

Effect of Class Attendance on the Academic Performance of Students in Mathematics in Public Day Schools in Musanze District

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ABSTRACT

The aim of this study was to determine the effect of class attendance on students' academic performance in Mathematics subject in public day Schools in Rwanda" A case of Musanze district'. This study adopted a descriptive research design using a mixed methods research design; a combination of both quantitative and qualitative forms of research. The target population for this study was the educational practitioners in the district who includes Students, teachers, head teachers and Sector Education officer in the district. Thus the total population was 1600 participants. Sample random technique was used to sample 320 respondents taken as a sample size. Quantitative data was analyzed through descriptive statistics. Qualitative data was analyzed through content analysis. Analysis of data was aided by statistical packages for social science (SPSS) version 21 and output exported to micro soft word in form of pie charts and tables for the purpose of reporting. From the findings, the study revealed the Pearson correlation analysis showed that class attendance ($r=0.814$, $p=0.000$) is positively and significantly related to students' academic performance. The correlation was also statistically significant since the p-value was less than 5%. Finally, the study recommended that to ensure a more meaningful academic performance among the students. Since attendance of the students is an alarming issue, attendance improvement initiatives need to be done to improve students' attendance in order to help students learning Mathematics subject. Thus, teachers should record daily attendance of the students to monitor regular absentees.

Keywords: Class attendance, Students' academic performance and Mathematics

INTRODUCTION

Absence from classrooms is an important problem in education. Non-attendance in class has become a norm, causing problems for students, the teaching staff, and education units, even though classrooms are a good place to transfer the professors' experiences to students and understand university subjects (Mearman, 2014). Frequent absence from or low attendance of students in the class can lead to academic failure and is a sign of students' lack of interest and motivation toward the field of study (Landin & Pérez, 2018).

Students' failure of to attend the education process is defined as absenteeism. In literature absenteeism is depicted as skipping school or class (truancy), irregular participation in class (Kemker& Barron, 2017), distancing from class or school with no excuse stated. Tuyishimire et al. (2020) defines absenteeism as skipping school without any excuses and legal causes and in the same vein it can also be defined as intentionally and habitually distancing from a learning setting without any legal causes such as health problems and with no valid grounds (Deane & Murphy, 2013). Due to his/her negligent behavior a student intentionally and inexcusably avoiding educational process (Damari, 2001) misses out not only acquisitions of program- based education but also acquisitions offered by unstructured education (Claire, 1999). That is because absenteeism is a vital and yet mostly ignored determinant factor in education and it is for certain

that the most significant determinant factor is students' success performance.

These findings on the relationship between academic success and absenteeism shed light in some degree to the status of these variables but what indeed raises questions in mind is how, during distance education process in particular, class attendance can affect students' academic success. There have been a wide range of studies conducted to investigate the dimensions of the link between class attendance and academic success in formal education and these studies mainly discussed the effect of class attendance on academic success (Utley 2015). Similarly, there have also been many other studies that examined the dimensions of the link between class attendance and academic success in distance education. Uloko (2014) in his studies determined that students continuing distance education are more successful than those attending formal education. In their research Ghazizadeh, Jasim, Mohammed & Saeidi (2022) analyzed success rates of students continuing formal education and those continuing distance educations but they failed to identify a significant differentiation. However, Jackbos (2017) in a study detected that the difference was in favor of students continuing formal education.

Nye, et al. (2016) conducted a research in an institute where attendance is a mandatory to students for at least 75% rate for a student to sit for a semester's final examination. In their study, there were two groups of respondents: students who had at least 75% attendance and those with less than 75% attendance. Result showed that there was statistically significant difference between the two groups for their mean mark. The mean mark of those with 75% attendance was higher than those with less than 75% attendance (unpaired t-test $p,0.0067$). However, a contrary result from Damari (2001) in their research on the impact of attendance on students' academic performance revealed a weak correlation between scores and attendance of the students. Results showed that students can still score high even they fail to attend classes. Moreover, in a meta-analytical study on the relationship of student attendance with academic performance conducted by Plant & Hill (2013) revealed that those who have high performance are those whose attendance are very good and those students with lowest mark are those whose attendance were most likely very poor. It was also reported that the difference in marks between students with poor attendance and students with average attendance was larger than the difference between students with average attendance and students with very good attendance.

