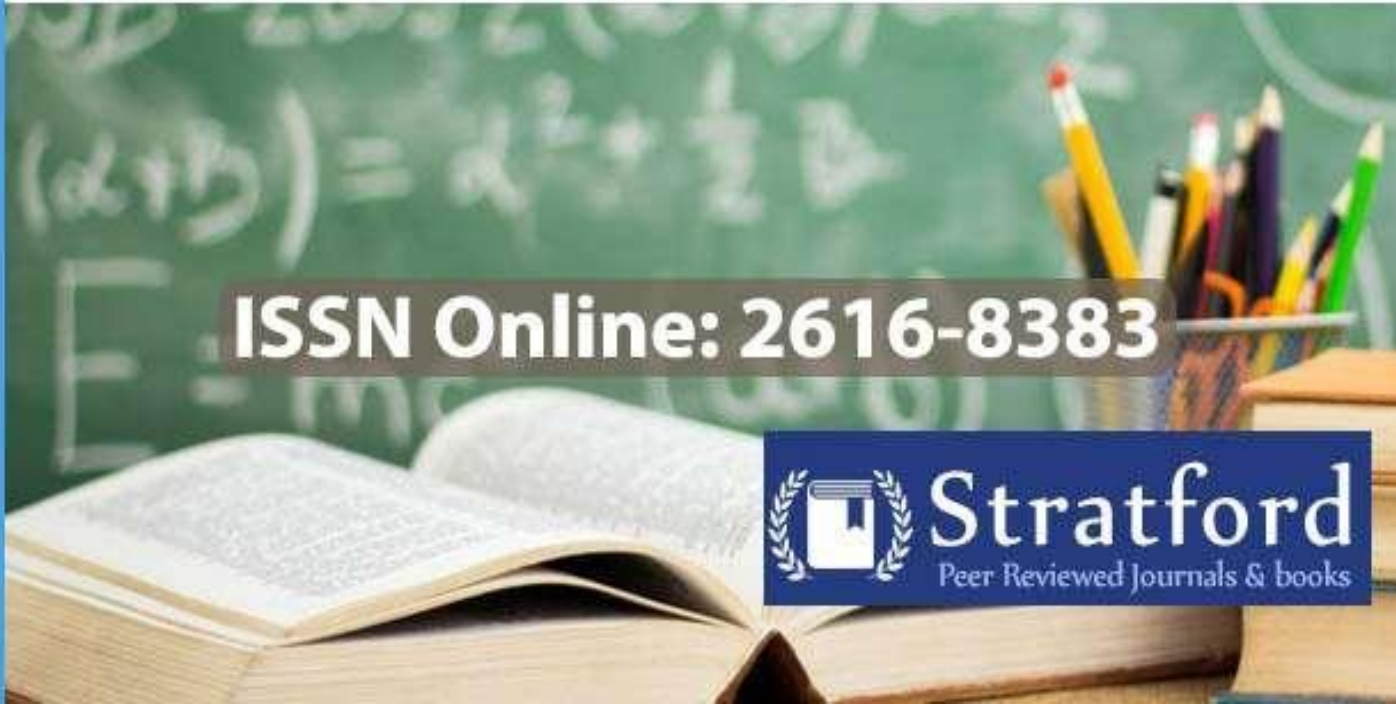


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## **Students Discipline Factors and Academic Performance in Mathematics Subject in Public Boarding Secondary Schools in Rulindo District**

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# Students Discipline Factors and Academic Performance in Mathematics Subject in Public Boarding Secondary Schools in Rulindo District

