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Impact of Gender Differences on Students' Performance in Mathematics within Selected Secondary Schools of Gicumbi District, Rwanda

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Abstract: *The main objective of this study was to examine the impact of gender differences on students' performance in mathematics in secondary schools in Gicumbi District, Northern province, Rwanda. The adopted research design was a descriptive survey. The study involved a total of one hundred and three (103) participants, consisting of ninety-seven (97) students and six (6) mathematics teachers from three purposively selected schools by using a simple random sampling method. Quantitative data were analyzed using the statistical package for social science software version 20 (SPSS) employing frequencies, bar charts, percentages, means, standard deviations, and t-tests. Validation of the instruments was done by addressing instruments to the supervisor to check, and peer reading by fellow masters students was used. The table of specification was used to check the content validity for mathematics test and two mathematics teachers of senior five were consulted and their comments were used to improve the instruments for beginning the collection of data. This study revealed that girls score better in mathematics than boys. In the mathematics test, girls achieved an average of 12.42 while boys scored an average of 10.82. This demonstrated that there were large disparities between boys' and girls' performance. It was recommended that remedial interventions that emphasize on these differences between boys and girls should be reinforced. Gender bias should not be present in mathematics teaching and assessment methods to help all learners understand that they are able to compete and perform well in the same condition.*

Keywords: *Performance, Gender differences, Mathematics, Students, Teachers*

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1. Introduction

The basis of the scientific and technological knowledge that cultures all over the world value is mathematics, according to society. It serves as a vehicle to achieve political, socioeconomic, scientific, and technical advancement. (Mutai, 2016). This does not explain why Rwandan primary and secondary schools require students to take mathematics. Universities may also utilize mathematics to select secondary school students for entry requirements into degree programs with a science focus (Kenya Universities Joint Admission Board, 2006).

The questions like what and how? are based on when decisions are being taken, before looking for a solution,

these questions are answered by transforming each assertion into a statement of mathematics. The level of precision of an individual's decision is determined by his or her mathematical proficiency. This indicates that to perform properly in society, an individual need to have a reasonable understanding of mathematics, particularly in this modern age.

According to (Tella, 2008), Mathematics is a scientific language and according to (Aminu, 1990), mathematics is not only the language of science, but also a necessary food for thought, logical reasoning, and advancement. Mathematics frees the mind, while assessing one's intellectual talents and pointing them in the right direction. Mathematics, according to (Okebukola, 1992), is the core intellectual discipline of technology society. Finally, mathematics is the foundation of all sciences, technology, and human efforts.

It is well known that girls and women are generally expected to dress in typically feminine ways and be polite, accommodating, and nurturing. Men are generally expected to be strong, aggressive, and bold. Gender differences in learning Mathematics should no longer be regarded as an issue and should aim at reducing the gaps in performance in mathematics subjects (Innocent et al, 2018). The performance of girls in most subjects, especially Science, Mathematics, and Technology, is poorer than boys, resulting in a lack of female role models in these fields (Kestelyn, 2010). Young women's lack of confidence in handling arithmetic problems, one-sided study hall trials based on sexual orientation, generalizations by students or remarkable people, and sex distinction in contacts in a similar observation are all variables that contribute to female poor enrollment in mathematics (Catheline, 2009)The study conducted by (Musimenta et al., 2020)indicated the following results in the table below about gender differences and mathematics performance in secondary schools in different countries.

Table 1: Mathematics performance according to school and gender

Names of school	Rwanda	Angola	Zambia	Kenya
Male	60.0	40.0	59.7	58.3
Female	40.0	60.0	40.3	41.7
Total (%)	100	100	100	100

In Rwanda's education system, policies, programs, and methods boosting females' enrolment in mathematics and science disciplines are currently being implemented (Kestelyn, 2010). The Girls' Education Strategic Plan, approved in 2009, the First Lady's national awards for the best performing girls and the School Campaign, the National Taskforce for the coordination of girls' education, established in 2005, and sanitation and hygiene facilities provided in every newly constructed school are just a few of the policies and initiatives. Strengthening gender-sensitive and learner-centered approaches, as well as promoting affirmative action policies, where appropriate, are among the strategies put in place to achieve these policies. All of these programs and activities are aimed at fostering educational equality, with gender equality being a crucial principle (Kestelyn, 2010).