Tanzanian research by Kitambazi & Lyamuya (2022) reveals poor student attendance due to child labor, which impacts science and math performance negatively. In Rwanda, an increase in school enrolment due to a nine-year basic education program has led to various challenges, including disobedience, high teacher-student ratios, lack of parental involvement, and facility disrepair, according to Tuyishimire & Hesbon (2020). Overall, the connection between class attendance and academic success, particularly in Mathematics, remains a significant focus of research and educational policy. Overall, the connection between class attendance and academic success, particularly in mathematics, remains a significant focus of research and educational policy.

1.1 Problem Statement

The researcher has investigated series of problems and obstacles that contribute to the students' academic performance in Mathematic subject public day schools in Musanze District. Some identified factors include overcrowded class, poor facilities in the class etc. Based on the previous research student's attendance is low in rural area compared to urban area whereas poor class attendance severely affects exam performance or academic performance in Mathematics subject. But in public certificate examination the rural students are also having almost equal performance in term of grade point average compared to the urban students. This unscientific performance calls a certain question into our mind that whether attendance in the school and the lesson taught in the school for the preparation of examination has any effect or contribution on the academic performance of secondary students in in Mathematics subject in public day schools in Rwanda with

reference of Muhoza sector in Musanze District

The main objective of this study is analyze the effect of class attendance on academic performance of students in Mathematics in public day schools in Musanze District.

Hypothesis

This study sought to achieve the following research hypothesis:

H₀₁: There is no a significant relationship between class attendance and academic performance of students in Mathematics in public day schools in Musanze District.

METHOD

Research design serves as a systematic framework for study procedures. This research employed both qualitative and quantitative methods to investigate the causes, effects, and relationships between variables. Using a survey research design, data from students, teachers, head teachers and Sector Education officers from five public day schools from Musanze sector which are GS Muhoza I, GS Muhoza II, GS Kabaya, GS Cyabagarura and GS Busogo I. Thus the total population was 1600 Participants. The table below gives details of the target population.

Table 1: Table showing size of population of selected schools

Schools	Number of teachers	Sector Education officers	Number of head teacher	Number of Students	Total population
GS Muhoza I	10	–	1	338	354
GS Muhoza II	11	–	1	321	332
GS Kabaya	11	–	1	398	415
GS Cyabagarura	11	–	1	390	408
GS Busogo I	7	–	1	347	411
Total	50	5	5	1540	1600

Source: Musanze District report, 2023

Random sampling was used to select a representative sample of each of the parties used in the study. This study consists of 1,600 persons as the research population and the sample size was determined using Yamane’s (1973) formula

Where:

n is the sample size,

N is the population size, and

e is the marginal error of 5% through level of confidence of 95%.

Thus, this formula is applied to the above sample

$$n = \frac{N}{1+N(e)^2} \text{ Therefore, } n = \frac{1600}{1+1600(0.05)^2} = 320$$

N: Total population under the study was 1600 and n: sample is 320

A carefully constructed questionnaire and written interview guide was used to compare the written and oral responses of key informants, including students, school principals, sector education staff and teachers. Scheduled interviews are semi-structured face-to-face interviews that allow the researcher to elicit additional information from participants. The interviews were used because they helped

FINDINGS AND DISCUSSION

In this study the research sampled biology teachers, headteachers, and science/biology students of senior 4,5 and 6 because they have better knowledge and experience about their schools' teaching and learning practices compared to other students in their respective schools.