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## Abstract

The study focused on understanding the role of student discipline in the mathematical performance of students in public secondary boarding schools in Rulindo District, Rwanda. The investigation encompassed four schools: E.S Nyamugali, E.SES Rukozo, Inyange Girls' School of Sciences, and LNDV Girls' School, both at O'level and A'level, with a total student population of 1761. The research sought to evaluate how students' self-discipline affects their progress in mathematics, and the overall academic progress in the subject across the selected schools. Using the Yamane method, a sample size of 328 students along with 20 mathematics teachers and discipline masters was determined. Data collected through questionnaires revealed a strong consensus among students and teachers that good behavior and regular class attendance are crucial for academic success in mathematics. In addition, the research findings highlighted that 45.3% of respondents strongly agree that discipline is a significant factor in promoting hard work and success in mathematics. Classroom environment and conditions were also recognized as vital elements contributing to students' performance, with a majority indicating favorable classroom spaces as beneficial for both teaching and learning of the subject. The analysis also uncovered that teaching methodologies, educational resources, and teacher self-perception, along with school support in mathematics, significantly impact students' performance. Over half of the respondents agreed that these factors are influential. However, the findings showed mixed responses regarding the competitive culture among students affecting performance, with some disagreement about the extent of its influence. In conclusion, the study advocates for increased focus on discipline and the provision of a conducive learning environment to enhance students' mathematical abilities.

**Keywords:** *Students Discipline, Academic Performance, Mathematics Subject, Public Boarding, Secondary Schools*

## 1.0 Introduction

Discipline is the measure of achievement in adjusting conduct. It is typically frank and strict, respecting regulations and advice, ethical values, and the ability to govern oneself and others in difficult situations. Discipline differs from the teaching of suitable manners and the unlearning of maladaptive morals by focusing on assistance, regulations, and direction in controlling behavior. It is a matter of setting restrictions, clarifying roles and accountabilities, providing guidance, and generating acceptable, orderly, and suitable living conditions (Krishnan, 2009). Student discipline in schools is a key matter, as elaborated on by several state and international educational scholars and intelligences. Student discipline refers to behavioral adaptation for a suitable purpose (Zimmerman & Kitsantas, 2014). Meanwhile, student discipline comprises the establishment of rules for suitable conduct and the guarantee that guidance is successfully applied. Teaching staffs are very competitive in order to attain respectable conducts and guarantee ethical behaviors in the school organization. The relation with the popular quote, "choice attempts the significance," is that it is not possible to evaluate whether committed morals may come out with effective instruments without first attempting to understand them. Mathematics has been portrayed as a complex subject by most of the learners, especially in Sub-Saharan Africa (SSA), where standards have been extremely low. Bethell (2016) observed that it would take several years for SSA countries to reach the levels comparable to their counterparts of the high-flying income economies of East Asia if the problem of low achievement in mathematics is not addressed accordingly and urgently. Depending on the momentous purpose that mathematics advances in society, several scholars aren't able to pass the course (Ali et al., 2016).

Mathematics is the subject of numbers that mostly involves teaching students about numbers and how to relate them to each other through various actions performed on them. Indeed, math refers to the discipline of providing scientific statements; it gives conclusions and outcomes to the subject. Mathematics is essential for communication, as it is used in many ways to present information, such as through figures, letters, tables, charts, graphs, and diagrams, as well as technical or geometrical drawings. Mathematics formulates instruments that are applied to consolidate and interpret data, and it is a technique that is coherent beyond any other known to man. Therefore, mathematics is a major subject in the curriculum worldwide, and it has direct relations with other courses, especially in science-based and technical fields. Studying and learning mathematics and achieving mathematics knowledge is absolutely essential for advanced groups of people as a way of becoming aware of its practice in the workplace. The philosophy of mind about mathematics is essential and practical in the workplace, business, financial, and individual decision-making (Srivastava, 2016). In Nigeria, Muhammad and Muhammad (2010) noted that a school is where children are socialized and acquire positive moral values. They added that it is very clear that guidance is needed to direct children towards the right ways, which is one of the most important tasks of schools.

The provision of curative measures with specificity seems unavoidable, describing discipline in secondary schools as a curative measure; postulating that a cursory view is taken purposely in locating possible ways of improving the academic standard, discipline, and students' performance in secondary schools in order to respond to the great concerns over the falling standard of education and moral values in secondary schools. Moreover, there is a lack of decision position in implementing school rules and regulations. The punishment of students was reported to be administered in an unfair manner that exacerbated the dissatisfaction and anger among students, which culminated in indiscipline tendencies like attacks, sabotage of school property, and violence

