. So, we must ensure that, the knowledge of mathematics is adequately dispatched, delivered and also received by the students, and this cannot be achieved until factors leading to underachievement are identified and tackled (Adewuyi 2014). Essentially, there are numerous factors that may have affected student's achievement in mathematics, but for the purpose of this research, teacher's affective support, parental involvement, and classroom management shall be considered as correlates of students' attitude and performance in mathematics.

Statement of the Problem

This study seeks to determine the extent to which students' attitudinal factors (teacher's effective support, parental involvement and classroom management) jointly and individually affect students' attitude and performance towards Mathematics, with a view towards offering possible suggestions to improve Mathematics achievement.

Purpose of the Study

The recurring poor performance in mathematics at various institutions across the country calls for a resolute effort on measures that will help to curb the menace. Hence the purpose of this study is to investigate some of the factors that could be associated with this low performance of students in their first year of study in higher institutions and proffer some solution. Specifically, the research is to study the predictive effects of parental involvement, teacher's affective support and classroom management on students' attitude and performance in mathematics.

Objective of the Study

The research was guided by the following objectives;

- (i) to know if there is positive relationship between teacher affective support, parental involvement and classroom instruction and students' attitude and performance in mathematics;
- (ii) to examine carefully the joint and relative contribution of teachers' affective support, parental involvement and classroom management with students' attitude and performance in mathematics

Research Questions

The following research questions guided the study

- i. Is there any relationship between teacher's affective support and students' attitude and performance in Mathematics?
- ii. Is there any relationship between parental involvement and students' attitude and performance in Mathematics?
- iii. Is there any relationship between classroom management and students' attitude and performance in Mathematics?
- iv. What is the joint contribution of teacher's effective support, parental involvement and classroom management with students' attitude and performance in mathematics?

Significance of the study

The students concerns can significantly affect their ability to learn and understand the subject mathematics and their attitudes may greatly affect how they perceive their own mathematical capability. This study particularly addresses factors affecting students' attitude and performance in mathematics at schools. In addition, the study was expected to indicate some general problems and needs of students' attitude and achievement in mathematics, as these in turn would help those concerned with devising appropriate measures to minimize the problem of teaching and learning mathematics.

Limitation of the study

Due to time and resource constraint, the study was limited to ND I students of the Federal Polytechnic Ado-Ekiti drawn from eight departments among the twenty-seven in the polytechnic. Hence, the sample is therefore not the representative of all the schools in Nigeria. The process of filling questionnaires by students without assistance was not easy. However, efforts had been made in such a way that the questions were set in a very simple way so that they could understand and fill in the questionnaires while the researcher was there to help them in clarifying things, which are not clear.

Assumptions of the Study

The study assumed that the respondents would be ready to give genuine information during data collection

REVIEW OF RELATED LITERATURE

Students' attitude towards mathematics

Several studies had been done in many countries to find the factors that influence students' achievement and performance in mathematics, their attitude towards mathematics and factors affecting learning mathematics. Among these factors, students' attitude towards mathematics is one important factor that has been consistently studied. Often, the studies on relationship between students' attitude and the students' academic performance show a positive relationship (Mohamed & Ismael, 2011).

Hence students' attitude towards mathematics is a major factor that might influence the performance of the students. Attitude is a central part of human identity. Hence, attitude is defined as "a summary of evaluation of an object of thought" (Sileshi, 1995). In addition, attitudes can be seen as cognitive and affective orientations or dispositions towards an object, idea, person, situation, etc. Attitudes and behaviours frequently measured using self report (Rosetta et al, 2007). Students' attitude and behaviour have been found to be influenced by school and classroom factors (Samuelsson & Granstrom, 2007). Interest and attitude in the subject area are the special predictors for the students' participation and success in the

subject. Attitudes towards mathematics can be referred to a positive or negative emotional disposition towards mathematics.

