

## INFLUENCE OF SCHOOL TYPE ON GIRLS' ATTITUDES TOWARDS MATHEMATICS IN AINAMOI DIVISION, KERICHO DISTRICT, KENYA

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### ABSTRACT

*This study explored the influences of school type on girls' attitude towards mathematics. A total of 200 girls (80 from girls only schools and 120 from Co-educational schools) responded to a three-point rating scale instrument that measured attitudes towards mathematics. The study focused on four aspects of attitudes towards mathematics. These were; students' confidence in mathematics, their mathematical enjoyment, perceptions of their ability and perceived usefulness of the subject. The reliability index was 0.73 Cronbach alpha which is the accepted threshold for social science research. The study revealed that form four girls generally had a positive attitude towards mathematics. Further, the study revealed that there was no significant difference between girls' attitude towards mathematics in girls' only schools and girls in Co-educational schools. However it revealed that there was a statistically significant difference at 0.05 alpha level in girls' perception of their ability between girls in girls' only schools and those in Co-educational schools in favor of those in girls' schools. The findings are expected to assist the teachers in designing counseling packages for girls especially those in Co-educational schools as early as form one. This might assist in preventing the solidification of stereotypic views about mathematics.*

**Keywords:** Girl, attitude towards mathematics, school type, secondary education

### INTRODUCTION

Girls' education in Kenya at all levels has been of concern to the government, education stakeholders, and the society in general. This has been occasioned by their higher rates of dropping out of school, underachievement in school subjects and inability to enroll in school. This scenario can be attributed to poor school organization, biased curriculum, cultural practices, and attitudes (Barnetuny, 1991; MOEST, 2001). According to MOEST (2002), education has the ability of narrowing the gender imbalance in areas of national development, hence the need to enhance the general education of girls and narrow the gender differences experienced in education.

In a meta-analysis of gender effects in science, boys were found to have a more positive attitude than girls towards science across all science areas. However, although there were more positive attitudes by boys in general *Improving Educational Outcomes of Boys in general* science, girls' attitudes were more positive in high-performance level science. Results from the Programme for International Student Assessment (PISA) showed that in Australia as a whole and within each state or territory, there were no significant differences between boys and girls in science performance (OECD, 2001). The same research showed that there were no significant gender differences in mathematics performance in any Australian state or territory. According to KNEC (2009) gender differences in mathematics performance in favor of boys have consistently been observed in KCSE examinations every

year. According to data from the Ministry of Education the gender gap is minimal at the primary school level compared to the secondary level. Table 2 shows the gender gaps in national K.C.S.E examination mean score for mathematics as percentages for the years 2002 to 2008.

**Table 1. Table showing the gender gaps in K.C.S.E mathematics mean score as percentages, 2002-2008**

	2002	2003	2004	2005	2006	2007	2008
Male	22.53	22.10	21.34	18.49	21.87	23.10	24.31
Female	16.44	16.05	15.39	12.97	15.78	15.78	17.71
Mean Score Difference	6.09	6.05	5.95	5.52	6.09	7.36	6.06

Source: Kenya National Examination Council records

Table 1 reveals that over the years boys have performed much better than the girls. Though the performance of the students is generally poor and fluctuates, a gap between the sexes is always maintained. In Kericho District girls' mathematics performance is low, with the mean grade ranging between D and D, as indicated in table 2.

**Table 2. Girls' mathematics performance in K.C.S.E. in public schools from 2005 to 2009 in Kericho district**

	2005		2006		2007		2008		2009	
<i>Girls' performance index in mathematics</i>	m/s	m/g	m/s	m/g	m/s	m/g	m/s	m/g	m/s	m/g
	2.74	D	3.11	D	3.10	D	3.85	D+	3.25	D
<i>Maximum attainable performance</i>	12	A	12	A	12	A	12	A	12	A

Key: m/s= Mean score, m/g= Mean grade

Source: Examination Department, D.E.O.'s office Kericho.

