ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 10, Issue, 12, pp.76816-76821, December, 2018

DOI: https://doi.org/10.24941/ijcr.33572.12.2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ASSESSING FACTORS HINDERING ATTITUDE OF STUDENTS TOWARDS MATHEMATICS ON SOME SELECTED HIGH SCHOOL AND PREPARATORY SCHOOL THE CASE OF ILLU ABBA BOR ZONE, OROMIA, ETHIOPIA

***Temesgen Adafire, Teklu Adamu and Alemayehu Demere**

Department of mathematics, Faculty of Natural Science and Computation Science, Mettu University, Ethiopia

ARTICLE INFO

Article History:
Received 08th September, 2018
Received in revised form
19th October, 2018
Accepted 18th November, 2018
Published online 31st December, 2018

Key Words:
Education,
Attitude,
t-test,
Mathematics.

ABSTRACT

Education is one of the most powerful weapons that have no alternative to attack poverty, step up global development and identify the bad and good sides of the world. The development of any country relies largely on education particularly, on quality of education. The purpose of this study was to Assessing factors hindering attitude of students towards mathematics .Specifically, it was intended to investigate the relationship between achievement and attitude of secondary and preparatory school students in mathematics, to identify the existence of significant difference in attitude towards mathematics between male and female secondary and preparatory school students and to differentiate the most challenging component(s) of attitude in the selected secondary and preparatory schools in I/A/Boor. The research was designed in a descriptive survey method. Participants of the study were 341 grade 10 and 12 students of the selected schools and all mathematics teachers engaged in teaching the respective grades. Semi stratified, purposive and random sampling techniques were employed in order to select sample participants. Four instruments were used for data collection from sample students. Secondary data were used to assess achievements in mathematics. The findings of the assessment of secondary and preparatory school student s attitude towards mathematics in the selected schools indicated that at most of the sample students responses mean value greater than 3 for positively phrased statements and less than 3 for negatively phrased statements with respect to the three components of attitude. Data were also analyzed by using t-test for the assessment of attitude of male and female students. The results indicate that, there is no significant mean difference in attitude towards mathematics between male and female, as well as between secondary and preparatory school students. Moreover, it also implies that, the action (behavioral) component of attitude towards mathematics is relatively the most challenging area of secondary and preparatory school students in learning mathematics.

Citation: Temesgen Adafire, Teklu Adamu and Alemayehu Demere, **2018.** "Assessing factors hindering attitude of students towards mathematics on some selected high school and preparatory school the case of illu abba bor zone, Oromia, Ethiopia", *International Journal of Current Research*, 10, (12), 76816-76821.

INTRODUCTION

Education is one of the most powerful weapons that have no alternative to attack poverty, step up global development and identify the bad and good sides of the world. The development of any country relies largely on education particularly on quality education. Education is a means for bringing behavioral changes in the learners in terms of knowledge skills, and attitudes. Begum and Farooqui (2008) explained that education is a vehicle of socio economic progress. They are further explained that education is an ongoing process during this process it is often required to measure the progress of the learners, how far the educational changes occurred among them or how these changes have been organized.

****Corresponding Author:*** **Temesgen Adafire,**
Department of mathematics, Faculty of Natural Science and Computation Science, Mettu University, Ethiopia.

Thus scholars generalized as 'Education plays a vital role in the development of human capital and linked with individuals' wellbeing and opportunities for better living (Farooq *et al.,* 2011; Abbaba *et al.,* 2012) As a result, researchers have long been interested in examining variables contributing effectively for performance quality learners. Students academic performance is affected by inside and outside factors. These include individual and household characteristics, socioeconomic situation, school related factors and government police It is also believed that the development of the country should be inclusive in such a way that all citizens should have equal contributions regardless of their diversities. But the marginal participation of women in science and technology in Ethiopia and other developing countries is well recognized (Atsede 1991; Ngau 1999) as cited by women's minimal participation in these areas is often attributed to or explained by their poor performance in such school subjects as science and mathematics. Taking this into account, Ethiopia had formulated

education and training policy about two decades ago in which all citizens have a chance to participate equally with a considerable affirmative action given for the formerly marginalized groups, especially women. In relation to this idea, the Ministry of Education of Ethiopia revealed that, though this much effort is made to foster science and technology for the wellbeing of the country as well as the Individuals,