Various studies have attempted to address the topic of gender inequalities in mathematical education (Aminu,1990; Mutai,2016; Innocent,2018; Musimenta,2020). While most of these studies focused on gender concerns in mathematics (Hall, 2012; Tang et al. 2010) and gender disparities in mathematics (Amelink, 2009; Masanja, 2006), just a few studies looked at students' gender perspectives (Owiti, 2011; LaFleur, 2011; Uwineza,2018; Irakoze, 2021). A small number of research papers in Rwanda that looked at the gender component focused on girls' education in general, but not specifically on mathematics education (Hugin, & Randell, 2007; Kestelyn, 2010). Gender difficulties in mathematics education have been studied in African nations such as Kenya (Owiti, 2011) and Tanzania (Masanja, 2006). In terms of student attitudes and involvement in mathematics class, males exhibited significantly more positive views toward mathematics than females (Owiti, 2011) and a higher level of participation in non-mandatory levels of mathematics than females (Owiti, 2011). Mathematics frees the mind while also measuring one's intellectual talents and pointing them in the right direction.

1.1 Statement of the Research Problems and Motivation

Education stakeholders continue to invest money into young Rwandans' education in the hopes of making good, if not excessive, fallouts in terms of assistance and facts. Regardless of the focus on education in Sustainable Development Goals (SDGs) by 2030 desire to attain gender equality and empower all women and girls, difficulties like access and relevance of curriculum have characterized education in Rwanda over the years. According to the Institute of Policy and Research (2008), Mathematics is widely seen as a difficult subject for all students, but especially for girls.

Because of their higher levels of intrinsic spatial abilities, male students' academic results have long been regarded as superior to those of female students, particularly in Mathematics and Science (Musimenta et al., 2020). Performance in mathematics and science areas is sometimes the focus of researchers. Teachers may feel that males have higher levels of innate spatial abilities, causing them to treat males and females in different conditions when they are in the classroom.

However, inequity persists in science and mathematical vocations, healthcare, and technology, even though gender choices are more freely decided now. One part of effectively increasing gender equality is to mainstream the gender perspective at all levels of policy (Organization for Economic Cooperation and Development, 2012). Many initiatives have been made to enhance mathematics achievement, including passionate gender awareness, government efforts, and NGO engagement; yet gender differences in mathematics performance persist. In Northern Province, Gicumbi District no such research has been conducted. It is in this view of the belief that students' gender may have an impact on the student's performance. This study examined the relationship between them if any in Gicumbi District**.**

1.3 Objectives of the Study

The objectives of this study are spread into two parts including general objectives and specific objectives.

General objective

The overall objective of this study was to examine the impact of gender differences on students' performance in Mathematics within selected Secondary Schools in Gicumbi District.

1.4. Research Questions

1. How do gender differences affect students 'performance in mathematics in secondary school?

2. What are the boys' and girls' related factors that affect performance in mathematics in secondary school?

3. How is the mathematics performance of boys compared to that of girls' students in secondary school in Gicumbi district?

4. What are the perceptions of mathematics teachers and students about boys' and girls' ability to grasp mathematics concepts?

2. Literature Review

Gender has long been thought to play a role in the disparities in performance between male and female students in a variety of educational fields and levels. Even though most Rwandan schools teach male and female students in the same classes, there have been substantial variations in mathematics performance in national examinations across the country (Musimenta et al., 2020). Gender refers to the social construction of a variety of physical, biological, mental, and behavioral characteristics that relate to male and female sex differences. It is a social and cultural construct of roles, resource access, and control between men and women, or boys and girls in society (Musimenta et al., 2020).