In addition, students who benefited more from high quality instruction are self regulated, have strong mathematics backgrounds and mathematics self-concept is one of the factors that influence students' achievement in mathematics and this factor influenced their motivation to learning mathematics Andualem (2006). He also noted that student's intellectual-mathematical motivations and social-personal motivations influence the student's attitudes in learning mathematics. Beside these, mathematics anxiety research among elementary to high school populations showed that it is an influential variable in mathematics education (Nor Fadilah et. al, 2010). Kebede (2007) examines "attitudes toward mathematics, on class climates, on students", mathematics self-perception that there are statistically significant effect of gender, student perception of parental opinions, and amount of study time on mathematics attitudes.

On the other hand, Yilmaz et al, 2010 as cited in Mohamed Z. G. (2012), by using semi structured interview have found that some other factors affecting student' attitudes towards mathematics are usage of different teaching materials, teachers' classroom management skills, teachers' content knowledge and personality, teaching topics with real life enriched examples, and students' opinion about mathematics courses.

Researchers concluded that positive attitude towards mathematics leads students towards success in mathematics. Attempt to improve attitude towards mathematics at lower level provides bases for higher studies in mathematics. Students' concerns about mathematics can significantly affect their ability to learn and understand the subject; furthermore, their anxiety and attitude may greatly affect how they perceive their own mathematical competence (Yoseph, 1997).

Students' success or failure in mathematics depends on their altitude towards mathematics. Thus students' attitude towards mathematics influences student participation rate. Students may develop positive attitude towards mathematics or may develop negative attitude towards mathematics. Researchers reported positive effects of Meta cognitive guidance on students' mathematical reasoning in cooperative learning and in different computerized environments Rosetta & petro (2007).

Most of those studies examined the effects of Meta cognitive guidance on solving mathematical problems based on school curriculum and less on tasks based on situations, which represent the kinds of problem encountered in real life (Yohannes, 2007). Nowadays mathematics has been considered as an effective aid towards solving problems of any field. Due to this fact and other reasons, anybody concerned with the problem solving process of any sector is supposed to have a good knowledge of mathematics.

Teacher's affective support

(Marchis, 2011; Sakiz et al., 2012). Teachers' strong influence on students' beliefs in their mathematical competency suggest the importance of the teacher's role in mathematics classrooms which leads to improvement in students' mathematics performance (Berends, Goldring, Stein, & Cravens, 2012; Charalambous, Panaoura, & Philippou, 2009; Johnson, 2000). The affective dimensions of teacher support significantly affect students' academic, emotional, behavioural, and motivational outcomes in educational environment. Components in TAS are specified as caring, respect, concern for, and interest in students, valuing, listening, fair treatment, encouragement, and high expectations (Sakiz, 2007).

According to Rodriguez-Brown (2009) one of the contributions that schools and teachers can make that supports children's transition from home to school is to invite parents to visit the classroom anytime during a preset day. In Rodriguez-Brown (2009), teachers' activities were found to be unique but effective in conveying to parents the teacher's acceptance for the

knowledge the parents already have as well as their involvement in their child's instruction. The context of family and community are critical to a child's school learning but the school is neither powerless nor helpless in influencing the attitudes and manners of adults outside the school which in turns affect the child's learning and development. The school and the families it serves can define their own community with its sense of purpose, patterns of relationship, and expectations of all its members according to their roles.

Parental involvement

In general, parental involvement is referred to as the participation of parents in the education of children to enhance their social and academic achievement (Fishel & Raimirez, 2005). Because parental involvement encompasses various parental practices and behaviours, most researchers regard the construct as multi-dimensional (Brown, 1994; Epstein, 1995). Multi-dimensional definitions of parental involvement include helping with homework or supervising home work, volunteering or attending school events (Epstein, 1987), encouragement of academic success, having high expectations for achievement (Hoover-Dempsey & Sandler, 1995, 1997), and parent-child communication (McNeal Jr, 1999). Parental involvement has been defined as parental participation in school-related activities, parental encouragement of academic success and parental expectations of educational attainment (Chen & Gregory, 2010) and parenting style.

