

Effects of Socio-Economic Status of Families on the Student's Academic Performance in Mathematics Subject in Secondary Schools Rwanda: A Case of Burera District

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Abstract: Background: Examining the impact of families' socioeconomic status on the mathematical skills of students at Rwandan public day secondary schools, particularly in the Burera region, was the researcher's aim. This study specifically sought to determine the socioeconomic status of families that influence students' academic performance in mathematics classes in the public day secondary schools of Burera District, examine the academic performance that results from the socioeconomic status of families in Burera District, and assess the relationship between the socioeconomic status of the families and students' academic performance in mathematics courses in the public day secondary schools of Burera District.

Methods and Materials: By combining descriptive and correlational techniques, the study used a hybrid strategy. 163 respondents made up the study's population, while 106 pupils and 10 math professors made up the sample size. Stratified sampling of the respondents was valued in the deliberate and random selection of these.

Results: Regarding the first goal, the findings show that 74.5% strongly agreed and 13.4% agreed that a family's ability to pay for school supplies reflects their socioeconomic status; 64.2% strongly agreed and 12.3% agreed that a family's ability to meet their basic needs reflects their socioeconomic status; and 82.1% strongly agreed and 8.2% agreed that a family's ability to resolve conflicts reflects their socioeconomic status. Additionally, 3.8% agreed and 89.6% strongly agreed that a family's capacity to pay for education reflects their social standing. Regarding the second goal, the study's findings showed that 70.7% strongly agreed and 19.0% agreed that your parents' educational attainment influences your mathematical performance, and 63.8% strongly agreed and 17.2% agreed that your parents' background—whether literate or not, wealthy or impoverished—affects your mathematical performance. 76.7% strongly agreed and 23.3% agreed that family conflicts have an impact on your math performance, 90.5% strongly agreed and 9.5% agreed that your math performance is impacted by the teacher's ability and motivation, and 60.3% strongly agreed and 20.7% agreed that having enough resources for instruction has an impact on your math performance. The study found that higher student collaboration based on historical principles is positively correlated with the number of students in the class (.250), with student test and exam results for the history subject (.029) and student competition results for the history topic (.093). The study discovered a high correlation between kids' test and exam results, creativity and invention, and problem-solving skills, and their capacity to pay for school supplies. Higher test and exam scores were linked to the ability to meet human fundamental needs, whereas lower test and exam scores, creativity and invention, and problem-solving skills were linked to the ability to resolve conflicts. Since the degree of linkage was less than 0.05, significant correlations were found.

Conclusion: According to the report, schools should be able to offer low-income pupils extra help and resources like digital access and tutoring programs. Teachers can get training to identify the particular difficulties these pupils encounter and create plans to help them in the classroom. By offering tools and assistance, parents may also be active in their children's education.

Keywords: Socio-Economic Status, Student's Academic Performance, Mathematics, Secondary Schools, Rwanda.

I. INTRODUCTION

In many respects, a remarkably high proportion of pupils struggle to improve in mathematics classes compared to other disciplines from the beginning of their education. They constantly aim to comprehend the idea of numbers and how they are used. However, while educationalists seek a deeper partnership between schools, parents, and other education partners, their aims may be hindered and undermined by the socioeconomic situation of their families. Families might not, however, demonstrate their involvement in their children's schooling.

A person's place in a hierarchical social system is referred to as their socioeconomic status. An individual's social and economic standing within a group are both included in their socio-economic status. According to Sawrey and Telford (2022), children from higher socioeconomic backgrounds have greater opportunity for academic, physical, and emotional growth in addition to being very bright. One of the most crucial disciplines is mathematics. Numbers, forms, measurements, statistics, and logical reasoning are all part of mathematics. It has a broad use in many facets of our existence, including economics, engineering, finance, medical, and natural science.

Any phenomena that encourages something to occur successfully is called an effect. According to Daya Shankar Tiwari (2023), mathematics offers a methodical approach to problem-solving and critical thinking and forms the basis for many scientific disciplines.

Considering that households in Vietnam have a worse socioeconomic standing as a result of their bad arithmetic scores brought on by their dire living circumstances. Sawrey, J.M., and Telford, C.W. (2022) According to data, 13% of Vietnam's underprivileged pupils were able to place in the top quarter of their arithmetic scores. Even though mathematics is valued, many students find it difficult to comprehend the topic (Montero & Casmir, 2019). Students in Tanzania who do poorly in the subject on national exams are a reflection of this struggle. The importance of mathematics in science, technology, and innovation has been publicly acknowledged by the Kenyan government through the Vision 2030.

Therefore, in order to achieve its goal of science, technology, and innovation by 2030, the Kenyan government has set out to enhance mathematics. Stanslaus (2016) looked into how parents' socioeconomic position affected their children's academic achievement in Tana River County, Kenya's public secondary schools. The study's findings demonstrated a positive correlation between students' achievement and their socioeconomic position. According to Oginni (2018), the socioeconomic level of pupils is influenced by the features of their households, which have been shown to be a powerful predictor of their performance.