2.1 Factors influencing students' performance

Academic success is influenced by several different aspects. Student aptitude, motivation, the level of the secondary school, and other personal and household factors are all taken into consideration. The gender of the student may also affect how well the student performs. Various factors, such as early training and experience, gender disparities in attitudes, parental and expectations of the teacher and behaviors, unequal course taking, and biological variances between the sexes, might contribute to gender variations in student performance. (Feingold, 1988).

2.2 The performance of boys and girls in mathematics

(Denga, 1998) posited that no evidence is clear as to whether differences exist between males and females in academic achievement. He however stated that boys tend to outperform girls in Mathematics and Sciences. however, girls often score higher on verbal items and boys on numerical and spatial items. Boys and girls obtain higher grades in school, however, after the fifth grade, boys and girls reach equal levels of proficiency in both Arts and Science areas. According to (Onekutu, 2002), male students do better than female students. Williams et al. (1990) found that there were no gender differences in early school achievement between boys and girls. In the upper grades, gender inequalities become more obvious, with boys outperforming girls in subjects requiring computation.

2.3 Gender and students 'performance in mathematics

Literature about gender and students' performance in mathematics exists with different views and findings. The study carried out data on gender and mathematics performance in some selected secondary schools in Bureti Sub-County, Kericho County revealed that Gender had a remarkable impact on mathematics achievement with gender differences favoring boys (mean of boys = 11.48 and mean of girls = 10.81 (Mutai, 2016). Female students, on the other hand, appear to perform better than male pupils, according to a growing corpus of worldwide research (Arnot, David & Weiner 1999; Hydea & Mertzb, 2009). In a large-scale study conducted in the United States by Hydea & Metz (2009), it was discovered that girls had achieved parity with boys in mathematics achievement, especially in high school, where there was formerly a disparity. They confirmed that girls outperform boys even in activities requiring advanced problem-solving. The International Institute for Educational Planning (HEP)-UNESCO (2004) conducted the Second Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ) Survey (2000-2002) and found no significant gender inequalities among pupils in South Africa. Only in Seychelles did the same survey reveal that girls scored much higher than boys. Tanzania and Kenya, on the other hand, Boys scored much higher than girls in Tanzania, Kenya, Mozambique, Zanzibar, and Malawi. The disparities were not significant in other school systems, including those in South Africa. According to (Imoko, 2015), the varied learning goals of boys and girls put girls at a disadvantage in competitive contexts. Because their reasoning differed, boys and girls preferred a mathematics curriculum that allowed them to work at their own pace. Because their goal is to gain understanding, girls love experiences that allow them to explore and form their own opinions. Boys, on the other hand, place a premium on speed and precision as signs of success. Boys can operate well in a competitive textbook-based mathematics learning environment. The Cultural, the family, and the socio-economic position of parents, as well as cultural and traditional influences, are all key elements that come up in gender and mathematics studies (Ajai, 2015).

The results of a literature review on gender differences in academic achievement at various levels are equivocal. Females, on the other hand, consistently surpass their male counterparts in higher education. We explored if this holds for secondary schools in Gicumbi district in the next section.

3. Methodology

3.1 Research design

The study was descriptive research of survey type. In this survey research, information was obtained from the respondents and was used to describe the population. This was survey research because the information was obtained from respondents to define the impact of gender differences on student performance in Mathematics within Secondary Schools. The study was done for six weeks. Both descriptive and inferential statistics were used to answer research questions.

3.2 Population and sample size

This study was carried out in Northern Province, Gicumbi District, in three selected schools. The choice of Gicumbi District is that its proximity to the researcher's station helped to maximize the management of research and reduce the research cost. The population of the study was comprised of 103 participants including 97 students of Senior five in three selected schools studying science in combination with mathematics as a major subject and their respective six mathematics teachers in Gicumbi district, Northern province. The total population includes 33 boys and 64 girls' students. Two (2) female and four (4) male mathematics teachers of senior five. The sample size was purposively selected by using a simple random sampling method.