Despite these observations little research on gender difference in mathematics achievement has been done in Kenya. Eshiwani (1975) carried out a research on sex differences in the learning of mathematics among Kenyan High School students. He found out that there was a gender difference in mathematics performance. Miheso (2000) argue that poor mathematics performance can be attributed to the sex of the learner. Innate/Biological differences between boys and girls have been proposed as an explanation for this difference (Abidha, 1988). Other studies have come up with environmental factors within and out of school as explanations for these differences (Mondoh, 1994)

Attitude towards school subjects is very important to learning. Gender bias by society's stereotyping of mathematics as a male domain, which has often been used to explain females' lower performance and participation in mathematics (Mondoh, 2001). There is a common belief that positive attitude and particular liking for, and interest in mathematics often leads to greater effort and in turn higher achievement (Ng'eno, 2005). Various studies on the relationship between attitude and achievement have been done. For example, Husen (1967) in Moore (1972) sought to determine the inter-relationship between self-concept and attitude toward mathematics and academic achievement in mathematics. Findings revealed that attitudes towards mathematics do influence students' achievement in mathematics. Confidence towards mathematics has to do with how sure a learner is of his/her ability to learn mathematics and to do well in mathematical tasks. Fennema & Leder (1990) found that

when a gender difference in mathematics achievement in favor of males was observed it was followed by a gender difference in confidence in favor of males. The value of mathematics to a female learner can be affected by whether or not she thinks studying mathematics is a sex-role-appropriate activity. The value of mathematics to a girl can be affected by whether or not she thinks studying mathematics is inappropriate for females, and then her achievement in mathematics could result in a perception that she has not adequately fulfilled her sex role.

Hyde and Mertz (2009) in their study on Gender, Culture and Performance reported that boys and girls acquire early number concepts similarly in pre-school years and performance throughout elementary school is similar. They however noted that the boys' skills in mathematics increased faster than girls by around twelve years of age creating a significant gender gap in performance in high school. They noted that Women are willing and able to learn the mathematics needed for advanced degrees in these areas when provided with appropriate socio-cultural environment along with education and career opportunities. The current study established the differences in teachers' perception of their preparedness to implement secondary school mathematics by gender. The prevailing stereotype is that mathematics is a male domain and therefore a very appropriate subject for male students' achievement. Studies have demonstrated that males attributed success to ability and more strongly than did the females whereas females attributed their success to effort and luck more strongly than the males (Fennema & Leder, 1990). It should be noted that a student who attribute success to ability has every reason to expect success since ability will remain relatively constant however a student who attributes success to luck has no such assurance since luck by its nature is outside one's control.

Secondary schools in Kenya are grouped into co-educational and single sex schools among other categorizations; one may ask whether these factors influence girls' attitudes towards mathematics differently in the two school settings. In recent years, there has been a belief in Kenya that girls are better off socially and academically in girls' only schools than in Co-educational schools. In the Western countries though, according to Rathgeber (1995) most students and parents prefer the Co-educational schools especially at the high school level. Rowe and Rowe (2002) present data from 270,000 1994-1999 Victorian school students' performance in the VCE showing that in declining order of achievement are girls in single sex schools, girls in co-educational schools, boys in single-sex schools, and boys in co-educational schools. In addition to this, data presented in the qualitative phase of this report indicate that boys enjoy co-educational environments, teachers find boys respond well in co-educational environments, and a number of key researchers and commentators identify the important role of diversity within schools and that this diversity includes, amongst a number of things, that offered by co-educational contexts. Moreover, motivation and achievement data clearly show that there is a great deal of overlap amongst boys and girls suggesting that inclusive and integrated contexts are not inappropriate for the bulk of the student body. There are few studies that have been done in various countries including Kenya to ascertain the negative effects of single sex schooling and co-educational schooling to learning, especially mathematics.