Table 2. Response rate

Respondents	Targeted	Obtained	Response rate(%)
Head teachers	5	5	100
Teachers	8	8	100
Sector education officer	1	1	100
Students	306	250	81.6
Total	320	264	82.5

Source: Field Research, 2023

As shown in Table 2, from the targeted respondents, four questionnaires from teachers and 56 questionnaires from students were not returned, so the participation rate was reduced to 12 (75%) of the teachers and 250 (81.6%) of the students. Regarding headteachers, the study sampled 5 school headteachers from 5 secondary schools and they were interviewed; therefore, the response rate was 100%. Overall, the response rate of respondents was 82.5%.

4.1 Descriptive Statistics

Effect of class attendance on academic performance of mathematics subject

In this research the study attempted to determine the effect of class attendance on academic performance of mathematics subject in public day schools in Rwanda.

Table 3: Class attendance and academic performance of Mathematics subject

Statements	Mean	Std Dev
Students attend class more frequently in Mathematics subjects when learning includes students' input about what and how topics will be discussed in class	4.42	.69
Students attend class in Mathematics subject more frequently when teachers make learning more relevant to their daily life	4.10	.81
Students attend class more frequently in Mathematics subject when teachers provide ways for students to express their opinions	4.11	.90
Students attend class more frequently in Mathematics subject when teachers provide opportunities for students to debate	4.28	.84

Students attend class more frequently in Mathematics subject when students are challenged in their learning	4.18	.81
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D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree, M=Mean, Std=Standard deviation

As shown in Table 3, the results relate to the five statements assessing the impact of attendance on student achievement in Mathematics subject. The results show that for the first statement, the majority of respondents strongly agreed that students are more likely to attend mathematics lessons if students' views on what to cover in class and how to do it are included in lessons, with a mean value of 4.42, and a high positive correlation standard deviation of 0.69. The second question asked respondents whether students would be more likely to attend Mathematics lessons if teachers made them more relevant to their daily lives. The results showed that the majority of respondents agreed with this statement (M=4.10, SD=0.81). For the third question, 'Students attend Mathematics lessons more often if teachers allow them to express their opinions', the majority of respondents strongly agreed with this statement, with a mean of 4.11 and a very positive and strong standard deviation correlation (0.90). The fourth question asked whether students were more likely to attend mathematics classes when they felt they had learning difficulties. Respondents strongly agreed with this statement, with an average of 4.28 and a very strong positive standard correlation of 0.84. The next question on class attendance was whether students attend mathematics classes more often when they feel they have learning difficulties. The majority of respondents agreed with this statement, with a mean of 4.18 and a standard deviation of 0.81, meaning that the majority of respondents strongly agreed and agreed that all of the above are key elements of attendance used in their school and have an impact on student learning outcomes.

D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree, M=Mean, Std=Standard deviation

4.2. Results and Discussions

From the findings, the study found that classroom participation affects students' learning outcomes: students are more likely to participate in Maths lessons when they have a say in how content and topics are discussed in class; students are more likely to participate in maths lessons when teachers allow them to express their ideas; students are more likely to participate in maths lessons when teachers give them the opportunity to discuss; and students are more likely to participate in maths lessons when they are encouraged to learn.

The interview data gathered the views of the participants on the effect of class attendance on the academic performance of the students.

There were interviewed Sector Education officers and head teachers, the findings from the interview given to them About students' class attendance and academic performance in Mathematics subject showed that all respondents unanimously agree that there is a strong correlation between students' class attendance and their academic performance in the mathematics subject. Irregular attendance tends to lead to poorer performance due to missed learning opportunities, incomplete understanding, and lack of practice

One of them expressing his views, a headteacher had this to say:

“Low, irregular class attendance is associated with students' lack of success. Absence from classes and not paying attention to the lessons can be detrimental to learning. The presence in the classroom helps students use the resources and retain information. Also, it has been indicated that class attendance has a direct relationship with students' performance and a positive effect on professional success at a high level “

These findings are in agreement with Alijah (2013) who studied the factors affecting absenteeism from the point of view of students and teachers. The results showed that the scientific mastery of teachers, the

presentation of specialized content, the regularity of students, attendance, absence, appropriate classroom facilities, and the consistency of the class discussions with examinations encourage continuous classroom attendance.