Statement of the Problem: Mathematics is believed to be a core subject in all disciplines and in the area of natural sciences in particular and it is clear that mathematical knowledge matters the knowledge of Other fields of studies. In line with this, Kolawole (2007) in his study stated that, mathematics is the bedrock of all sciences. Due to this, several studies have been conducted in different countries. For instance, Haron (2008), on pre-college students on the Bangali campus, Malaysia, found that many students identified mathematics as most difficult subject to learn. Slavin (2010) also stated that students who possess a positive attitude towards mathematics will succeed at higher educational and professional levels. Nicolaidou and Philippou (2003) showed that negative attitudes are the result of frequent and repetitive failures or problems when dealing with mathematical tasks and these negative attitudes may become relatively permanent. Hence student's attitude towards mathematics is a major factor that might influence the performance of the students.

Objectives of the Study: The general objective of the study was to assess factors hindering attitude of secondary and preparatory school student's toward mathematics in some selected secondary and preparatory school students in I/A/BOOR

The specific objectives of the study were to:

- To assess the attitude of secondary and preparatory school students have in mathematics.
- To describe the attitude difference toward mathematics in terms of gender and age among secondary and preparatory school students
- To identify factors that affects the attitude of secondary and preparatory students toward learning mathematics

MATERIALS AND METHODS

Study area and method of data collection: This study was conduct in Illubabor Zone of Oromia national regional state is one of the nine regions of the country which has many zones, districts and city administrations with different natures of weather conditions. Illubabor Zone which is located in south western Ethiopia is one of the 19 zones of Oromia regional state .It has a total area of approximately 16,555km2. It is bordered to the south by kefa zone to the north by west wollega, to the east by Buno Bedele zone and to the west by Gambella regional state. Illubabor Zone has 14 woredas. The climatic condition of the zone is moderate temperature and is favorable for living. It has 40 high schools and 10 preparatory schools in the zone.

Method of data analysis: This section presents the statistical methods used to treat the data obtained from sample secondary and preparatory school students. These data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0 and the qualitative data were narrated in words. The research was conducted in six secondary schools and preparatory schools in Illubabor. Thus, the data obtained through different instruments of data collection were analyzed using both qualitative and quantitative methods of data analysis.

Table 1. Sample size taken for the study

Administrative zone	Sampled distinct	Sample size
Ilu Abba Bor Zone	Bure	50
	Alge	68
	Darimu	85
	Nono	35
	Hurumu	55
	Dorani	48
Total	6	341

Secondary data was collected from student's record office

RESULTS AND DISCUSSION

As it can be shown in Table 2. above, the Ethiopia general secondary education certificate mathematics examination results of three consecutive years of grade 10 students result (2006-2008) were collected and tabulated. Out of 5078 students in these three consecutive years of grade 10 students (2006-2008) were collected and tabulated. out of 5078 students in these three consecutive years 181 students (4.1%) score F and 1595(30.3) scored 'D' adding the two we get that 1776 (33.4%) of the students score grade below 'C' this generally implies that almost fourth percent of the students achieved lower grade in Ethiopian general secondary education certificate mathematics examination. moreover among the remaining, 50.6% scored 'C' and 13% scored 'B' and few students scored 'A' .This in other words implies that secondary school students did not achieve effectively the intended objectives stated in the curricula materials. This low achievement may be resulted of poor preparation of the subject, poor instruction among others. (This low achievement may be result from the attitude that students have towards mathematics). Table 3. above depict that the Ethiopian entrance university mathematics examination result of grade 12 in 2008 out of 120 students (96%)scored less than 50% and failed, 12students (4%) scored in the range 50-75% this result is very low when we compare with respect to the total number of students. The data obtained from the university entrance examination of preparatory school students in the past year were shown very low achievement in mathematics .This implies that preparatory school students did not have favorable attitude towards mathematics or there should be possible factors that inhibit learners not to achieve better in mathematics .less achievement of the intended objectives stated in the curriculum materials is one of the factors.