Depending on the way the construct parental involvement has been operationalised and the outcomes measured, the findings about the influence of parental involvement on students' academic achievement have been varied (Catsambis, 2001; W. Fan & William, 2010). The support of knowledgeable, involving, and supportive parents has been found to improve the academic performance and behaviours of their children (Epstein, 1992). Researchers have found a positive association between parental expectation and students' academic achievement in general (X. Fan, 2001; Griffith, 1998; Hubbard, 1999). McNeal Jr (1999) found that communication between parent and child was associated with higher achievement in science. On the other hand, parent participation in parent-teacher association meetings was found to be negatively related to science achievement. When considering achievement in mathematics the findings regarding parent-child communication or parental expectation seem also to apply. For example, researchers have found that home-based parental involvement (e.g., communication between parent-child, parental expectation of success, encouragement of mathematics learning) facilitates mathematics achievement of elementary school students (Fantuzzo, King, & Heller, 1992; Jeynes, 2007; C. Nye, Turner, & Schwartz, 2007).

Parenting style covers the totality of the emotional feeling in a parent-child relationship and is considered as a global construct (Darling & Steinberg, 1993). According to Baumrind (1978), permissive parents are non-controlling, moderately responsive to child's needs, and use minimum punishment. Authoritative parents are reasonably controlling, affectionate, responsive, and they encourage autonomy. On the other hand, authoritarian parents are demanding, non-responsive, and exhibit high levels of control. A number of studies have found a positive relationship between authoritative parenting and academic performance of students (Baumrind, 1978; Reitman, Rhode, Hupp, & Altobello, 2002; Steinberg, Elmen, & Mounts, 1989).

Classroom Management

Any country that desire to bring about a new social order should see science and mathematics as instruments for such a change. To effect a desired change such a country must undertake modification of its curriculum as a first step followed by classroom instructions which is derived from the affected curriculum and implemented by the teacher in the classroom.

According to Gayson (2000), students' academic achievement is simply what you get out of an activity for what you put in. Science and Mathematics Students' Academic achievement also takes into cognizance both quality and quantity of the results achieved. For student to be performing academically well, implies that it is not just number of graduates of the system that matters, but how relevant and competent the graduates are in meeting the societal aspiration, (Fadipe, 2000).

Acquiring knowledge and skills are some of the basic things that the teachers must assist the learner to attain. It is also necessary to encourage students to achieve these objectives through motivations. Motivation is a very important factor promoting the goals and aspirations of any organization. Dugguh (2007) states that human motivation is a complex matter to understand. A person's motives may be clear to him but quite puzzling to others. On the other hand, a person under stress may well not understand his own motives even though these may be perfectly clear to a trained observer. It is important for people in management and supervisory positions to understand such motives and adjust their leadership styles accordingly.

Mallum and Haggai (2000), opined that motivation has greater influence on students' academic achievement in the classroom. They maintained that the work of the teacher is made easier when his students are motivated. Students are eager to learn willing to undertake learning activities and attend classroom regularly and punctually. A classroom teacher will be challenged to plan adequate learning activities to maintain the zeal of the class. They further stressed that in the classroom students are aroused either by inner interest and needs or external stimulus. There are for instance students who undertake learning task on their own and resist disturbance or interruption by other around them. There are those whose interests are aroused only by rewards and incentive and there are those who are spurred by showing of objectives, demonstration stories or the presence of a particular teacher or subject.

Methodology

Research Design

The research study used survey design to investigate the utilization of resources that influence students' attitude and performance in mathematics. Survey method aimed at obtaining data, which can be analyzed, patterns extracted and comparison of such data to be made. Similarly, survey design is used in this study because it enabled the researcher to collect information from a sample of students that will be used to examine the resources that influence the attitude and performance of mathematics in Schools, based on a number of parameters. According to Orodho (2009), survey design is intended to collect data by interviewing or administering a questionnaire to a sample of individuals.