3.3 Instrument for data collection and data analysis

In this study, data was collected using a researcher-designed questionnaire and interview. Three tools were used including the teachers' questionnaire, students' questionnaire, and students' mathematics test. The questionnaire for students and teachers was certified by three experts in mathematics and the data obtained was analyzed using Statistical Package for Social Science Software version 2020 (SPSS). The questionnaire was divided into two parts. Part A concerned with the identification of the respondents, information such as age, sex, name of the sector, school name, class number, and subject. Part B concerned twelve (12) multiple-choice questions to collect information about variables: impact of gender differences on student performance in mathematics. the instrument was adapted using a Likert format varying from strongly agree (SA), Agree (A), disagree (D), and strongly disagree(SD). The mathematics student's questionnaire was prepared based on the experience and

following the standard of Rwanda education board (REB) and national examination and school inspection authority(NESA) The oral interview was conducted to confirm the results of the questionnaire.

3.4 Procedure of data collection

Before administering research tools and gathering data, the researcher visited sampled classrooms for self-introduction and verbally explained the objective of the study. To administer and collect student test items, the researcher talked with mathematics teachers and asked for their assistance and contribution. The Students' Mathematics Test and students' questionnaire were completed by 97 students in total, while 6 teachers completed the teacher's questionnaire. To avoid interfering with the school schedule, this was done at the time that the researcher and the school administration had agreed upon. The instruments were administered through personal visits on appointment with the deputy directors of study and school head teachers. After making sure that all concerned teachers and students filled out the questionnaires the researcher collected the filled questionnaire and started analysing the data.

4. Results and Discussion

Results are presented by referring to the research questions.

Research question 1: How do gender differences affect students' performance in mathematics in secondary school?

The study wanted to examine if gender differences affect students' performance in mathematics. Students were asked to show their opinions about mathematics performance and gender differences. According to a five-point Likert scale, the responses were divided into four groups: strongly agree, agree, disagree, and strongly disagree. Strongly agree and agree are the study's indicators of a good response, whereas strongly disagree and agree are indicators of a negative response as shown in the three successive tables below.

Table 2: Being a boy or a girl interferes with learning and performance

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	22	22.7	22.7	22.7
Agree	53	54.6	54.6	77.3
Disagree	19	19.6	19.6	96.9
Strong disagree	3	3.1	3.1	100.0
Total	**97**	**100.0**	**100.0**	

From the analysis, strongly agree and agree were taken as positive while disagree and strongly disagree were taken as negative. From the above table, the results showed that a big proportion of the respondents (77.3%) reported that being a boy or a girl interferes with learning and performance. and a small portion of the respondents (22.7%) reported that being a boy or girl has no impact on the performance in mathematics. Given that there is a substantial gender differences in any of the schools examination Girls and women are generally expected to dress in typically feminine ways and be polite, accommodating, and nurturing. Table 3.students learn well

Table 3: Students learn well regardless of the gender of the teachers

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly agree	21	21.6	21.6	21.6
Agree	48	49.5	49.5	71.1
Disagree	24	24.7	24.7	95.9
Strong disagree	4	4.1	4.1	100.0
Total	**97**	**100.0**	**100.0**	

Source: Researcher

From the analysis, strongly agree and agree were taken as positive while disagree and strongly disagree were taken as negative. from the above table, the results showed that a big proportion of the respondents (71.1%) reported that the gender of the teacher has no impact on students' performance in mathematics. And a small portion of the respondents (28.9%) reported that teacher gender has impact on their performance in mathematics.

Only a very small portion of responders are impacted by the gender of the teachers. All of the school classifications included in this research reflect this conclusion. Contrary to a 2004 UNESCO report, this suggests that teachers' gender affects students' math learning and accomplishment. The smaller percentage of female mathematics teachers in the sample suggests that girls have fewer role models and contributes to the perception that math is a man's subject. In any case, the only thing that matters to the students is a teacher who will structure the lectures so that it is simpler for them to comprehend difficult mathematical concepts.