Since attitudes have been identified as an important factor influencing achievement (Rabari, 1993), the study investigated the gender related attitudes of form four girls towards mathematics in both girls' only and Co-educational schools. The girls' attitudes towards mathematics could be influenced by the presence of boys in the school environment. This study particularly looked at the following attitude factors; the confidence towards mathematics, the enjoyment of mathematics, the perceived usefulness of mathematics, perception of ability and the gendered image of mathematics. The study also sought to

identify whether there were significant differences of girls' gender related attitudes by school type i.e. between Co-educational and single sex schools.

**THEORETICAL FRAMEWORK**

An attitude is conceived as having three interrelated components. Mcleod (1992) identifies the three attitude components relating to attitudes towards mathematics. Firstly, are systems of ideas or beliefs, which reflect a person's value and outlook. This includes beliefs about gender roles and the appropriateness of mathematics for men and women. This component is the cognitive component. Human beings categorize stimuli because it simplifies the task of responding to the environment. According to Triandis (1971) categories are inferred from consistencies in responses to different stimuli. When a student is first taught or studies mathematics he/she places it in one of his/her categories (for example monster) and might have an attitude towards it. A student who does not have the concept of mathematics would not have an attitude toward mathematics. The cognitive representation of the category is the minimum condition for having the attitude. Statements of the form "math is a boys' subject" or "math is easy" are part of this component.

Secondly, are emotions, intense feelings, either positive or negative, which are evoked by a situation such as being confronted with a mathematical task. This is known as the affective component. If a person "feels good" or "feels bad" when he/she thinks about a category we would say that he/she has a positive or negative affect towards the members of this category. For example, if he feels good when he thinks about mathematics he has a positive affective component towards it. We also experience positive affect toward objects that help us reach our goals and negative affect towards objects that hinder us or lead us to undesirable goals. Therefore, cognitive category must become associated with pleasant or unpleasant events or desirable or undesirable goals. When this happens, the category becomes charged with affect.

Thirdly is the behavioral component; that is the predisposition to act in certain ways towards given concepts, ideas, or situations. The behavioral component reflects the behavioral intentions of students towards mathematics after it has been placed in a certain category. A person's behavioral intention, that is, what he would do towards an attitude object, is very closely related to norms of behavior, i.e. what people think he/she should do. For example, if the society believes that girls are intellectually incapable of studying "difficult and task-oriented subjects" such as mathematics and science, then the girls may express their unpleasant emotional state by refusing to work hard and put less effort into studying it or by talking unfavorably against the subject. These consistencies in "thinking", "feeling" and "acting" suggest the existence of an attitude. The figure 1 below, Triandis (1970) represented how the attitude components are measured by a variety of subject responses.

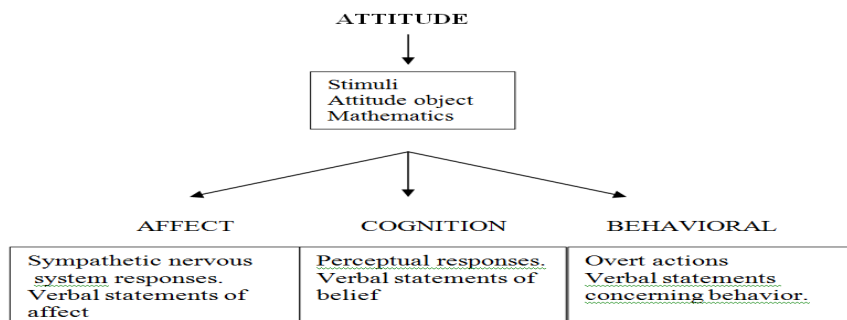


Figure 1. Attitude and its components

Measuring the affect component directly involves the utilization of physiological procedures and use of verbal responses. Perceptual responses and verbal statements are used to determine the cognitive components while overt actions and verbal statements concerning behavior determine the behavioral component.