Study Population

The study was carried out in the federal polytechnic, Ado-Ekiti, Ekiti State. The study population comprises of all ND I students of the polytechnic

Sample and Sampling Procedure

The study was conducted using eight departments from the four schools in the polytechnic which was randomly selected

Research Instrument

The research instrument was questionnaire designed by the researcher for the students. The questionnaire consists of eight questions each was designed to determine the effect of teacher's affective support, parental involvement and classroom management on students' attitude and performance in mathematics. The items in the questionnaire were structured on

four likert rating scale of Strongly Agree (SA) – 4, Agree (A) – 3, Disagree (A) – 2 and Strongly Disagree (SD) – 1

Data Analysis

The data collected for the study was analysed using Pearson Product Moment Correlation, Multiple Regression and Chi-square at 0.05 level of significant

Results and Discussion of Findings

Research Question One: Is there any relationship between teacher's affective support and students' attitude and performance in Mathematics?

Table 1: Students' attitude based on teacher's affective support

Methods	Value	α -value	Comment
Chi Square test	0.001	0.05	There is relationship between 'teacher's affective support and students' attitude and performance in mathematics' at 5% significant level.
Pearson Correlation	0.331		There is a low positive correlation between the two variables.

Research Question Two: Is there any relationship between parental influence and students' attitude and performance in Mathematics

Table 2: Students' attitude based on parental involvement

Methods	Value	α -value	Comment
Chi Square test	0.001	0.05	There is relationship between 'parental involvement and students' attitude and performance in mathematics' at 5% significant level.
Pearson Correlation	0.239		There is a low positive correlation between the two variables.

Research Question Three: Is there any relationship between classroom management and students' attitude and performance in Mathematics

Table 3: Students' attitude based on classroom management

Methods	Value	α -value	Comment
Chi Square test	0.001	0.05	There is relationship between 'classroom management and students' attitude and performance in mathematics' at 5% significant level.
Pearson Correlation	0.225		There is a low positive correlation between the two variables.

Research Question Four: What is the joint and relative contribution of teacher's affective support, parental involvement and classroom management on students' attitude and performance in mathematics?

Table 4a: Contribution of teachers' affective support, parental involvement and classroom management on students' attitude and performance in mathematics

Multiple R = 0.369 Multiple R square = 0.136 Adjusted R square = 0.131						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	25.744	3	8.581	24.015	.000
	Residual	162.943	456	.357		
	Total	188.687	459			

Table 4a shows that the independent variables; teacher's affective support, parental involvement and classroom management, when taken together yielded a Multiple Regression Coefficient (R) of 0.369, Multiple R Square of 0.136 and Adjusted R Square of 0.131. The result shows that 13.6% in the variability in students' attitude and performance in mathematics can be explained by the combine influence of the three variables and with p-value < 0.05, it implies that the independent variables contributes significantly to students' attitude and performance in mathematics which indicates that the effectiveness of the variables in predicting students' attitude and performance in mathematics may possibly not have occurred by chance.

Table 4b: Relative contribution of teacher's affective support, parental involvement and classroom management on students' attitude and performance in mathematics

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.917	.190		10.092	.000
Parental involvement	.118	.043	.125	2.758	.000
Teacher's affective support	.281	.044	.286	6.333	.000
Classroom management	.098	.030	.140	3.209	.001

Table 4b above, shows that each of the independent variables made a significant contribution to the prediction of students' attitude and performance in mathematics with teacher's affective support (0.286) making the most significant contribution to the prediction followed by classroom management (0.140) then parental involvement (0.125).

Discussion of findings

The results of the research questions shows that the variables (teacher's affective support, parental involvement and classroom management) are statistically significant at 5% level of significant and a positive and significant correlation exist between these variables and students' attitude and performance in mathematics.