among students (Njoroge & Nyabuto, 2014). Several deleterious and operative features hinder the progression of mathematics exercising. These features include the interest of scholars, age, gender, health, deprivation level and level of nutrition, tutor capacity, age of starting school, and perception of the math course (Sevindir et al., 2014). We have experienced that students are not interested in mathematical subjects and courses. One of the efforts aimed at realizing such expectations in Rwanda includes that of reviewing the curriculum to align it with national aspirations and to ensure that the knowledge, skills, attitudes, and values acquired by learners are consistent with the requirements of the 21st century skills. It is also believed that equipping learners with the necessary skills could lead to the development of a knowledge-based economy that can propel individual citizens to compete in the global market (Rwanda Education Board, 2015).

### **1.2 Problem Statement**

Globally, student discipline is shown to have a positive and negative impact on academic performance. However, strategies for dealing with student discipline are not yet fully understood, especially in developing countries. In schools, students are supposed to learn social values and how to adjust their behavior and morals in order to become responsible citizens (Omote, 2015). Regarding discipline aspects in Rwandan secondary schools, this report showed an increase in indiscipline cases such as disrespect, premature sexual engagement, drug abuse, vandalism, and alcoholism (Rwanda Ministry of Education, 2010). Therefore, this poor student behavior has been proven to affect academic performance in many countries, including Rwanda. For example, the cases of unwanted pregnancy among school girls aged 16-19 years were 17,500 in Rwanda, and most of these girls dropped out of school due to the school's poor discipline management strategies (MIGEPROF, 2016). Therefore, the researcher was inspired to work on the study entitled "Student Discipline Factors on Mathematics Subject Performance," in which public secondary schools in Rulindo District were selected to serve as the study population to make an assessment of their progress in mathematics.

### **1.3 Objectives of the Study**

- i. To examine the associated factors of student discipline in Public secondary schools with boarding of Rulindo District.
- ii. To evaluate the level of academic performance in mathematics subject in selected secondary schools of Rulindo District.
- iii. To determine the relationship between student discipline factors and academic performance in mathematics subject in selected secondary schools with boarding of Rulindo District.

## **2.0 Literature Review**

The section presents the theoretical review, empirical review and conceptual framework.

### **2.1 Theoretical Review**

Globally, the discipline of students in secondary schools, which encompasses both positive and negative reinforcements, plays a critical role in creating the school environment. Omote (2015) emphasizes that student discipline involves the enforcement of rules and the fostering of agreed-upon codes of conduct, which is essential for both students and teachers. Mathematics, as stated by Sa'ad et al. (2014), is a fundamental subject in primary and secondary education in Nigeria, significantly influencing the core curriculum and serving as a pivotal element for student progression to higher education. Despite its recognized importance as per the Federal Republic of

Nigeria (FRN, 2004), there has been a continued trend of low performance in mathematics in public examinations, leading to a decline in interest in science and technology-related subjects. This challenge of poor performance in mathematics is seen as a barrier to educational and technological advancement. Ali and Jameel (2016) argue that a focus on mathematics education is crucial for student success in the subject. Pi Day (2018) supports this by stating that mathematics is essential for problem-solving, analytical thinking, and reasoning skills, all of which are integral in a mathematically oriented world. Schools are structured environments designed for learning, equipped with necessary resources such as classrooms and teaching materials (Boston May, 2018), and public secondary schools in particular, as maintained by EMTOMAZITT (2016), are established by governments to serve the public. Students, or scholars as referred to in different contexts (University, 2020), engage in education to acquire knowledge, professionalism, and employment opportunities in their chosen fields. The term "curriculum" has varied meanings, but for the purpose of this research, it refers to all elements including documents, plans, processes, and the structured educational framework (Maure, 2015). This study aims to investigate the factors contributing to students' underperformance in mathematics within selected public secondary schools in the Rulindo District, Rwanda, highlighting the significant impact of curriculum and discipline on students' academic success in mathematics.