### **Population and Sample**

The target population of this study was the form four girls' students from public provincial secondary schools in Ainamoi Division of Kericho District. There are 7 such schools in the district. Since the study was limited to the attitudes of girls towards mathematics, all the Co-educational and girls' only schools were selected. These were 3 Co-educational and 2 girls' only schools. Systematic random sampling was used to select the student sample from the girls' only schools. A sample frame which was a class list in order of students' admission numbers was used. A sample of 80 respondents (40 from each girl school) was selected. Further, due to smaller numbers of girls from the Co-educational schools, purposive sampling was used to select all the form four girls in the 3 schools. This gave a total of 120 respondents from this school category. Hence the student sample comprised a total of 200 students.

### **Research Design**

The research design for the study was descriptive survey. The design involves careful description of education phenomena and reports the way things are. It was appropriate for the study since it is able to explore the relationship between variables in their natural setting as they occur (Sproul, 1988). The design also allows the use of questionnaires which are frequently used since they assist in obtaining facts about current conditions and are useful in making inquiries concerning attitudes and opinions (Lovell & Lawson, 1970).

### **Data Collection Procedures**

The instrument used to collect data was the student questionnaire. It was administered to the form four girls in the selected schools. The instrument was chosen for the research because it gives the respondent adequate time to give well thought out answers and makes it possible for anonymity. It was adapted from Clifford (1998) study that in turn adapted from the Girls into Mathematics' booklet (1985). The questionnaire contained two sections.

The first section has employed the likert scale method with 14 statements of attitudes towards mathematics. Each statement has three responses to which the respondent had to choose one option. e.g.

*I enjoy mathematics*                      yes[ ]    no[ ]    sometimes[ ]

The second section contains close-ended questions, which are accompanied by a list of all possible alternatives from which the respondents were expected to select the answer which best described the situation.

The questionnaire was designed to ascertain aspects of attitudes towards mathematics in relation to gender.

- a. Students' enjoyment of mathematics.
- b. Student self-concept in terms of their understanding and ability in mathematics.
- c. Student estimate of the personal value of mathematics.
- d. Student's confidence in their ability in mathematical tasks.
- e. Student's preference for coeducational or single sex teaching relating to attainment.

By using the test-retest procedure, the students' responses were co-related using the Pearson r Correlation Coefficient with a view of establishing the consistency in filling the questionnaire. A reliability index of over 0.7 was obtained.

## RESULTS AND DISCUSSIONS

The following are the results from the questionnaires administered to the students. A total of 200 questionnaires were administered to form four girls out of which 191 questionnaires were returned, thus being a 95.5% return rate. In this study, students' attitude towards mathematics was described as students' enjoyment of mathematics, mathematical confidence, perception of mathematical ability value of mathematics, and their gendered perception of mathematics. The following hypotheses specifically guided the study.

- Ho1: There is no significant difference in mathematical confidence between form four girls in girls' only and in Co-educational schools.
- Ho2: There is no significant difference in mathematical enjoyment between form four girls in Girls' only and in Co-educational schools.
- Ho3: There is no significant difference between forms four girls perception of their ability in girls' only and in Co-educational schools.
- Ho4: There is no significant difference in the perceived usefulness of mathematics between forms four girls in girls' only and in Co-educational school.
- Ho5: There is no significant difference in attitude towards mathematics between form four girls in girls' only and in Co-educational schools.

### Mathematical Confidence

Ho1: There is no significant difference in mathematical confidence between form four girls in girls' only schools and in Co-educational schools.

To determine whether significant difference existed in girls' only and Co-educational schools, the hypothesis one was tested using the mean scores of the following items. These are:

- I. I can solve math problems alone
- II. I am highly motivated to learn math
- III. I believe I am good at math
- IV. I feel confident about my ability in math.