Analysis of students response to the questioner

Analysis of respondent of students to questionnaires with respect to cognitive of attitude: With mean value 2.45 mathematics made them feel uncomfortable and 32.8 with mean value 2.70 also shown their strong disagreement for that they were not comfortable answering questions in the class. The above results also indicated as students had favorable attitude towards mathematics as the statements are negative and the mean values are less than 3. From this we conclude that most of the sample students of the study have good feeling of mathematics and even the challenges in the subject attract them to have a positive belief that would result in positive attitude towards mathematics. On the other hand there are some students who considered mathematics as their most dread subject

Table 2. The Ethiopian general secondary education certificate mathematics examination results of grade 10 students (2006-2008)

School	Letter grade										
	A		B		C		D		F		Total
BURE	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	
2006			60	31.2	85	44.3	40	20.8	7	3.6	192
2007			50	18.2	170	62	45	16.4	9	3.3	274
2008			55	22.1	176	56.5	55	18.7	8	2.7	294
Hurumu											
2006			40	14.7	165	60.7	60	22.1	7	2.6	273
2007	2	0.7	45	15.1	80	26.8	160	53.7	11	3.7	298
2008	4	1.0	25	6.2	182	45.4	161	40.1	29	7.2	401
ALGE											
2006	2	0.6	55	16.2	145	48.5	78	25.2	5	1.6	285
2007	-		60	18.5	160	49.4	90	27.8	8	2.5	318
2008	4	1.0	22	5.5	310	77.5	59	14.8	5	1.2	400
DARIMU											
2006	3	0.5	34	5.4	187	29.5	137	21.6	9	1.4	370
2007	2	0.3	25	3.8	200	31.8	165	26.1	17	2.7	409
2008	9	1.4	87	12.3	300	48.8	170	26.9	26	4.1	592
Nono											
2006			20	3.2	38	6.0	40	6.3	2	0.3	100
2007	2	0.3	22	3.5	52	8.2	22	3.5	4	0.6	102
2008	1	0.2	31	4.9	62	9.8	33	5.2	6	0.8	133
Dorani											
2006	1	0.2	18	8.3	78	35.9	105	48.4	6	2.3	208
2007	-		23	10.6	83	38.2	97	44.7	9	4	212
2008	3	0.3	21	9.7	102	47	78	35.9	13	6	217
2006-2008	33	2	693	13	2575	50	1595	30.5	181	50.6	5078

Table 3. The average Ethiopian university entrance mathematics examination results of grade 12 students of 2008

School name	Academic year	Total number of students per year			Students yearly score in different range		
					<50%	50-75%	>75%
		M	F	T			
Darimu	2008	20	23	43	43	-	
Bure	2008	21	15	36	28	8	
Alge	2008	37	24	61	57	4	

Table 4. Analysis under cognitive aspects

No.	Statement with respect to cognitive	SD		D		U		A		SA		mean	*SD*
1.	Mathematics is very worthy while and necessary subject	f	%	F	%	f	%	f	%	f	%		
2.	Mathematics help develop the mind and teaches a person to think	10	2.9	2	0.6	19	5.5	29	8.4	281	81.4	4.67	0.85
4.	Mathematics is important in everyday life	7	2	27	7.8	7	2	80	23.2	220	63.8	4.40	1.003
5.	Mathematics is one of the most important subjects for people to study	15	4.3	14	4.1	26	7.5	64	18.6	222	64.3	4.36	1.077
6.	High school mathematics course would be very helpful	17		19		24		48		233		4.35	1.142
7.	I can think of many ways that I use mathematics outside of school	7	4.9	17	5.5	48	7.0	98	13.9	171	67.5	4.20	0.995
24.	Mathematics is dull and boring	19	2.0	15	4.9	59	13.9	79	28.4	169	49.6	4.07	1.160
29.	I believe I am not good at mathematics exercise	94	5.5	28	4.3	81	17.1	70	22.9	68	49.0	2.97	1.481