Table 4: Girls can perform well like boys in mathematics subject

	Frequency	Percent	Cumulative Percent
Strongly agree	24	24.7	24.7
Agree	53	54.6	79.4
Disagree	14	14.4	93.8
Strong disagree	6	6.2	100.0
Total	97	100.0	

From the analysis, strongly agree and agree were taken as positive while disagree and strongly disagree were taken as negative. from the above table, the results showed that a big proportion of the respondents (79.4%) reported that girls can perform well like boys in mathematics. and a small portion of the respondents (20.6%) reported that girls can perform well like boys in mathematics. Given that there is a substantial gender difference in any of the schools examined in this research, it appears that gender has an impact on performance in mathematics.

Research question 2. What are the boys' and girls'-related factors that affect performance in mathematics in secondary school?

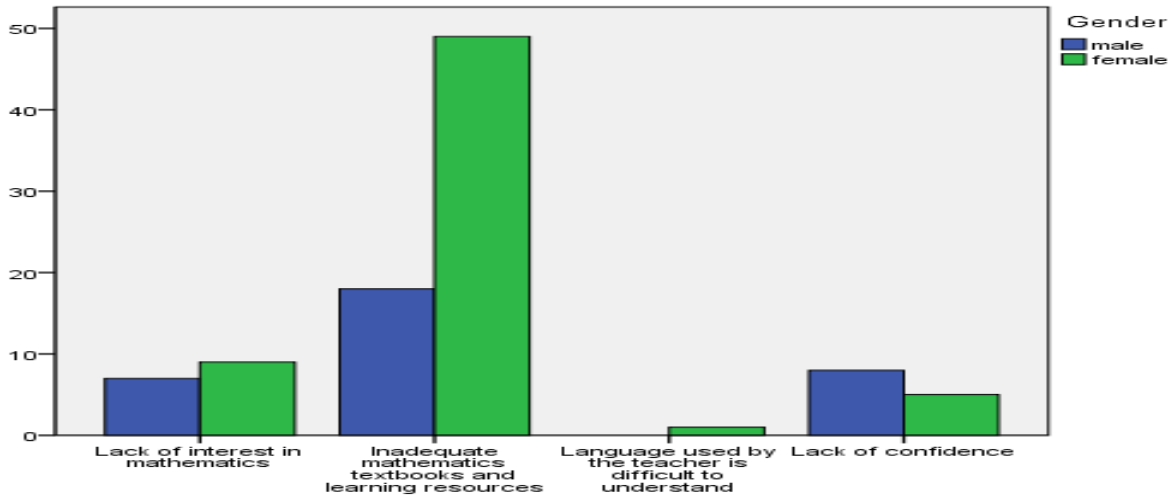

Figure 1: Gender related factors that influence performance.in mathematics.

This figure shows that inadequate mathematics textbooks and learning resources is the first factors which affect students' performance in mathematics. On other side the instruction language used by the teacher has little effect on performance in mathematics. the percentages and frequencies for each factor are shown in the table 5 below.

Table 5: Gender-related factors affecting students' performance in mathematics

		Gender		Total
		Boys	Girls	
Factors affecting students' performance in mathematics	Lack of interest in mathematics	7	9	16
		21.2%	14.1%	16.5%
	Inadequate mathematics textbooks and learning resources	18	49	67
		54.5%	76.6%	69.1%
	The instruction language used by the teacher is challenging	0	1	1
		0.0%	1.6%	1.0%
	Lack of confidence	8	5	13
		24.2%	7.8%	13.4%
Total		33	64	97
		100.0%	100.0%	100.0%

Table 5. shows the factors affecting students 'performance in mathematics, from this study, it was found that 21.2%of male students and 14.1% of female students fail mathematics due to lack of interest in mathematics.54.5% of males students and 76.6% of female students fail mathematics due to inadequate textbooks and learning resources.0.0% of male students and 1.6% of female students fail due to the language used by the teacher that is difficult to undersand.24.2% of males and 7.8% of female fail mathematics due to lack of confidence.

From this analysis, we found that a great number of male students 54.5% are affected by inadequate textbooks and learning resources. While there is no one of the male students affected by the language used by the teacher which is difficult to understand. For girls, a high number of girls' students (76.6%) are affected by inadequate textbooks and learning resources. Whereas 1.6% of students are affected by the language used by the teacher that is difficult to understand.