Student attitude towards mathematics is a tendency to respond to a particular goal either efficiently or ineffectively (Zan & DiMartino, 2007). Students' attitudes towards mathematics can influence their participation in mathematics subjects, which may have a direct impact on their mathematical learning, problem-solving, and achievement (Ngurah & Lynch, 2013; Sarouphim & Chartouny, 2017). Blazaret (2017) states that high-quality teachers are capable of improving exam results and creating a supportive learning environment that promotes student development, emotions, social well-being, classroom behavior, and critical thinking skills. Parents' education level, values, and expectations are significant factors that influence children's early skills and future academic outcomes (Harju Luukkainen, 2021). Parents play a vital role in providing children with early numeracy and mathematics skills. Household contexts can also impact student achievement; Zippert et al. (2020) found a strong relationship between parental support and student mathematics achievement. The significance of prior knowledge and educational experiences on student academic outcomes may vary depending on gender, socioeconomic status (SES), and language ability (Hannover Research, 2016). School environment is another critical factor in academic achievement. Concentration of wealth and poverty in certain neighborhoods and regions can lead to school segregation, which can impact student achievement. Students from low-income families tend to perform less well in school, contributing to inequities in educational attainment. Schools in low-income areas often face challenges such as underfunding, large class sizes, teacher shortages, and staff shortages, which can limit opportunities for student success (OECD, 2018).

## 2.2 Empirical Related Literature Review

According to Matsoga (2003), his study on discipline in Botswana schools revealed the widespread violence and misbehavior that existed in many secondary schools. This lack of discipline, which interfered with the teaching and learning process, manifested itself in various ways, including bullying, vandalism, alcohol and substance abuse, truancy, and inability or unwillingness to do homework. Cotton (2000) shares the same opinion in his study on modes of student control in public schools in the United States of America. He recommends an open-minded approach to school rules and regulations as a way of minimizing unwanted student behavior in schools. However, since most school rules and regulations are set without student participation (Kabandize,

2001), students tend to resist them and sometimes break them, leading to disciplinary acts that could result in suspension or dismissal, which could affect their academic performance. Van der Beek et al. (2017) found that mathematics achievement correlated positively with mathematics enjoyment and negatively with mathematics anxiety in a Dutch adolescent sample.

Pinxten et al. (2014), carried out a longitudinal study of Belgian upper primary school children, and mathematics enjoyment was a mild positive predictor of later mathematics achievement and later perceived effort in mathematics. There has been Relationships between attitudes and progressive in young (Mc Coach, 2011; Dowker, 2012; Ganleye,2016; Harari,2013; Jameson, 2013; Ramirez, 2013; Wu, 2012). The research work carried out in Nigeria for about education advancement level of scholars in secondary schools highlights that success in ensuring institute discipline, academic over other teachings in school and national exams, it was indicated by Ehiane (2014) underprivileged progressive continue over high schools in the state. The low level of academic achievement among students in high schools in public examination in Oyo state, in the contemporary times condense academic system is necessary to attain predictable results. However, all stakeholders in education sector had criticized the competence of scholars in high schools with special references in English langue and mathematics and other sciences (Zhao & Kuo, 2015). In addition, the aforementioned issue was seen as one of the challenges teachers are facing in their everyday activities by implementing interdisciplinary mechanisms. Students' discipline was seen as a necessary part and indeed the fundamental part of education because of it regulates student's limits their behavior prevents them from misconduct and clarifies punishments if rules are broken. Young teenagers who should be protected from bad influences are exposed to films and other types of media with dangerous contents. Some students end in being attracted by so called stars that are not necessarily good models to identify with (Fawcett, 2013). The attainment of students' academic performance would be achieved through insurance of students in school setting.