Table 3 and 4 presents the results after analyzing after analyzing Ho1

**Table 3. Table showing the mean and standard deviation on mathematical Confidence**

<i>School Type</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>
Girls' schools	80	2.64	0.415
Co-educational schools	111	2.48	0.784

**Table 4. An analysis of significant difference of the mean scores on mathematical confidence between girls in girls' and those in Co-educational schools**

	<i>T-value</i>	<i>Df</i>	<i>Sig(2-tailed)</i>	<i>Mean diff.</i>	<i>Std Error Difference</i>
Mathematical Confidence	1.729	189	0.085	0.1663	0.9618

The calculated T-value is 1.729, which is less than the critical value of 1.97, at 0.05 level of significance. Therefore the hypothesis is accepted. This indicates that there is no statistically significant difference in mathematical confidence between girls in girls' only and in Co-educational schools. However in table 3, the mean value of the attitude items of the girls in girls' schools have a slightly higher means score on confidence, but the difference is not statistically significant at 0.05 confidence levels. Confidence influences a student's willingness to approach new material and to persist when the material becomes difficult. Despite the immediate difficulty of the task, the student persists when she is confident. From the results in table 3, the mean score of girls in both girls only schools and in Co-educational schools were high, though in girls' schools the means score was slightly higher i.e. 2.64. This reveals that girls are confident when approaching mathematical task and persists till a solution is found. This contradicts with Fennema (1980) whose study on 11<sup>th</sup> grade students revealed that girls had lower levels of confidence in their ability to learn mathematics and more so lower than the boys. The slightly lower means score of girls confidence in Co-educational schools could be explained by the presence of the boys in the learning environment. Kotte (1992) in his study with high school students in Denmark found out that male dominance in the classroom is paralleled by a lack of self-confidence of the girls. This could be an indication of girls' lack of self-confidence in the presence of boys

**Enjoyment**

Ho2: There is no significant difference in mathematical enjoyment between form four girls in girls' only schools and in Co-educational schools.

This hypothesis ascertained the students' stated enjoyment of mathematics between form four girls in girls' only schools and in Co-educational schools. To determine whether significant differences existed in enjoyment of mathematics between girls in girls' school and in Co-educational schools, H<sub>o2</sub> was tested using the mean scores of the following items .

These are

1. I enjoy mathematics
2. I find math interesting always
3. I enjoy trying to solve a new problem
4. I think my math teacher enjoys teaching me.

The results are presented in Table 5 and 6.

**Table 5. Table showing the mean and standard deviation on mathematical enjoyment**

<i>School Type</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>
Girls' schools	80	2.609	0.351
Co-educational schools	111	2.534	0.397

**Table 6. An analysis of significant difference of the mean scores on mathematical enjoyment between girls in girls’ schools and those in Co-educational schools**

	<i>T-value</i>	<i>Df</i>	<i>Sig(2-tailed)</i>	<i>Mean diff.</i>	<i>Std Error Difference</i>
Mathematical Enjoyment	1.363	189	0.175	0.1663	0.9618

A closer look at Table 5 shows that the mean scores of girls in girls only schools is higher (2.609) than for girls in Co-educational schools (2.534). This difference is not statistically significant as shown in table 6. The T-value is 1.363 and is lower than the critical value. Therefore the null hypothesis is accepted. This indicates that there is no statistically significant difference in enjoyment of mathematics between girls in girls’ only schools and Co-educational schools. This means that girls in both school types enjoyed mathematics at the same level. This contradicts with Clifford study, which revealed that girls in girls’ schools enjoyed mathematics more than those in coeducational schools. The means scores of girls in the two school types are high (2.609 and 2.534 out of the possible means score of 3). This means that form four girls enjoy mathematics irrespective of the school type.

**Perception of Ability**

The hypothesis stated:

Ho3: There is no significant difference in perception of mathematical ability between girls in girls’ only schools and in Co-educational schools.

Ho3 was analyzed using the mean scores from the following items;

1. Work in math is very easy
2. I usually understand a new math idea quickly
3. I feel confident about my ability in math.

The results are presented in Tables 7 and 8 below.