According to the socioeconomic status of Rwandan parents, each family's level of living is correlated with the education of their children. Government assistance for surviving programs, including educational views, is still provided to many families. Six years of elementary school, three years of lower secondary (ordinary level), and three years of upper secondary (advanced level) make up Rwanda's Twelve-Year Basic Education (12YBE) program. Public day secondary schools were established as a result of this strategy, which gives all Rwandan children the chance and access to free education in public day schools (Nizeyimana et al., 2020).

This action was taken to achieve Millennium Development Goals NST1 and EDPRS2. These economic development policies, as they relate to public day secondary schools, are designed to help children from low socioeconomic backgrounds not fall behind but instead attend classes for free and receive other government-provided educational benefits like tuition, supplies, uniforms, etc. The Burera District's poverty rate is comparable to the 45% national average. As a result, it continues to receive the following benefits through the social protection program: mutual health insurance, free educational programs, VUP financial services, VUP public work, and VUP direct support. (2018–2024 Burera District Development Strategy). Despite the government of Rwanda's efforts, academic performance in mathematics in public day secondary schools is not as high as it could be. The government's educational policy policies have improved the teaching of mathematics by introducing The STEM fields STEM (science, technology, engineering, and mathematics) is a field and curriculum that emphasizes math, science, technology, and engineering education.

It was implemented in 2021 with the intention of advancing scientific courses by equipping educators with suitable teaching strategies and learning materials. AIMS Rwanda is the piloting organization. Nonetheless, public secondary schools continue to provide inadequate outcomes in mathematics courses. Manirakiza's (2024) study on the socioeconomic status of parents and the academic performance of students at a selected secondary school in Burera District The results showed that there was a link between the academic performance of their children and the parents' socioeconomic situation in terms of their work, income, and educational attainment, with the majority of parents having just a primary education.

The abilities of instructors are seen to be one of the elements that might influence students' success in mathematics, since they are crucial in assisting students in achieving the intended behavior after their education. The capacity to properly do a task by utilizing a suitable set of knowledge, abilities, attitudes, and values is known as competence. Rollout of the Competency-Based Teacher Training Manual (2015) (Swars et al., 2018).

Therefore, it is essential to train teachers in order to provide them the skills and approach that will allow them to deal with the difficulties that come with implementing competence-based teaching. Gemechu (2018) also looked into the connection between academic success and the socioeconomic standing of parents. The rationale, purpose, intention, objectives, feelings, intuitions, ideals, beliefs, attitudes, and values that people use to justify their actions are all considered forms of motivation (Mercier and Sperber, 2017). Positive emotions and consistent encouragement or reinforcement of the proper purpose serve to inspire the students. Scores in the educational system are a representation of students' academic success in mathematics, which relates to their academic or educational development in intellectual realms taught at school, college, and university.

Bora and Ahmed (2018). Despite government control over education policy, parents have a significant role in their children's education. Families' socioeconomic standing is based on how each member views the world and their surroundings. The research will be aimed at examining the reasons behind the low academic performance of mathematics in those schools, given that the Rwandan government and other education partners do not forget to provide financial and material support to those schools. Parents' ignorance of how to pay for school fees, learning materials, uniforms, school lunches, and the main cause of this is P.T.A. participation, such as school building funding. Lack of appropriate teaching and learning materials has been linked to worse academic achievement in mathematics (Nomsa Mabena, Patricia Namayammu Mokgosi, Selina Serole Ramapela, 2021). The main objective of this study was to find out the effects of the socio-economic status of families on the students' academic performance in mathematics in public secondary schools. Rwanda. It was guided by the following specific objectives:

- i. To investigate socio-economics status of families that influence students' academic performance in Mathematics subject in public day secondary schools in Burera District
- ii. To analyze the academic performance that is due to socio-economics of families in Burera District.
- iii. To assess the relationship between the socio-economics status of the families and students' academic performance in Mathematics subject in public day secondary schools in Burera District'.

II. THEORETICAL FRAMEWORK

Theoretical framework deals with the ways in which different assumptions guide researchers to link different ideas based on relative literatures.

Capacity to access to human basic needs: As people do not leave on the same standard of living most families in rural areas don't aware of getting suitable and adequate basic human needs. Hence Dhwani, S. (2024), added Maslow's hierarchy of needs can be used in the area of teaching to find the maximum way of motivating students.

Physiological needs: Those needs are essential for survival such as: food, water, clothes, shelter which constitute the first priorities needs as they are considered. Teaching a student the teacher should make sure that those needs are availed such that they also coincide with a good learning environment.

Security and safety needs: people desire order in order to ensure that their security is maintained, security of their property, employment, finance, resources, health, and prosperity. It is in this regard a student must feel safe physically, emotionally and mentally.

Capacity to solve conflicts

Conflict is a misunderstanding between members of society. It may result in the misbehavior of one of the members of the family or a lack of using resources within the family. This disorganizes the wellbeing of the members of the family and affects the positive academic performance of the students. Therefore, it is encouraged to school administration and local government authority to take part in management and conflict resolution in the families, which are the sources of low academic performance among students.