Inferential Statistics

Table 4: Correlation Analysis between independent and dependent variable

Class attendance Students' academic performance	
Class attendance	Pearson Correlation1
	Sig. (2-tailed)
	N250
Students' academic performance	Pearson Correlation.814**1
	Sig. (2-tailed).000 N250250
**. Correlation is significant at the 0.01 level (2-tailed).	

According to the findings reported in Table 3, the Pearson correlation analysis showed that class attendance ($r=0.814$, $p=0.000$) is positively and significantly related to students' academic performance. The correlation was deemed to be statistically significant since the p-value was less than 5%.

The findings therefore the correlation analysis showed that there is a positive and statistically significant relationship between class attendance and students' academic performance in the five sampled public day schools in Musanze District. Class attendance is a critical factor in students' academic success. Research by Aden et al. (2013) and Daniel & Ahmad (2021) shows that regular attendance enhances learning outcomes and the likelihood of achieving academic success, while chronic absenteeism impedes progress and can lead to legal issues and community problems.

Multiple Regression

The results of the multiple regression are presented in the tables that follow.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.840 ^a	.706	.693	.27206
a. Predictors: (Constant), class attendance				

Source: Field research, 2023

Table 5 shows the quantity of variance that is explained by the predictor variables. The first statistic, R is the multiple correlation coefficient between all the predictor variables and dependent variable. In this model, the value is 0.840, which indicates that there is a great deal of variance shared by the independent variables and dependent variables. The next value, R Square=0.706, is simply the squared value of R. This is frequently used to describe the goodness of fit or the amount variance explained by a given set of predictor variables and its value is 70.6 % of the variance in t students 'academic performance is explained by class size effect in the model.

Table 6: ANOVA summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.073	3	4.024	54.372	.000 b
	Residual	5.033	68	.074		
	Total	17.107	71			
a. Dependent Variable: Performance						
b. Predictors: (Constant), class attendance						

Source: Field research, 2023

Table 6 indicates standard regression which provides the significance of the prediction of individual predictor variables on the dependent variable. The Table shows the output analysis and whether there it has a statistically significant difference group mean. As seen, the model ($F=54.372$, $p=0.000$) was found to be significant at 5% since the p-value ($P=0.000$) was less than the 5% threshold Therefore, class attendance significantly affects students ‘academic performance.

Table 7: Regression coefficients and significance of the independent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.000	.230		4.354	.000
	Class attendance	.188	.065	.212	2.892	.006
a. Dependent Variable: students ‘academic performance						

Source: Field research, 2023

Table 7 above indicates that Kernel of regression analysis in which $Y=A+BX$. The class attendance constant and it has unstandardized coefficients B equal to 1.000 when is constant. The Std error is 0.230. Thus, according to Kernel formula equal to $Y=1.000+0.188X_1+\epsilon$ is effective and efficiency of students ‘academic performance which is dependent variables.

CONCLUSION

From the findings of this study, the study concluded that class attendance affects students’ academic performance by students who attend class more frequently in Mathematics subject when learning includes students’ input about what and how topics will be discussed in class, by students who attend class more frequently in Mathematics subject when teachers provide ways for students to express their opinions, by students who attend class more frequently in Mathematics subject when teachers provide opportunities for students to debate and by students attend class more frequently in Mathematics subject when students are challenged in their learning.

In light of the conclusions drawn, the researcher offers several recommendations for various stakeholders in the Rwandan education system. Parents are encouraged to actively promote regular attendance in mathematics classes, emphasizing its importance and fostering a supportive home learning environment. Teachers should adopt engaging teaching methods, implement effective attendance tracking, and provide support to students with attendance issues. Government educational leaders should allocate resources, provide professional development for teachers, and enforce attendance-related policies. Students are urged to take personal responsibility, manage their time effectively, seek help when needed, and set academic

goals. In conclusion, enhancing mathematics class attendance in Rwandan public secondary schools necessitates collaborative efforts among parents, teachers, educational leaders, and students to improve academic performance and future educational outcomes.

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