**Table 7. Table showing the mean and standard deviation on mathematical perception of ability**

<i>School Type</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>
Girls’ schools	80	2.394	0.316
Co-educational Schools	111	2.253	0.275

**Table 8. An analysis of significant difference of the mean scores on mathematical perception of ability between girls in girls’ only schools and those in Co-educational schools**

	<i>T-value</i>	<i>Df</i>	<i>Sig(2-tailed)</i>	<i>Mean diff.</i>	<i>Std Error Difference</i>
Mathematical perception of ability	1.363	189	0.175	0.1663	0.9618

Table 7 shows that the mean scores of girls in girls’ only schools was higher (2.394) than those in Co-educational schools (2.253). In table 8, the T-value (3.213) is higher than the critical value. The null hypothesis is thus rejected; there is a significant difference in girls’



perception of their ability between girls in girls' schools and those in Co-educational schools. The girls in girls' schools have a higher perception of their ability.

A positive and high perception of ability is linked to perception of mathematical success and thus increases the student self-esteem. The results in Table 7 and 8 give an indication that studying in Co-educational environment could influence how girls perceive their ability. Girls in Co-educational schools reveal that their perception of ability in mathematics is lower. This could be as a result of male dominance within the classroom coupled with gender differential treatment of the students by the teachers. This might also indicate that Co-educational schooling reinforces the myth that males are superior in terms of mathematical ability.

Perceived usefulness of mathematics

The hypothesis that was tested stated that:

Ho4: There is no significant difference in the perceived usefulness of mathematics between form four girls in girls' only schools and in Co-educational school.

To analyze the perceived usefulness of mathematics in girls' schools and Co-educational schools, the means of the following items were used. These were:

1. Knowing math will help me get a job
2. I think math will be an important part of my job when I leave school.

Table 9 and 10 below shows the analysis of the hypothesis.

**Table 9. Mean and Standard deviation on perceived usefulness of mathematics**

<i>School type</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>
Girls' schools	80	2.46	0.75
Co-educational Schools	111	2.56	0.55

**Table 10. An analysis of significant difference of the mean scores on the perceived usefulness of mathematics between girls in girls' school and those in Co-educational schools**

	<i>T-value</i>	<i>Df</i>	<i>Sig(2-tailed)</i>	<i>Mean diff.</i>	<i>Std Error Difference</i>
Perceived usefulness of mathematics	-1.046	189	0.297	-0.1030	0.0985

Critical value:  $t_{05} = 1.97$

In table 9 the mean score of the girls in girls' schools i.e. 2.46 is lower than that of girls in Co-educational schools i.e. 2.56. The t-value is therefore -1.046, which is less than the critical value. The null hypothesis is accepted. This indicates that the difference is not statistically significant at 0.05 significance level. However a closer look at table 9 reveals that girls' mean score in Co-educational schools is higher than that of those in girls' only school. This brings about the negative sign in the mean difference (-0.1030).

Career aspirations influence the differences in attitude. The mean scores of form four girls in the two school types were high meaning that girls exhibit more interest in the subject because they perceive math to be important and useful in future. The results also imply that mathematics has been accepted as an appropriate subject for girls.

### Girls' attitude

The hypothesis stated: There is no significant difference in attitude of girls towards mathematics between girls in girls' only schools and in Co-educational schools.

The results after analyzing this hypothesis are presented in table 11 and 12 below.

The mean scores of the following items were used to test the overall attitude of the girls.

**Table 11. Number of girls responding to the options on the attitude items as percentages**

<i>Attitude item</i>	<i>% of girls responding "Always"</i>	<i>% of girls responding "Sometimes"</i>	<i>% of girls responding "Never"</i>
1. I enjoy mathematics	48.5	49.2	2.3
2. I find math interesting always	41	19.3	39.7
3. Work in math is very easy	78	21	1
4. I can solve math problem alone	45	32	23
5. I usually understand a new math idea quickly	16.5	73.5	10
6. I am highly motivated to learn math	45	44	11
7. I think my math teacher thinks am good at math	50	36.8	13.2
8. Knowing math will help me get a job	79	16	5.5
9. I think math will be an important part of my job when I leave school	78	16	6
10. I believe that I am good at math	61.6	31.8	6.6
11. I enjoy trying to solve a new math problem	58	35	7
12. I feel confident about my ability in math	65	24	11
13. I do not like it if I miss a math lesson	75	22	3
14. I think my math teacher enjoys teaching me	68	28	4