NO.	Statement with respect to	SD		D		U		A		SA		MEAN	SD
		f	%	f	%	f	%	f	%	f	%		
8	Mathematics is one of my most dreaded subjects	100	29	54	15. 7	45	13	42	12.2	100	29	2.96	1.623
11	Mathematics makes me feel uncomfortable	150	43.5	48	13.9	69	20	23	6.7	51	14.8	2.35	1.464
13.	When I hear the word mathematics , I have feeling of dislike	174	50.4	49	14.2	14	4.1	36	10.4	68	19.7	2.34	1.631
14.	It makes me nervous to even think about having to do a mathematics exercise	153	44.3	46	13.3	38	11	43	12.5	61	17.7	2.45	1.574
15.	Mathematics does scare me at all	137	39.7	44	12.8	63	18.3	19	5.5	78	22.6	2.58	1.593
20	I feel sense of insecurity when attempting	121	35.1	33	9.6	100	29	39	11.3	48	13.9	2.59	1.425
	Total	1189	344.7	441	128	732	212.2	551	159.8	838	242.9	31.26	16.309

Table 6. Responses of students to questioners with respect to behavioral aspect of attitude

No.		SD		D		U	A		SA		Mean	S.D
		F	%	f	%	f	%	f	%	F	%	
3.	I get great deal of satisfaction out of mathematics exercise	13	3.8	11	3.2	42	12.2	112	35.4	153	44.3	4.15
9.	Studying mathematics makes me feel nervous	139	40.3	70	20.3	15	4.3	32	9.3	85	24.6	2.57
10.	My mind goes blank and I am unable to think clearly when studying mathematics	166	48.1	45	13.0	34	9.9	43	12.5	53	15.4	2.33
12.	I am always under a terrible strain in mathematics class	171	49.6	39	11.3	33	9.6	31	9	67	19.4	2.37
16.	I have lost self-confidence when it comes to mathematics	138	40	43	12.5	100	29	31	9	29	8.4	2.33
17	I am able to do mathematics exercises without too much difficulty	63	18.3	31	9	64	18.6	76	22	107	31	3.39
18.	I expect to do fairly well in any mathematics class I take	48	13.9	28	8.1	71	20.6	75	21.7	119	34.5	3.55
19	I am always confused in my mathematics class	134	38.8	40	11.6	76	22	35	10.1	56	16.2	2.53
21	I learn mathematics easily	39	11.3	45	13	77	22.3	63	18.3	117	33.9	3.51
23	I have usually enjoyed studying mathematics in school	46	13.3	23	6.7	66	19.1	90	26.1	116	33.6	3.61
	Total											

Analysis of responses of students in affective aspect of attitude: Mean value 3.51, learn mathematics easily, 33.6% with mean value 3.61 had usually enjoyed studying mathematics in school and 27.5% with mean value 3.37 were comfortable expressing their own idea on how to look for solution to difficulty mathematics exercise.

The above result indicate that majority of the students had favorable attitude towards mathematics as their mean value are greater than 3 with their corresponding percentage

Moreover, for negatively phrased statement, 15.4% with mean value 2.33 their mind goes blank and they are unable to think clearly when studying mathematics, 19.4% with mean value 2.37 always under terrible strain in mathematics class 8.4% with mean value 2.33 had lost self-confidence when it comes to mathematics and 16.2% with mean value 2.53 were confused in their mathematics class. These result also indicated that majority of students shown their mean is less than 3 with corresponding percentages and the statement are negative. However, the results obtained from the data collected through classroom observation in critical thinking strategies of learning contradict with their response because the number of students engaged in these strategies in all of the six schools was very negligible when compared with the number of students in the classes.