The results of the research is in line with the findings of the studies conducted by Chueng (1998) which found a positive and significant correlation between the attitude of student and their performance in mathematics. McGee (2001), reported from his findings that classroom management plays an important role in maximizing academic interaction time between

teachers and students and that students participation in class can be guaranteed through effective teaching skills. Olatoye & Agbatogun (2009), in their study, found that parental involvement significantly influenced the mathematics achievement of students

The forth findings revealed that the contributions of the independent variables; teacher's affective support, parental involvement and classroom management yielded a Multiple R Square of 0.369 which equate to 36.9% in the variability of students' attitude and performance in mathematics with Adjusted R Square of 0.131. it was discovered that the joint contribution of the independent variables on students attitude and performance in mathematics is significant at ($P < 0.05$). The result also shows that each of the independent variable made a significant contribution to the prediction of students' attitude and performance in mathematics. This finding support the works of Shamila & Yoon (2017), who reported that teacher's affective support, and classroom instruction predict attitude towards mathematics more than parental influences.

Conclusion and Recommendations

The research work shows that teacher's affective support, parental involvement and classroom management positively correlated with students' attitude and performance in mathematics and are statistically significant with teacher's affective support making the most significant contribution to the prediction followed by classroom management then parental involvement.

The study therefore recommends that, parents being their first teacher, should exact an unwavering effort and patient in motivating their children in building a positive attitude towards mathematics and academic performance by supporting their homework expectation and assist them whenever they need help. Mathematics teachers should on the other hand, make mathematics interesting and appealing to the students in developing a positive attitude towards the subject.

References

1. Adewuyi, H.O. 2014. Teachers' efficacy, parental involvement, truancy and gender as correlates of students' mathematics underachievement. Unpublished thesis. university of Ibadan.
2. Andualem Melesse (2006). Social interaction in mathematics class room: A case study of city secondary school. Unpublished Master thesis. Addis Ababa University.
3. Aremu, O. A & Sokan, B. O. (2003). A multi-causal evaluation of academic performance of Nigerian learners: issues and implications for national development. Department of Guidance and Counselling, University of Ibadan, Ibadan.
4. Bakare, C. (1987). Self-Efficacy, Self- Regulation, and Cognitive Style as Predictors of
a. Achievement. *Journal of Educational Computing Research*, 38(2), 139-153.
5. Baumrind, D. (1978). Parental disciplinary patterns and social competence in children. *Youth and Society*, 9, 239-276.
6. Berends, M., Goldring, E., Stein, M., & Cravens, X. (2012). Instructional conditions in charter schools and students' mathematics achievement gains. *American Journal of Education*, 116(3), 303–335.
7. Brown, M. C. (1994). Parental involvement as a variable in reading readiness: A review of related literature. *Information Analyses*. (ERIC Document Reproduction Service No.: ED 384-850.)
8. Catsambis, S. (2001). Expending knowledge of parental involvement in children's secondary education: Connections with high school seniors academic success. *Social Psychology of Education*, 5, 149-177.