### 2.3 Theoretical Framework

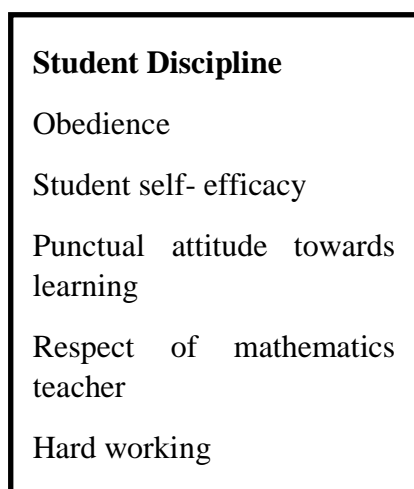
Bandura's social cognitive theory emphasizes how environmental, personal, behavioral, and cognitive factors interact to determine an individual's motivation, behavior, and performance (Crothers et al., 2008). The social cognitive theory consists of four goal realization processes: self-observation, self-evaluation, self-reaction, and self-efficacy. These elements are interconnected, and each influences the attainment of goals and motivation (Redmond, 2010). Students feel a sense of satisfaction when they achieve their valued and set goals. An individual is more likely to continue putting in more effort if they have achieved the **goals**, they set out to achieve. If they only partially achieve their goals, such as in mathematics performance, they will not be motivated to increase their effort (Bandura, 2001). Self-reaction: If the advancement is regarded as satisfactory, then self-efficacy is a feeling one will experience pertaining to continuing, and will be inspired towards the attainment of that goal or grades in the future.

Self-efficacy is the student's personal ability to understand new ideas or acquire new knowledge in a specific area (Nasiriyen et al., 2011). Bandura defines self-efficacy as "one's belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Snyder et al., 2007). Self-efficacy is a significant concept that motivates people and their actions. Lunenburg opines that self-efficacy is an essential element in human motivation and behavior, including how people's actions are influenced. It can influence a person's self-efficacy over time, and therefore relates to self-esteem. In terms of tutoring and learning, Maganga (2013) pointed out

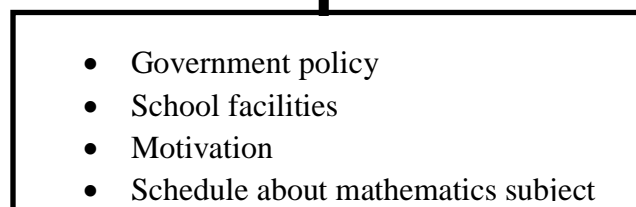
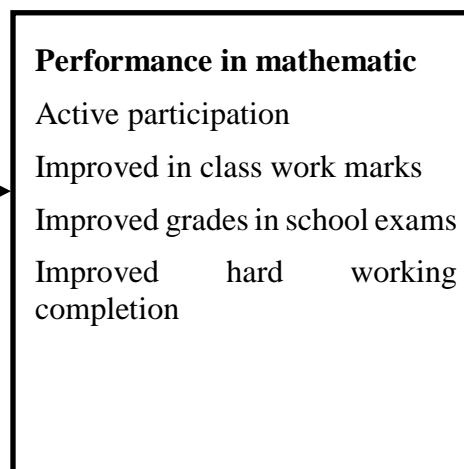
that, while analyzing Plato and Socrates' work, the thoughts or basic notions behind existing entities are usually felt by perception, through questions that evoke knowledge or comprehension of the thoughts behind solid circumstances. This implies that teachers need to provide students with more mathematics assignments, which will help stimulate their minds to comprehend the concepts of mathematics. In other words, students can be transformed into good mathematicians when their teachers give them additional questions to stimulate their minds to appreciate and understand mathematics concepts for improved performance.

## 2.4 Conceptual Framework

### Independent variables



### Dependent variables



### Intervening variable

## 3.0 Research Methodology

This study used a descriptive research design and was conducted in Rulindo District, Rwanda. The study population consisted of all public boarding secondary schools in Rulindo District. This included 1741 students, 8 mathematics teachers, and 12 discipline masters. The study sample was 328 respondents, and questionnaires were used to collect primary data. SPSS software was used to analyze the data descriptively and inferentially.

## 4.0 Research Findings

Therefore, 348 questionnaires distributed to the participants were filed 100% which means 20 Discipline masters and teachers and 328 student's participants filled the questionnaires. The researcher retained all questionnaires from attendants were also conducted with all the targeted. Therefore, the opinion rate was at 100%.