Moreover, the data obtained through interview also confirmed the class room observation that, most of the students believe that the subject matter is necessary and important, but the belief about the important of the subject matter by itself is not enough for students unless they can implement it into practice. The reason why teachers said this is that, most of the students were seat idle in mathematics classes except few students engaged in all activities . Therefore from the above data, it is concluded that though students believe as if they have favorable attitude towards mathematics, their performance in computations is very low. This implies that the behavioral aspects of attitude toward mathematics are relatively the most challenging area in learning mathematics.

Analysis of attitude towards mathematics based on gender

Table 7. Group statistics

Variable	Group of respondent	N	Mean	StdDevition
Cognitive	Male	180	4.76	1.43
	Female	161	4.44	1.52

Table 8. Independent sample t-test

		F	Sig.	T	df	95% confidence interval	
						Lower	Upper
Cognitive	Equal variance assumed	7.414	0.42	0.49	332	-0.21	0.4
	Equal variance not assumed			0.72	9	-0.12	0.33

The cognitive aspect of attitude towards mathematics

Ho: There is no significant mean difference in cognitive aspect of attitude towards mathematics between male and female secondary and preparatory school students

An independent t-test was performed to analyze difference in cognitive aspect of attitude towards mathematics based on gender

Table 7. Group statistics

Variable	Group of respondent	N	Mean	StdDevition
Cognitive	Male	180	4.76	1.43
	Female	161	4.44	1.52

Table 8. Independent sample t-test

		F	Sig.	T	df	95% confidence interval	
						Lower	Upper
Cognitive	Equal variance assumed	7.414	0.42	0.49	332	-0.21	0.4
	Equal variance not assumed			0.72	9	-0.12	0.33

From Table 7 above, the mean score of the cognitive aspect of attitude towards mathematics for male sample students (mean = 4.76, standard deviation = 1.43) exceeds the mean score of female sample students (mean = 4.44, standard deviation = 1.52). From 4.7bthe value of the independent sample t-test for equality of means found that attitude towards mathematics equal variance assumed had t value of 0.49 with 341 degree of freedom and sig. value of 0.42, which is not significant at 5% significance level. The 95% confidence interval for the difference between male and female secondary and preparatory school students in cognitive aspect of attitude towards mathematics is -0.21 to 0.4, this interval includes the value zero which is consistent with the finding that the cognitive aspect of attitude of the two groups are not significantly different at the 5% level of significance.

H1: there is no significant mean difference in affective aspect of attitude towards mathematics between male and female secondary and preparatory school students. An independent test was performed to analyze difference in affective aspect of attitude towards mathematics based on gender.

Table 9. Group statics

Variable	Group of respondent	N	Mean	Std.Devition
Affective	Male	180	2.68	1.44
	Female	161	2.88	1.45

Table 10. Independent sample t-test

		F	Sig.	t	df	Sig (2-tailed)	95% confidence interval of the difference	
Affective	Equal variance assumed	0.82	0.57	-0.65	341	0.464	-0.45	0.23
	Equal variance not assumed			0.62		0.464	-0.45	0.23

Siginificant at 0.05 level

From Table 9 above, we can see no mean difference in affective component of attitude towards mathematics for male sample students (mean= 2.68, standard deviation= 1.44) and the mean score of female sample students (mean= 2.88, standard deviation= 1.45). The independent t-test (Table 3.9) found that the affective component of attitude towards. Mathematics equal variance assumed had an F value of 0.82 and sig. value of 0.57. The value of t-test for equality of means found that attitude towards mathematics equal variance assumed had t value of -0.65 with 341 degree of freedom and sig. value of 0.464(2-tailed which is not significant at 5% significance level. The 95% confidence interval for the difference between male and female secondary and preparatory school students in affective aspect of attitude towards mathematics is -0.45 to 0.23, this

interval includes the value zero which is consistent with the finding that the affective aspect of attitude of the two groups are not significantly different at the 5% level of significance