9. Charalambous, C. Y., Panaoura, A., & Philippou, G. (2009). Using the history of mathematics to induce changes in preservice teachers' beliefs and attitudes: Insights from evaluating a teacher education program. *Educational Studies in Mathematics*, 71(2), 161–180. doi:10.1007/s10649-008-9170-0
10. Chen, W., & Gregory, A. (2010). Parental involvement as a protective factor during the transition to high school. *Journal of Educational Research*, 103, 53-62
11. Cheung, K. C. (1998). Outcomes of schooling mathematics achievement and attitudes towards mathematics learning in Hong Kong. *Educational Studies in Mathematics*, 19(2), 209-219
12. Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 113, 75-77.
13. Dugguh, S.I. (2007). Human Resource Management. Makurdi: Oracle Business Ltd.
14. Enu, J., Agyman, O. K. & Nkum, D. (2005). Factors influencing students' mathematics performance in some selected colleges of education in Ghana. *International Journal of Education Learning and Development*, 3(3), 68-74
15. Epstein, J. L. (1987). Toward a theory of family-school connections: Teacher practices and parent involvement. In K. Hurrelmann, F. Kaufmann, & F. Losel (Eds.), *Social intervention: Potential and constraints*. (p. 121-136). New York: DeGruyter.
16. Epstein, J. L. (1992). School and family partnerships encyclopedia of educational research (6th ed.). New York: Macmillan.
17. Epstein, J. L. (1995). School/ family /community partnerships: Caring for the children we share. *Phi Delta Kappan*, 76, 701-712.
18. Fadipe, J.O. (2000). Education and Productivity on Nigeria: An Overview in E.O Fagbaniye and D.O Duro Saro (Eds) *Education and Productivity in Nigeria*. Illorin: Hartee Press and Publishing Ltd.
19. Fan, W., & William, C. M. (2010). The effects of parental involvement on students' academic self-efficacy, engagement and intrinsic motivation. *Educational Psychology*, 30, 53-74.
20. Fan, X. (2001). Parental involvement and students' academic achievement: A growth modeling analysis. *The Journal of Experimental Education*, 70, 27-61.
21. Fantuzzo, J. W., King, J. A., & Heller, L. R. (1992). Effects of reciprocal peer tutoring on mathematics and school adjustment: A component analysis. *Journal of Educational Psychology*, 84, 331-339.
22. Fishel, M., & Raimirez, L. (2005). Evidence-based parent involvement interventions with school-aged children. *School Psychology Quarterly*, 20, 37-402.
23. Gayson, P.A. (2000). *Concept of Productivity*, London, Macmillan.
24. Griffith, J. (1998). The relation of school structure and social environment to parent involvement in elementary schools. *Elementary School Journal*, 99, 53-80.
25. Haladyna, T., Shaughnessy J. & Shaughnessy, M. (1983) A causal analysis of attitude toward Mathematics. Study under taken to evaluate school students' attitude towards learning mathematics (<http://www.academic.edu/2684502> An Evaluation).
26. Hoover-Dempsey, K. V., & Sandler, H. M. (1995). Parental involvement in children's education: Why does it make a difference? *Teachers College Record*, 97, 310-331.
27. Hubbard, L. (1999). College aspirations among low-income African American high school students: Gendered strategies for success. *Anthropology and Educational Quarterly*, 30, 363-383.
28. Jeynes, W. H. (2007). The relationship between parental involvement and urban secondary school student academic achievement: A meta-analysis. *Urban Education*, 42, 82-110.