**Table 12. Mean and Standard deviation of attitude items**

<i>School type</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error mean</i>
Girls' Schools	80	2.501	0.304	0.029
Co-educational Schools	111	2.447	0.248	0.028

**Table 13. An analysis of significant difference of the mean scores on attitude towards mathematics between girls in girls' only schools and Co-educational schools**

	<i>T-Value</i>	<i>Df</i>	<i>Sig(2-Tailed)</i>	<i>Mean Diff.</i>	<i>Std Error Difference</i>
Attitude	1.324	189	0.187	0.0546	0.04128

Critical value:  $t_{.05} = 1.97$

The t-value is 1.324, which is less than the critical value of 1.97. Therefore we accept the null hypothesis stating that there is no statistically significant difference in attitudes of girls in single sex schools and girls in Co-educational schools. However in table 12 the mean attitude scores of girls in girls' schools is a bit higher than that of the Co-educational schools.

The mean scores are generally high in the two school types, i.e. 2.501 and 2.44 in the girls' only school and Co-educational school respectively. This is consistent with the results in Table 8 which revealed that a higher percentage of the girls were in agreement with the 14 positively stated attitude items in the student questionnaire. This contradicts majority of the studies, which confirm that girls have a negative attitude towards mathematics. (Kiretu, 1994; Miheso, 2002). According to Clifford (1998) attitudes are the most influential determinants of success or achievement, whether be it in terms of attainment or continued participation. However, this study reveals that girls have a positive attitude towards mathematics yet their performance is lower than expected. This may imply that other factors other than attitudes influences more the performance of girls in mathematics suppressing the role that attitudes can play in influencing success.

## CONCLUSION

From the findings of the study, the following conclusions were made:

1. Girls in secondary schools generally have a fairly positive attitude towards mathematics and that there are no statistically significant differences in attitudes of girls in girls' only schools and those in Co-educational schools.
2. The school type i.e. Co-educational and girls' schools, does not affect the girls' enjoyment of mathematics, confidence towards mathematics, and perceived usefulness of mathematics. There were no statistically significant differences of these attitude factors between the school types. It is concluded that the presence of boys or their absence in the learning environment does not influence girls' enjoyment of mathematics, confidence towards it, there perceived usefulness of mathematics.
3. There was a statistically significant difference in the girls' perception of their ability between girls in girls' schools and those in Co-educational schools in favor of the girls' schools. The girls in girls' schools had a higher perception of their ability with a mean of 2.394 compared to the girls in Co-educational schools whose mean was 2.253. The girls in girls' schools view mathematics as a more approachable subject and able to tackle it more than the girls in the Co-educational schools.

## RECOMMENDATIONS

On the basis of the findings of this study and the conclusions, it is recommended that:

1. The results of the study points out that secondary school girls have a positive attitude towards mathematics contrary to common believe that girls do not like mathematics, it is indicated that girls enjoy, have confidence and value mathematics. Teachers should therefore take advantage of this situation to ensure excellence in mathematics. Teachers should be in-serviced or attend seminars on mathematics teaching so as to learn from experts' effective teaching methods and aids and also update their teaching techniques.
2. The head teachers and teachers in Co-educational schools should be gender sensitized during training and in seminars and workshops so that they become

sensitive when dealing with boys and girls regarding the comments they make, methodology used in class rooms and task distribution.

3. Guiding and counseling of female students about their ability and importance of mathematics should be done as early as form one. This may prevent formation and further solidification of stereotypical beliefs.

### SUGGESTIONS FOR FURTHER RESEARCH

The following suggestions were made for further research.

1. Teachers' attitudes towards teaching mathematics in Co-educational and single sex secondary schools should be investigated and the relationship of these attitudes with achievement in mathematics.
2. An investigation on whether there is any relationship between performance and girls' attitude in Ainamoi Division should be conducted.
3. This study to be carried out to include boys, therefore comparing students' attitudes towards mathematics in girls' only schools, boys' only schools and Co-educational schools.

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