H3: There is no significant mean difference in behavioral aspect of attitude towards mathematics between male and female secondary and preparatory school students An independent t-test was performed to analyze difference in behavioral aspect of attitude towards mathematics based on gender. The result is shown in Table 11 as follows

Table 4a. t-test to determine mean difference in behavioral component of attitude based on gender

Varible	Sexof respondant	N	Mean	Std.deviation
Behavioral	Male	180	3.13	1.28
	Female	161	3.16	1.39

From Table 4 above we can see, the mean value in behavioral component of attitude towards mathematics for male sample students (mean= 3.13, standard deviation= 1.28) less than mean score of female sample students (mean= 3.16, standard deviation= 1.39). The independent t-test (Table 4.1) found that the behavioral component of attitude towards mathematics equal variance assumed had an F value of 2.19 and sig. value of 0.34. The value of t-test for equality of means found that, the attitude towards mathematics equal assumed had t-value 0f -0.21 of 341 degree of freedom and sig.value of 0.607(2-tailed) which is not significant at 5% significance level. The 95% confidence interval for the difference between male and female secondary and preparatory school students in behavioral aspect of attitude towards mathematics is -0.53 to 0.31; this interval includes the value zero which is consistent with the finding that the behavioral aspect of attitude of the two groups are not significantly different at the 5% level of significance.

Conclusion

Based on the findings of the study it is reasonable to draw the following conclusions: As the mean value less than 3 indicated unfavorable attitudes, mean value equal to 3 being neutral in attitude, and mean value greater than 3 indicated favorable attitudes for positive statements, and the reverse is true for negatively phrased statements. The results obtained from most of the sample secondary and preparatory school students have shown mean value greater than 3. From this it is concluded that, sample secondary and preparatory school students have favorable attitudes toward mathematics, though the computational performance of these students is low. The assessment results of attitude of sample male and female secondary and preparatory school students shown that, there is no significant mean difference in attitude towards mathematics of male and female students. The result depicted that gender difference has no effect on sample secondary and preparatory school students' attitude towards mathematics. Based on this result, it is possible to conclude that, both male and female students have positive attitude toward the subject at secondary and preparatory schools. Similarly, the assessment results of attitude of secondary and preparatory school students based on school category shown that, there is also no significant mean difference in attitude towards mathematics between the sample secondary and preparatory school students. The result indicated that, the school level differences have no effect on sample secondary and preparatory school students' attitude towards mathematics .The results obtained from respondents of the questionnaire expressed as if secondary and preparatory school students have favorable attitude towards mathematics. Though students believe as if they have favorable attitude towards the subject, their performance in computations is very low as the data from classroom observations and interview implied. Since computational performance is categorized under the behavioral aspect of attitude, it is concluded that, among the three components of attitudes the action (behavioral) aspect of attitude towards mathematics is relatively the most challenging area in learning mathematics