Novelli et al. (2015) argued that in order to promote peace, there should be a good will seeking for the root causes of conflicts such as politics, disparity in socio-economic factors, and injustice. Education is held in hands by both teachers and family, where a child is prepared to overcome future challenges. Odiese and Omofumo (2023) concluded that the essence of life is to produce children and take good care of them so that they can carry on with the responsibility when we grow old.

Ability to pay school fees and school feeding

Generally, every secondary school student is requested to pay school fees, while is used in schools in order to solve problems related to finance. school fees is paid in different ways where we may list: the students who may have scholarship, or tuition which is paid by others, the tuition fees which may be paid by students themselves where this category of students are challenged due to most of them are from low socio-economics status families. However, the educational policy of Rwanda has established a policy that enables everyone to afford the cost of education at a minimal cost where the rest is funded by the government. Hence it is where public secondary schools were born aimed at helping those students struggling with financial problems.

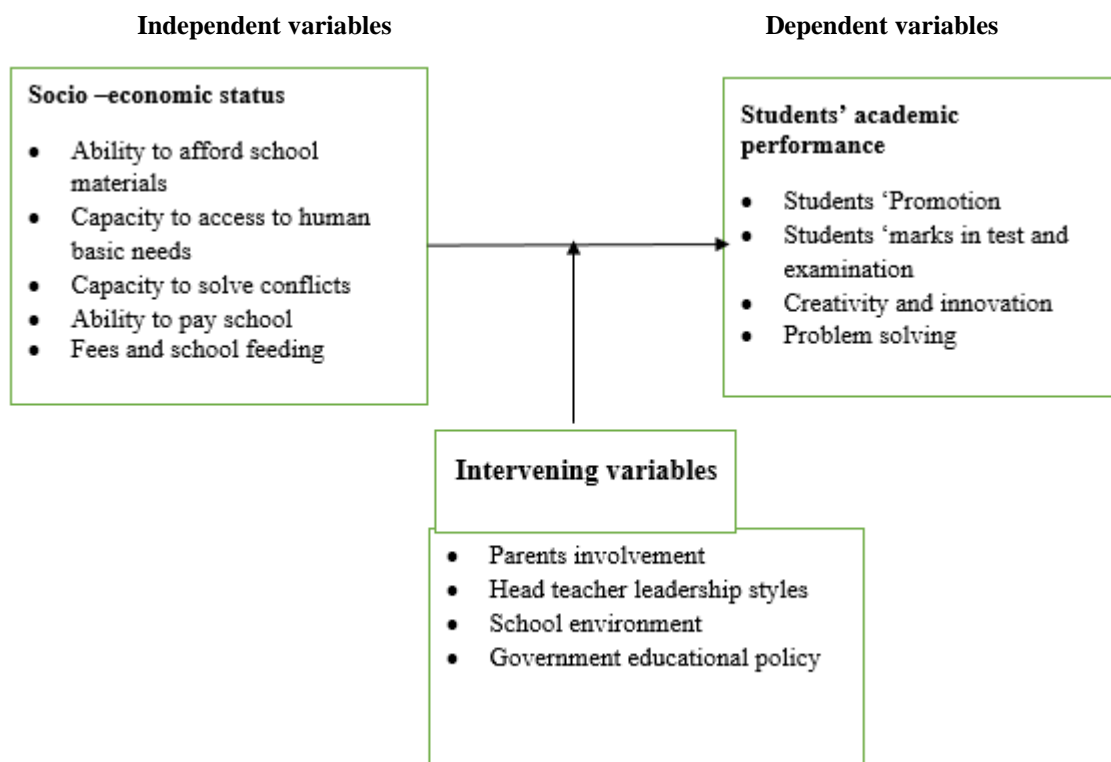
Ability to afford school materials

In classroom setting there are students who excel at school and students who don't excel well, and the teachers are supposed to help both types of the students. This problem may result in lacking of learning materials in classroom and at the same time on the side of the students which may cause an extreme distress on students and on teachers. In our educational system learning resources are distributed by the government, however in different parts of the world school districts are struggling to find enough money to spend on buying resources in their schools.

According to Duncombe,c.(2017) no parents who want to send their children to a school that can't provide the adequate learning resources. It has revealed that teaching a classroom without learning resources this boycotts a good running of school practices, students' motivation and decreases innovation and creativity among students. In the areas where parents are able to cooperate effectively with school administration, they are subjected to participate in fundraising aimed at supplying missing learning resources of both classrooms and for their children.

III. CONCEPTUAL FRAMEWORK

The link between the independent and dependent variables is explained using a conceptual framework. It provides a brief explanation of the connections between the academic performance of mathematics students at day secondary schools in the Burera District, instructional resources, teacher competency and learning motivation, family conflicts, family background, and parents' educational attainment.