29. Johnson, B. (2000). Investigation of the factors affecting attitudes toward mathematics of students in different college mathematics courses. Ohio University.
30. Kebede Tefera, (2007). A comparative study of private and government secondary school Students" attitude towards mathematics and their mathematics Achievement the case of Adama city. Unpublished Master thesis. Addis Ababa University.
31. Lipnevich, A. A., MacCann, C., Krumm, S., Burrus, J. & Roberts, R. D. (2011). Mathematics attitude and mathematics outcomes of US and Belarusian middle school students. *Journal of Education Psychology*, 103 (1), 105.
32. Mallun, J. & Haggai, M. (2000). Educational Psychology Classroom Practice. Jos, Dekka Publications Nigeria Ltd.
33. Marchis, I. (2011). Factors that influence secondary school students' attitude to mathematics, *Procedia Social and Behavioural Sciences*. 29, 786–793. doi:10.1016/j.sbspro.2011.11.306
34. McGee, M. R. (2001). Measuring effective teaching in inclusive classrooms. Thesis (M. A.). University of Toronto
35. McNeal Jr, R. B. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces*, 78, 117-144.
36. Mohamed & Ismael (2011). Secondary students" attitude towards mathematics in selected school of Maldives. *International Journal of humanities and social science* V1 No 15 International University of Malaysia.
37. Mohamed Z.G. (2012). The factor influencing students" Achievement in mathematics: A case for Libyan"s students. *World Applied sciences Journal(WASJ)* IDOSI publication.
38. Nor FadilahTahar,Zuriati Ismael, Nur Diana Zamani, Norshaieda Adnan. (2010). Students" attitudes towards mathematics: The use Factor Analysis in determining the criteria. Faculty of computer and mathematical science. Faculty of computer science and mathematical sciences University Teknologi; MARA Johor. International Conference on Mathematics Education (ICMER).
39. Nye, C., Turner, H., & Schwartz, J. (2007). Approaches to parent involvement for improving the academic performance of elementary school age children in grades K-6. London, England: The Collaboration. (Retrieved from [http://campbellcollaboration.org/doc pdf/Nye PIREview.pdf](http://campbellcollaboration.org/doc/pdf/NyePIReview.pdf))
40. Olatoye, R. & Agbatogun, A. (2009). Parental involvement as a correlate of pupils' achievement in mathematics and science in Ogun State, Nigeria. *Education Research and Review*
41. Orodho A.J, (2009). Elements of education and social sciences research methods. Nairobi: Kanezja Publishers
42. Patena, A. D. & Dinglasan, B. L. (2013). Students' Performance on Mathematics Departmental Examination: Basis for Math Intervention Program.*Asian Academic Research Journal of Social Science & Humanities*, 1(14), 255-268
43. Reitman, D., Rhode, P., Hupp, S. D. A., & Altobello, C. (2002). Development and validation of the parental authority questionnaire-revised. *Journal of Psychopathology and Behavioural Assessment* , 24, 119-127.
44. Rodriguez-Brown, F. V. (2009). The Home-School Connection: Lessons Learned in a Culturally and Linguistically Diverse Community. NY: Routledge.
45. Rosetta Zen & Petro Di Martino Dipartiment diamathematica PISA (2007) Attitudes towards mathematics: Overcoming the positive/negative Dichotomy. ITALY. The Montana council of teachers of mathematics. International journal of mathematics Education (IJME), volume 1,No1
46. Sakiz, G. (2007). Does teacher affective support matter? An investigation of the relationship among perceived teacher affective support, sense of belonging, academic

emotions, academic self-efficacy beliefs, and academic effort in middle school mathematics classrooms. Ohio State University.

47. Sakiz, G., Pape, S. J., & Hoy, A. W. (2012). Does perceived teacher affective support matter for middle school students in mathematics classrooms? *Journal of School Psychology*, 50(2), 235–255. doi:10.1016/j.jsp.2011.10.005
48. Samuelsson, J., & Granstrom, K. (2007). Important prerequisites for student Mathematics
a. achievement. *Journal of Theory and Practice in Education*.
49. Shamila, D. D. & Yoon, F. L. (2015). Factors affecting students' attitude toward mathematics: A structural equation modelling approach. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(1), 617-629
50. Sileshi Zeleke (1995). Gender difference in mathematics achievement as a function of attitude in grade 8 through 11. Unpublished Master thesis. Addis Ababa University.
51. Steinberg, L., Elmen, D. J., & Mounts, N. S. (1989). Authoritative parenting, psychological maturity, and academic success among adolescents. *Child Development*, 60, 1424-1436.
52. Yohannes Bekele (2007). Barriers to teaching and learning Mathematics in grade four: A study in one primary school in Addis Ababa. University of Oslo, Norway.
53. Yoseph Shume (1997). The relationship between attitude and achievement in mathematics among boys' and girls' in grade 6, 7 and 8. The case of Arsi zone. Unpublished master thesis. Addis Ababa University.
54. Zan, R., & Martino, P. D. (2007). Attitude towards mathematics: Overcoming positive/negative dichotomy. *The Montana Mathematics Enthusiasts Monograph*. (3, p.157-168. The Montana Council of Teacher of Mathematics)