Recommendation

The Ministry of Education should design and give additional training for lower grade mathematics teachers to be motivated and their students inspired them. Therefore, it is better for mathematics teachers to create awareness early on their students that mathematics is very important and have many applications in everyday life of human being in relating and demonstrating simple teaching aids in their classroom teaching rather than simple calculations of numbers. Mathematics teachers should apply appropriate methods of teaching in order to improve the attitude and achievement of students in mathematics. These are question and answer, individual project, peer and group discussion, presentation, cooperative learning, individual learning and guided discovery methods. In addition mathematics teachers should initiate students to present by a combination of deductive and inductive, analytic and synthetic methods etc. It is also recommended for mathematics teachers to make an ongoing evaluation and give continuous feedback for inappropriate behaviors developed by the students so that appropriate measure will be taken on time. In this case, the class size should get in to consideration and it should be reduced to an optimum number of students as far the teacher manages. It is better for mathematics teachers to develop an interest for mathematics through the setting up of mathematics club in secondary and preparatory schools. The club should aim to develop interest for mathematics it help students develop positive attitude towards mathematics learn the history of mathematics performance in relation to its slow and painful development from ancient to the present times with its importance and further stress its importance to students who will go on to higher institutions of learning for mathematics and related disciplines. It is recommended to mathematics curriculum designers to regularly evaluate, revise and design by identifying the problems to work on improving the status of learning mathematics from the lower level of the country educational system Mathematics teachers in

REFERENCES

Ababa, S. A., Gallarde, K. J., Gica A. L., Gillado, L. B., Laoc, I. R. and Oncone, M. B. 2012. Socio- economic status of parents and academic performances of students. Research Submitted in Partial Fulfillment of the Subject Introduction to Research and Research Works.

Aborsade, O. J. 2009. Cooperative and validation of mathematics attitude scale for secondary schools students in Etiki state Nigeria.

Abu-Hilal, M. M. 2000. A structural model of attitudes toward school subjects, academic aspirations, and achievement *Educational Psychology* 20:75-84.

Aghenta, J. A. 2010. Access by Women to Scientific Studies and Technological Training. In Report of the National Workshop on Promoting Science, Technology, and

Mathematics among Females and Women in Kenya. 37-39. Ikoyi- Lagos, Kenya: Federal Ministry of Education (Women Education Branch).

Akey, T. 2006. School context, students' attitude, behaviour and academic achievement: an exploratory analysis Tech.Rep., MDRC.

Akinsola, M. K. and Olowojaiye, F. B. 2008. Teacher instructional methods and student attitudes towards mathematics *International Electronic Journal of Mathematics education, 3:60-70*

Alrwais, A.M. 2000. The relationship among eighth grade students' creativity, attitudes, school grade and their achievements in mathematics in Saudi Arabia. Ohio: Ohio university *Available at* http://faculty.ksu.edu.sa/a.alrwais/ Pages/PHDThesis.aspx

American Association of University Women 2000. License for bias: Sex discrimination, schools, and Title IX. New York: Marlow and Co.

Asante, K. 2012. Secondary School Students' Attitude towards Mathematics.IFE *Psychology IA,* 20(1):121-133

Atsede W. 1991. Women in science and technology in Ethiopia. In *gender issues in Ethiopia,* edited by TsehaiBerhane-Selassie, 109-119. Institute of Ethiopian

Bajah, S. T. and Bozimo H. 2010. Low performance of Females in Science, Technology and Mathematics Education. In Report of the National Workshop on Promoting Science, Technology, and Mathematics among Females and Women in Kenya. 45-54. Ikoyi-Lagos, Kenya: Federal Ministry of Education (Women Education Branch).

Barton, A. C. 2000. Crafting multicultural science education with pre-service teachers through service learning. *Journal Curriculum Studies,* 32(6): 797-820

Begum, M. and Farooqui, S. 2008. School based assessment: Will it really change the

Bruce, D. 2007. Student Inter action in the Mathematics Classroom. Stealing Ideas or Building Understanding. Trent University.

Caglar, M. 2003. Mathematics and Language. Eastern Mediteranean University, Famagusta, North Cyprus. *The Turkish Online Journal of Educational of Educational Technology* 2(3): 1303-6521.

Casey, M. B., Nuttal, R. L. andPezaris, F. 2001. Spatial-mechanical reasoning skills versusMathematics self-confidence as mediators of gender differences on Mathematics subtests. *Journal of Research in Mathematics Education. 32(1):28-57.*

CSA (Central Statistical Agency) of Ethiopia 2006. Ethiopian demographic and health survey 2005. Addis Ababa,

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