Source: Researcher, 2024

Figure -1

The above table summarizes the relationship between the independent variables and dependent variables, where the independent variables are: availability of educational resources, teachers competence to motivate learners, existence of family conflicts, implication of family background, and education level of parents, while the dependent variables are: students' promotion, students' marks in tests and examinations, creativity and innovation in mathematics, and Problem solving. The table also illustrates the intervening variables, which can plan the role of intermediate variables that link independent variables and the dependent variables, which are: Parents involvement, Head teacher leadership style, School environment, Government educational policy.

IV. RESEARCH METHODOLOGY

Research design

According to Nick Jain (2023), a research design is "the overall plan or structure that guides the process of conducting research" (<https://idealscale.com/blog>). Descriptive research is to accurately and systematically identify a study type, problem, or population. In general, there are several ways in which we might acquire information. The most often used research methods include questionnaires, focused groups, field observation, and internet research. I also used phones, pens, and other gadgets. The questionnaires, which were used to directly collect data from chosen respondents, had both closed-ended and open-ended questions. The study was conducted at Groupe scolaire Butete, Groupe scolaire Rugarama, and Groupe scolaire Gitare, three secondary schools in the Burera district.

The study concentrated on how students' academic performance in mathematics in Burera District public day secondary schools in Rwanda was influenced by their family's socioeconomic position. My objective was to ascertain how students' academic performance in mathematics classes in Rwandan public day secondary schools is influenced by their family's socioeconomic condition. Three secondary schools in the Burera district—Groupe scolaire Butete, Groupe scolaire Rugarama, and Groupe scolaire Gitare—were the sites of the research. The study focused on how the socioeconomic status of the students' families affected their academic achievement in mathematics at Rwandan public day secondary schools in the Burera District.

My goal was to find out how the socioeconomic status of the students' families affected their academic performance in mathematics classes at Rwandan public day secondary schools.

Target Population

The target population, as defined by Wikipedia, is the whole population—or group—that the researcher want to study and examine. According to Luca Birigazzi (2019), the population about which the information is sought is known as the target population. The study's target group consisted of 163 students, 106 teachers, and 116 respondents who were enrolled in mathematics courses at three different schools in the Burera district: GS Rugarama, G.S. Butete, and G.S. Kagogo. Since they are the ones who have data on kids' arithmetic performance that is connected to their families' socioeconomic status, the research also concentrated on math instructors in those upper secondary schools. It was assumed for this study that all randomly selected teachers and students would be allowed to respond to surveys without outside interference. Additionally, we may anticipate that church influence would manifest itself in certain views that differ from those of non-church populations.

Sample Design

The process of educating the group that will be chosen or from whom the sample size will be drawn is known as the sample design. It was shown in this study that the sample size that is appropriate to supply the information required for this research may be identified if the target population is too big to include all respondents.

Sample Size

According zach bobbit , (2023) In statistics, Slovin's formula is used to calculate the minimum sample sized needed to estimate a statistic based on an acceptable margin of error.

Slovin's formula is calculated as:
$$n = \frac{N}{1+N(e^2)}$$

where n is the sample size, N is the population size, and $e = 0.05$ is the imaginary error. The research was carried out on a population of 163, into which the sample size is 116, who were able to answer questionnaires. In this sample size, 106 students were selected by using the random sampling method, and at the same time, a group of 10 mathematics subject teachers was chosen. Hence the sample size was: $n = \frac{163}{1+163(0.05^2)}=115.8$, which is approximately 116.

Sampling Technique

A sample, as defined by Merriam-Webster (2019), is a portion of a unit drawn at random from a larger whole and is thus assumed to be typical of its characteristics. The schools are a single entity in the sample approach; a comprehensive and accessible list of schools is required. where I am expected to choose colleges based on the research's goal. Sampling is the process of choosing a subset of the population or individual members in order to estimate the characteristics of the entire population and draw statistical conclusions from them.

Ten of the 116 respondents in the sample I utilized for this study are math teachers, and 106 of them are students. Students are competent enough to provide information about the availability of resources for teaching and learning as well as the motivation and skill of teachers. Teachers supplied the remainder of the information. I just collaborated with the instructors and kids I worked with to teach and study mathematics in order to obtain knowledge.

Research Population

A research population, according to Young (2012), is a carefully selected group of individuals or objects that serve as the primary subject of a scientific study. Because it is challenging to evaluate and screen every member of a huge group, the researcher looks for the most efficient technique to conduct the inquiry. Furthermore, this is done to cut costs because it is known that a huge population necessitates higher costs for improved information processing and interpretation. Therefore, the population of this study was 163, and among them I chose a sample of 120 respondents from secondary schools in Burera District, which makes up the study's target population, provided that it consists of 111 students and 9 mathematics subject teachers.

Data Collection Method

The data collection approach is the planned, methodical process of collecting and analyzing data on relevant variables in order to test hypotheses, assess findings, and provide answers to specific research questions.

Data Collection Instrument

Data gathering from the study population was generally aided by the research approach. In order to choose questionnaire respondents as the data gathering instrument, I used the survey technique, statistical analysis utilizing random sampling, and the stratified approach. Questionnaires were employed in place of spoken inquiries since they are useful for gathering information from respondents quickly and are appropriate for limiting time constraints.