Research question 3: How is the mathematics performance of boys compared to that of girls' students in secondary school in Gicumbi district?

This section presents an analysis of the data obtained from the students' Mathematics test(SMAT). The test was used to find if there is a significant difference in mathematics performance between boys and girls. The test was about Matrices and determinants of order 3.

Table 6. shows the gender of students, frequency(N), means, and standard deviations (std. Deviation) obtained in mathematics tests in Matrices and determinants of order three. The test was composed of four questions about matrices and determinants of order three. A matrix: a set of numbers arranged in rows and columns to form a rectangular array. The determinant is defined as a scalar value that is associated with the square matrix. If X is a matrix, then the determinant of a matrix is represented by |X| or det (X)

Table 6: Student performance in mathematics test

	Gender	N	Mean	Std. Deviation
Marks	Boy	33	10.818	3.4411
	Girl	64	12.422	2.6159

Std. Deviation: Standard Deviation Source: Researcher N: Frequency

The test was done out of 20 marks, the results indicated that boys have mean marks of10.818 with a standard deviation of 3.4411and girls have mean marks of 12.422 with a standard deviation of 2.6159 as shown in table 6 above. the overall presentation is that girls outperformed boys in the test as they had higher mean marks of 12.422 in the matrices and determinants test compared to boys who had mean marks of 10.818. therefore, an independent t-test was carried out to determine if this difference was significant.

Table 7: Student's t-test for the Mathematics Test (Matrices and determinants of order three)

	gender	N	Mean	Std. Deviation	Mean diff	t-value	DF	2 tail significant
Marks	Boy	33	10.818	3.4411	-1.6037	-2.350	95	0.023
	Girl	64	12.422	2.6159				

N: Frequency Std: Standard Deviation DF: Degree of Freedom

Source: Researcher

The research question under investigation was to compare boys' and girls' students' performance in Mathematics to show if there is a significant difference in performance or not. The t-test showed that there was a significant difference in performance based on gender as indicated in table 7 students t-test for inequality of means showed a significant difference in performance by gender of the students($t=-2.350, p<0.05$ at 95% confidence level).from these findings, girls perform better than boys in matrices and determinant of order three in Northern province, Gicumbi District, Regardless of the importance of mathematics to students and society at large, the general performance in mathematics at school have not affected by students poor performance in matrix and determinant of order three in secondary school in Rwanda.

Research question 4. Teachers' and learners' perceptions about boys' and girls' ability to grasp mathematics concepts.

Table 8a: Students' perceptions about boys' and girls' ability to grasp mathematics concepts

Students' perception	SA	A	D	SD
Learning mathematics is just remembering what the teacher says and does while in class	19.6	49.5	17.5	13.4
Mathematics is difficult to learn	28.9	46.4	17.5	7.2
Mathematics should not be a compulsory subject	25.8	50.5	16.5	7.2
I do a lot of mathematics exercises on my own or with a friend	22.7	51.5	16.5	9.3
I enjoy learning mathematics	24.7	58.5	21.6	5.2

Number of respondents = 97

Results indicate that 72.2% of the participants gave positive responses that the best way to learn mathematics is to discover a concept by oneself. Only 26.8 % of the participants believed that more methods can be used to learn mathematics. Cumulatively 69.1% of the participants responded that learning mathematics is just remembering what the teacher says and does while in class while 30.9% of the participants reported negative responses to the statements. A good percentage (75.3%) of the participants reported that mathematics is a difficult subject to learn while 24.7% says that mathematics is not difficult to learn.

When asked if mathematics should not be a compulsory subject 76.3% of the students said positively to the statement that mathematics should not be a compulsory subject and 23.7% reported negative responses. This means that students didn't know the importance of mathematics. 74.2 % of the participants said that they do a lot of mathematics exercises on their own or with a friend and 25.8% of the participants said negative responses to the statement which implies that they did not do a lot of exercises on their own or with a friend.