### Table 1: Correlation Analysis

<https://doi.org/10.53819/81018102t30122>

	Discipline on STPGCESW H	Teaching and learning Facilities CSFTL	Associated Factors Teachings tyle	Level of Academic PCCASS
Discipline on STPGCESWH	1			
Teaching and learning and Facilities CSFTL	0.864	1.000		
Teaching style	0.000			
	0.863	0.961	1.000	
	0.000	0.000		
Level of Academic PCCASS	0.933	0.866	0.872	1.000
	0.000	0.000	0.000	

Table 1 shows the Pearson correlation coefficient between associated factors and student academic performance good conduct encourages students working hard at school, good conduct promotes too much inspiration in mathematic subject, discipline has great impact in daily attendance of class, discipline helps to be academic honesty of student, Punctuality of student and organization is related to discipline, the students of this school also are Behaved well outside school, Discipline is giving of intentions on progressing subject, the correlation are; 933·.866, .872 it shows the positive relationship of culture of competitiveness among the students in this school, The mean for school examinations is very high, students at this school is moderate low performance, students at this school their performance is moderate high in mathematics.

#### 4.1 Regression analysis

To determine the scale of change in performance of mathematics subject due to student discipline and associated factor, the carried-out regression analysis and the findings summarized in the tables below.

**Table 2: Model Summary**

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1				
1	.942 <sup>a</sup>	.888	.887	.2678

Table 2 above shows that R-squared is 0.888, which implies that 88.8% of the variations in mathematics subject performance are indicated by the independent variables, which comprise discipline (giving students the intention to progress in their subjects), good conduct (encouraging students to work hard at school), discipline (having a great impact on daily attendance of class), discipline (helping students to be academically honest), and punctuality and organization of students.



**Table 3: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	183.424	3	61.141	852.720	.000 <sup>b</sup>
	Residual	23.231	324	.072		
	Total	206.655	327			

Table 3 above present the value of calculated F statistics is 852.720, it is very high with significance value of 0.000, this implies that model used in this research determined the relation between associated factors and students discipline in mathematics performance.

**Table 4: Regression Coefficient**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.453	.114		3.984	.000
	OBJCT1ExtentofdeciplineonSTPGCE SWH	.588	.032	.699	18.384	.000
	OBJ2TeachingandlearningFacilitiessC SFTL	.067	.085	.055	.788	.431
	Associated Factors Teaching style	.243	.078	.216	3.119	.002

Table 4 above shows the respective beta coefficients for students discipline and associated factors on mathematics subject performance, good conduct encourages students working hard at school, good conduct promotes too much inspiration in mathematic subject, discipline has great impact in daily attendance of class, discipline helps to be academic honesty of student, Punctuality of student and organization is related to discipline, the students of this school also are Behaved well outside school, Discipline is giving of intentions on progressing subject, 0.588, 0.67, 243, this implies that 1% the change in students discipline, good conducts, teaching and learning leads to 58.8%, 67%, and 24.3% change in student performance is the same direction keeping other factors constant. The significance values for all the model predictors were less than 0.05 an indication that the positive effects of independent variables are significant. In summary, there is positive effect of student discipline and associated factors in mathematics subject performance.

## 5.0 Conclusion

The students to learn science subject there is so many associated factors that may increase their inspiration in learning of science subjects, this study tackled about Students' discipline on mathematics performance in Rurindo, ES Rukozo, Nyamugari, Inyange girls school of sciences and LNDV in Rwanda, these following associated factors such as teaching style, teaching aids/resources, classroom conditions, self-perception of teachers, school involvement in mathematics education research, school involvement in mathematics education research, schedule

of teaching mathematics, teachers' individualism, student's interest for in mathematics, students' attitudes towards mathematics affect their performance in that subject, students' ambition. The researcher analyzed these factors and realized that students' discipline has the big extent in mathematics performance, the associated factors also motivates student to aware of subject. Therefore, the students should be well disciplined and school administrative, parents should monitor discipline students and generated all facilities that favor to learn mathematics.

#### 5.4 Recommendations

The analysis of research done the researcher viewed the following; Recommendations to be addressed by selected secondary schools for provision of discipline to the students such that totally change their perception to mathematics subject. Selected institutes should increase the monitoring behaviors to ensure that student's performance in mathematics subject, students should change their attitude of studying mathematics. These selected secondary schools should try to look for more facilities that may favor students to study science subjects mostly once schools have enough facilities teachers of science courses provide quality education which brings about the inspiration for students studying mathematics.

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