Administration of Data Collection Instrument

Dealing with the process of establishing order and structure as well as organizing the data gathering into meaningful and intelligible ways was the next stage. Following data collection, the researcher documented the information and applied statistical methods to aid in interpretation. In order to guarantee the correctness and consistency of the responses from the respondents, the data needed to be examined in order to identify any errors or omissions that had been made and to fix any inaccuracies.

V. RESEARCH FINDINGS AND PRESENTATION

5.1. Demographic Characteristics of the Respondents

The demographic parameters that were believed to have a significant influence on the research's findings were respondents' educational status, age group, and study year. Every aspect needed to obtain pertinent data is covered by the examination of the respondents' demographic distribution. Out of the 116 surveys the researcher submitted, only 115 were accurately filled out and mailed back. According to Mugenda and Mugenda (2014), a response rate of more than 90.0% is sufficient for the researcher to extrapolate the data, hence the fact that the response rate of 98.8% is noteworthy.

Table 1: Years of Study

Levels	Frequency	Percentage
Ordinary level	106	91.3 %
Bachelors Degree	8	6.8 %
Masters Degree	2	1.7 %
PhD	0	0%
Total	116	100.0%

Source: Primary Data (2024)

According to Table 1, 106 out of 115 respondents (91.3%) were enrolled in ordinary level courses, 8 of them have bachelor's degrees (6.8%), and 2 have master's degrees (8.2%). Even though the difference was small, there were more advanced level students than ordinary level students, which suggests that the respondents' years of study were distributed normally. This made it easier for the researcher to get data that wasn't reliant on senior schooling.

5.2 Presentation of Findings

The presenting of findings is the main focus of this section. The results are separated into the following three subsections according to the particular goals of the research: To investigate the relationship between families' socioeconomic status and their kids' academic performance in mathematics at the public day secondary schools in Burera District, to investigate the relationship between students' academic performance in mathematics in public day secondary schools in Burera District and their families' socioeconomic position, as well as the impact of family socioeconomic status on academic accomplishment.

5.2.1 Socio-economics status of families that influence students' academic performance in Mathematics subject

The main objective of this study was to determine the socioeconomic status of families that influence children's academic achievement in mathematics in public day secondary schools in the Burera District. The researcher requested that participants fill out a questionnaire in order to convey their ideas in order to achieve this aim. The respondents' opinions were scored using the following categories: SD (strongly disagree), D (disagree), Not sure, a (agree), and SA (strongly agree). For these ratings, the equivalent values were 1, 2, 3, 4, and 5.

Table 2: Students' perception on Socio-economics status of families that influence students' academic performance in Mathematics subject in public day secondary schools in Burera District

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Std
	N	%	N	%	N	%	N	%	N	%		
Ability to afford school materials indicates socio-economics status of families	0	0.0	2	1.9	11	10.4	14	13.2	79	74.5	1.837	1.250
Capacity to access to human basic needs indicates socio-economics status of families	7	6.6	6	5.7	12	11.3	13	12.3	68	64.2	1.627	0.765
Capacity to solve conflicts indicates socio-economics status of families	0	0.0	4	3.8	6	5.7	9	8.5	87	82.1	2.06	1.323
Ability to pay school indicates socio-economics status of families	0	0.0	0	0.0	4	3.8	7	95	89.6	2.3	1.4	.894

Source: Primary Data (2024)

Table 2 displays responses about how families' socioeconomic circumstances impact pupils' academic achievement in mathematics classes in the Burera District's public secondary schools. Sixty-two percent strongly agreed and 12.3% agreed that a family's ability to meet their basic needs is a good indicator of their socioeconomic status; 82.1% strongly agreed and 8.2% agreed that a family's ability to resolve conflicts is a good indicator of their socioeconomic status; and 74.5% strongly agreed and 13.4% agreed that a family's ability to pay for school supplies reflects their socioeconomic status. Additionally, 3.8% agreed and 89.6% strongly agreed that a family's capacity to pay for education reflects their social standing. This is further supported by Ahawo (2019), who claimed that a student's family has a significant impact on their academic life in

today's society. Otula (2017) strengthened the case by stating that cooperation between parents, teachers, and students is essential for the best possible learning outcomes. He said that children's motivation to study is influenced by the amount of material and emotional support they receive from their family.