Table 8b: Teachers' perceptions about boys' and girls' ability to grasp mathematics concepts

Teachers' perception	SA	A	D	SD
I think it is the teacher who can make mathematics learning easier	83.3	0	0	16.7
I am teaching mathematics well regardless of my gender	33.3	50	16.7	0
Girls can perform well like boys in mathematics Subjects	16.7	66.7	16.7	0
Mathematics should not be a compulsory subject	16.7	33.3	50	0
Mathematics is difficult to teach	16.7	50	0	33.3
I enjoy teaching mathematics	33.3	16.7	50	0

Number of respondents = 6

The findings from the teachers indicated a high percentage of 83.3% of the teachers gave positive responses that teachers can make mathematics easier, and only 17.7 %of the teachers provide negative responses which means that teachers cannot make mathematics easier. The same percentage (83.3%) of the participants responded to the statement that they can teach mathematics well regardless of their gender, while 17.7% of the teachers provided negative responses to the statement. A good percentage (83.4%) of the teachers reported that girls can perform well like girls, and 16.6% of the teachers revealed that girls cannot perform well like girls. When asked if mathematics should not be a compulsory subject 50 % of the teachers said positively to the statement that mathematics should not be a compulsory subject and 50% reported negative responses.

When asked if mathematics is difficult to teach, 66.7% of the teachers said that it is difficult to teach, and 33.3 % of the teachers said that it is easy to teach. This implies that teaching mathematics requires using more techniques to help students understand the key concepts of the lesson which is the foundation of teaching mathematics. Half of the teachers agree that they enjoy teaching mathematics and another half of mathematics teachers said that they hate to teach mathematics. This implies that teachers' behavior can motivate or demotivate students when teaching mathematics.

Discussion

A high number of the respondents have revealed that the state of being a boy, or a girl interferes with their learning and performance in mathematics. On the other views, it was found that the gender of the teacher does not affect students' performance. Boys expressed a stronger acceptance of mathematics. Girls showed strong acceptance that inadequate mathematics textbooks and learning resources affect their performance in mathematics compared to boys. Few girls revealed that instructional language used by the teacher is challenging. Boys are more interested in mathematics than girls, but they have low confidence compared to girls who had stronger confidence. Mathematics performance was significantly influenced by gender, with girls performing better than boys on average (mean for girls was 12.42, and the mean for boys was 10.82). Gender was therefore closely linked to performance in mathematics. Students' mathematics proficiency varied significantly depending on their gender. Boys and girls performed significantly differently on the mathematics assessment. The Research results contradict (Rukangu,2000) and(Onekutu, 2002) assertion that boys typically outperform girls in mathematics. But agree with Miheso's findings in 2002, who noted that girls outperformed boys in mathematics. Also, the results support the findings from Joackim (2016) who showed that Boys and girls form appropriate criteria that govern how they think and act in circumstances involving mathematics

as a result of their diverse perspectives on mathematics teaching.

5. Conclusion and Recommendations

5.1 Conclusion

The results of the current study have given enough proof that girls had negative attitudes toward mathematics and showed little interest in it. The way that boys view learning mathematics is favorable. Though there are individual differences in how people learn mathematics, most of these distinctions are gender-neutral. By improving some areas, it is, therefore, believable to improve girls' performance and close the disparity. The school leaders and shareholders do not value mathematics learning by acquiring enough resources that satisfy teaching and learning mathematics. It was concluded that there exist gender differences in student performance in mathematics. Girls were found to be more competent than boys in matrices and determinants in secondary school mathematics.

5.2 Recommendations

From the time when there are gender inequalities in mathematics performance, remedial interventions that emphasize these differences should be reinforced. Gender bias should not be present in mathematics teaching and assessment methods. This will help both boys and girls to see themselves as capable of competing and working together in school-related activities.

Since the investigation was conducted about gender differences and students' performance in mathematics in selected schools of Gicumbi district, Northern Province, Rwanda and the results cannot represent all secondary schools in Rwanda, this study should be simulated for the remaining district of Rwanda to allow better generalization.

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