Table 3: The teacher's perception of the socio-economic status of families that influences students' academic performance in mathematics

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Std
	N	%	N	%	N	%	N	%	N	%		
	Ability to afford school materials indicates socio-economics status of families	0	0.0	0	0.0	1	10.0	2	20.0	7		
Capacity to access to human basic needs indicates socio-economics status of families	0	0.0	1	10.0	1	10.0	2	20.0	6	60.0	1.90	1.449
Capacity to solve conflicts indicates socio-economics status of families	0	0.0	0	0.0	0	0.0	2	20.0	8	80.0	1.20	.422
Ability to pay school indicates socio-economics status of families	0	0.0	0	0.0	0	0.0	1	10.0	9	90.0	1.20	.622
Fees and school feeding indicates socio-economics status of families	0	0.0	0	0.0	2	20.0	2	20.0	6	60.0	1.60	0.843

Source: Primary Data (2024)

Table 3 displays responses on the socioeconomic status of families that influence pupils' academic achievement in mathematics classes in the Burera District's public secondary schools. Seventy percent of students strongly agreed that families' socioeconomic status is reflected in their ability to pay for school supplies; sixty percent strongly agreed that families' socioeconomic status is reflected in their ability to access basic necessities of life; eighty percent strongly agreed that families' socioeconomic status is reflected in their ability to resolve conflicts; and ninety percent strongly agreed that families' socioeconomic status is reflected in their ability to pay for school. Furthermore, 60.0% strongly agreed that school fees and food reflect a family's financial standing. Families' socioeconomic status has an effect on academic performance in one way or another. Every child has social and physical needs, and addressing those needs promotes academic success, according to Omoraka (2021). These needs include things like a comfortable reading space, tasty meals, a playground, books and other resources, and admission to the best local schools. All of these help children promote effective learning and excellent academic achievement in the classroom. High-quality education is crucial for providing the human resources required for the social and economic production sectors, which promote wealth creation and improve living conditions (Abdullah, 2021).

5.2.2 The academic performance that is due to socio-economics of families in Burera District

Analyzing the academic performance that results from the socioeconomic status of families in Burera District was the second goal of this study. In order to accomplish this goal, the researcher examined several papers pertaining to secondary schools in the Burera District and requested the respondents to express their opinions by completing a questionnaire. Strongly disagree (SD), disagree (D), not sure (NS), agree (A), and strongly agree (SA) are used to grade respondents' opinions. The corresponding values for these ratings were 1, 2, 3, 4, and 5.

Table 4: The Students's perception on the academic performance that is due to socio-economics of families in Burera District

Statements	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Std
	N	%	N	%	N	%	N	%	N	%		
	The level of education of your parents affects your performance in mathematics.	0	0.0	0	0.0	12	10.3	22	19.0	82		
The parents background (literate or not, rich or poor) Affect your performance in mathematics.	0	0.0	11	9.5	11	9.5	20	17.2	74	63.8	1.8	1.25

The families' conflicts affect your performance in mathematics.	0	0.0	0	0.0	0	0.0	27	23.3	89	76.7	1.7	1.30
The teacher's competence and motivation affect your performance in mathematics.	0	0.0	0	0.0	0	0.0	11	9.5	105	90.5	1.419	.88
The adequate instruction resources affect your performance in mathematics.	0	0.0	0	0.0	22	19.0	24	20.7	70	60.3	1.7	1.2

Source: Primary Data (2024)

Analyze the academic performance that results from the socioeconomic status of families in Burera District using the questionnaire. The results are shown in Table 4, which shows that 70.7% strongly agreed and 19.0% agreed that your performance in mathematics is influenced by your parents' educational background, 63.8% strongly agreed and 17.2% agreed that your performance in mathematics is influenced by your parents' background (literate or not, rich or poor), 76.7% strongly agreed and 23.3% agreed that the conflicts within your family affect your performance in mathematics, 90.5% strongly agreed and 9.5% agreed that the teacher's motivation and competence affect your performance in mathematics, and 60.3% strongly agreed and 20.7 agreed that the proper instructional resources affect your performance in mathematics. (Gobena, 2018) examines how parents' socioeconomic status—including their degree of education, income, occupation, and family access—relates to their children's academic performance in secondary schools in Rwanda's Burera region. The research, which employed a descriptive correlation technique using SLOVEN's formula, involved 202 respondents from 410 targeted categories. The findings showed a higher relationship between children's academic success and their parents' socioeconomic standing, which includes their level of education, financial resources, employment, and family access. Other factors, such as the natural environment and the school environment, also have an influence on academic achievement. The report suggests that while making plans for Burera District pupils, the government, curriculum designers, educational planners, and instructors take the parents' socioeconomic situation into account.

Table 5: The teacher's perception on analyzes the academic performance that is due to socio-economics of families in Burera District

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Total	Mean	Sdv
	N	%	N	%	N	%	N	%	N	%			
The level of education of your parents affects your performance in mathematics.	0	0.0	0	0.0	2	20.0	2	20.0	6	60.0	10	1.8	1.2
The parents background (literate or not, rich or poor)Affect your performance in mathematics.	0	0.0	0	0.0	0	0.0	2	20.0	8	80.0	10	1.75	1.1
The families' conflicts affect your performance in mathematics.	0	0.0	0	0.0	1	10.0	2	20.0	7	70.0	10	1.77	1.2
The teacher's competence and motivation affect your performance in mathematics.	0	0.0	0	0.0	0	0.0	1	10.0	9	90.0	10	1.4	.87

Source: Primary Data (2024)

The findings showed that your success in mathematics is influenced by your parents' educational attainment; 60.0% of respondents highly agreed. Data showed that 80.0% of respondents strongly agreed that a student's success in mathematics is influenced by their parents' background, whether they are wealthy or illiterate. Students' arithmetic performance is impacted by family conflicts; 90.0% and 70.0% of respondents strongly agreed. Students' success in mathematics is influenced by the teacher's skill and drive. Habyarimana (2020) examined the impact of family socioeconomic data on the academic achievement of pupils in the Rubavu District's nine-year basic education (9YBE) schools. As part of a mixed study design, 383 individuals were chosen by using purposive and simple random selection procedures. The results demonstrated that family socioeconomic position had a substantial influence on pupils' academic achievement, with p and beta values for financial status, family size, and family headship. The study came to the conclusion that the government, parents, teachers, non-governmental organizations (NGOs), and other stakeholders should address family socioeconomic status concerns in order to enhance students' academic performance.

5.2.3 The relationship between the socio-economics status of the families and students' academic performance in Mathematics subject

Finding a correlation between students' attendance and their performance in mathematics classes in public secondary schools in Rwanda's Burera District is the third goal of the current study.

Table 6: Correlation Analysis between the relationship between the socio-economics status of the families and students' academic performance in Mathematics subject

		Ability to afford school materials	Capacity to access to human basic needs	Capacity to solve conflicts	Students' marks in test and examination	Creativity and innovation	Problem solving
Ability to afford school materials	Pearson Correlation	1	.085	.001	.451**	.305**	-.033
	Sig.(2-tailed)		.000	.000	.000	.000	.002
	N	215	215	215	215	215	215
Capacity to access to human basic needs	Pearson Correlation	.085	1	.072	.250**	.029**	.093
	Sig.(2-tailed)	.214		.294	.000	.000	.000
	N	215	215	215	215	215	215
Capacity to solve conflicts	Pearson Correlation	.001	.072	1	-.053	.113	.149*
	Sig. (2-tailed)	.000	.000		.000	.000	.029
	N	215	215	215	215	215	215
Students' marks in test and examination	Pearson Correlation	.451**	.250**	-.053	1	.209**	.042
	Sig.(2-tailed)	.000	.000	.000		.002	.541
	N	215	215	215	215	215	215
Creativity and innovation	Pearson Correlation	.305**	-.029	.113	.209**	1	.304**
	Sig.(2-tailed)	.000	.000	.000	.002		.000
	N	215	215	215	215	215	215
Problem solving	Pearson Correlation	-.033	-.093	.149*	.042	.304**	1
	Sig. (2-tailed)	.000	.000	.029	.541	.000	
	N	215	215	215	215	215	215

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

Source: Primary Data (2024)

The ability to pay for school supplies was found to be strongly correlated with students' test and exam scores ($r = .451^{**}$, p -value = 0.000), with their creativity and innovation ($.305^{**}$, p -value = 0.000), and with their ability to solve problems ($-.033^{*}$, p -value = .632). Because the p -value was less than 0.05, the correlation is positively connected, indicating that kids' test and exam scores, originality and invention, and problem-solving scores all rose when their capacity to purchase school supplies was adjusted, and vice versa. Capacity to access human basic needs and students marks in tests and examinations ($r = .250^{**}$, p -value = 0.000), creativity and There is a significant correlation between students' marks in tests and examinations ($r = -.053$, p -value = 0.000), creativity and innovation ($r = 0.113$, p -value = 0.000), and problem solving ($.149^{*}$, p -value = 0.000). The degree of association was less than 0.05, indicating an adjustment in students' marks in test and examination, problem solving and value, and capacity to solve conflicts. Additionally, there is a significant correlation between innovation ($r = .029^{*}$, p -value = 0.000) and problem solving ($r = .093$, p -value = 0.000) and problem solving (p -

value = 0.000). The socioeconomic achievement gap is a major source of inequality in educational systems because it affects life prospects, income, and well-being (Ethington & Wilson, 2023). Low-status students often feel depressed and have little time for academic activities. Their socioeconomic situation or that of their family may influence their emotional states and motivation to learn. Further research is needed to determine the motivational factors influencing students' views toward foreign language culture and people. In Iran, educational attainment studies have not focused on differential accomplishment based on socioeconomic status.

Table 7: Regression coefficient between independent variables and Students 'marks in test and examination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.907	.464		1.954	.058	.337	.846
	Ability to afford school materials	.299	.098	.425	3.052	.004	.101	.498
	Capacity to access to human basic needs	.157	.115	.198	1.364	.181	-.076	.389
	Capacity to solve conflicts	-.058	.094	-.087	-.619	.539	-.249	.133
	Ability to pay school Fees and school feeding	-.110	.145	-.112	-.760	.452	-.404	.183

Dependent Variable : Students' marks in test and examination

Predictors : (Constant), Ability to pay school Fees and school feeding, Ability to afford school materials, Capacity to solve conflicts, Capacity to access to human basic needs

Source: Primary Data, (2024)

The study's respondents' results in Table 7 showed that the regression equation is ($y = ax + b + \text{error}$). This means that y is the dependent variable, which is the students' test and exam scores, and x is the independent variable, which is the students' ability to pay school fees and food, afford school supplies, resolve conflicts, and access basic human needs. As a result, $y = (\text{Beta}) x + .907 + \text{error}$. However, there is a 95% confidence level that the factors related to class attendance can affect students' test and exam scores, ranging from 33.7% to 84.6%. In Nyarugenge District, Rwanda, Hyera (2023) investigated how social and cultural norms affected the secondary school dropout rates of girls. According to the study, sociocultural norms have a varied effect on dropout rates for girls and boys. Secondary school girls who wanted to leave out to have a family early were pregnant and expelled.

Table 8: Regression coefficient between independent variables and Creativity and innovation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.461	.703		3.503	.001	.539	.883
	Ability to afford school materials	.264	.149	.115	1.779	.083	-.036	.565
	Capacity to access to human basic needs	-.219	.174	-.189	-1.258	.216	-.571	.133
	Capacity to solve conflicts	.060	.143	.061	.420	.677	-.229	.349
	Ability to pay school Fees and school feeding	-.553	.220	-.382	-2.519	.016	-.998	-.109

Dependent Variable : Creativity and innovation

Predictors : (Constant), Ability to pay school Fees and school feeding, Ability to afford school materials, Capacity to solve conflicts, Capacity to access to human basic needs

Source: Primary Data (2024)

The study's respondents' results in Table 8 showed that the regression equation is ($y = ax + b + a$). This means that y is the dependent variable, which is creativity and innovation, and x is the independent variable, which is the ability to pay school

fees and school meals, afford school supplies, resolve conflicts, and access basic human needs. Consequently, $y = (\text{Beta}) x + 2.461 + \alpha$. However, there is a 95% confidence level that the characteristics of class attendance can influence creativity and invention, ranging from 53.9% to 88.3%. The socioeconomic status of families affects their academic performance. Omoraka (2021) asserts that addressing children's social and physical needs improves their academic performance. A pleasant reading space, wholesome diet, leisure pursuits, availability of books and resources, and admission to prestigious institutions are a few examples of needs. These elements support effective learning and academic performance. To prepare people for social and economic production, which leads to more wealth and better living circumstances, high-quality education is crucial (Abdullah, 2022).

Table 9: Regression coefficient between independent variable and Problem solving

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta	T		Lower Bound	Upper Bound
1 (Constant)	1.498	.567		2.642	.012	.350	.647
Ability to afford school materials	-.031	.120	-.039	-.257	.799	-.274	.212
Capacity to access to human basic needs	.169	.140	.191	1.206	.235	-.115	.454
Capacity to solve conflicts	.152	.115	.201	1.318	.195	-.081	.386
Ability to pay school Fees and school feeding	-.184	.177	-.166	-1.039	.306	-.543	.175

a. Dependent Variable: Problem solving

b. Predictors: (Constant), Ability to pay school Fees and school feeding, Ability to afford school materials, Capacity to solve conflicts, Capacity to access to human basic needs

Source: Primary Data (2024)

The study's respondents' results in Table 9 showed that the regression equation is $(y = ax + b + \alpha)$. This means that y is the dependent variable, which is problem solving, and x is the independent variable, which is the ability to pay school fees and school food, afford school supplies, resolve conflicts, and access basic human needs. Therefore, $y = (\text{Beta}) x + 1.498 + \alpha$. However, there is a 95% confidence level that using class attendance characteristics can improve problem solving, with a range of 35.0% to 64.7%. (The impact of family socioeconomic status on school dropout rates in Rwandan secondary schools is examined by Rumberger & Palardy (2019). There were 250 participants in the study, including parents, children, and teachers. The results showed that a lack of family support and basic requirements made students from low-income families more likely to drop out. The study found that secondary school dropout rates were negatively impacted by family socioeconomic status. In order to ensure that every child attends school, the researcher suggests boosting parental involvement in education, providing training on the causes and repercussions of dropout, and conducting routine inspections.

VI. CONCLUSION

The following findings were clarified by the study using the data discussed in the chapter and a comparison with previous empirical research:

The study concludes that the socioeconomic status of families—"Ability to afford school materials, Capacity to access human basic needs, Capacity to solve conflicts, and Ability to pay school fees and school feeding"—affects students' academic performance in mathematics in public day secondary schools in Burera District. This is in response to the first goal and research question. The pupils' test and exam scores; the students' finished inventiveness and originality; In regard to the second study goal, which was to examine the academic performance resulting from the socioeconomic status of families in Burera District, the research found that the test designed by district results may be utilized to assess the student performance in mathematics. The last objective and research question looks at the relationship between the socioeconomic status of Rwandan adolescents' families and their academic performance in mathematics. The correlation matrix between the dependent variables—creativity and innovation, problem-solving abilities, and students' test and exam scores—and the independent variables—the ability to pay for school supplies, the ability to access basic human needs, the ability to resolve conflicts, and the ability to pay for school fees and food—shows positive significance because the p -value was less than 0.05.

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