

EFFECT OF SCHOOL FEEDING PROGRAM ON STUDENTS' ACADEMIC PERFORMANCE IN RUBAVU DISTRICT OF RWANDA (2020-2021)

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Abstract

*This study aims at investigating the effect of school feeding program on students' academic performance in Rubavu district of Rwanda. The school feeding program has been one of the best strategies for enhancing the students' academic performance in 9&12 YBE schools since 2014. The study employed 380 students sampled from 12 schools of Rubavu district. Among them 204 were males while 176 were females. The study used a correlation design. The demographic variables were reported by using frequencies and percentages while the descriptive questions were analysed by using mean and standard deviation tools of SPSS. The relationship between variables were studied by using Pearson correlation whereas the predictive model was reported by analysing regression tools of SPSS. The results showed the high perception of respondents on School feeding program ($M = 3.83$; $Std. D = 1.17$). The same respondents scored high perception on Students' academic performance ($M = 4.32$; $Std. D = .87$). The study demonstrated a strong positive correlation between School feeding program and Students' academic performance ($r = .529^{**}$, $N = 380$, $P = .000$). Finally, the regression analysis results showed that School feeding program predicts the Students' academic performance at the level of 28% of variance. From those findings, the study recommends for future researchers to study other factors that contribute to the performance of students such as the teacher students' ratio, parental involvement, and school infrastructures.*

The issue of students' academic performance (SAP) is a pre-occupation of countries and their stakeholders in education. The country that wants to improve its economy and sustainable development invests more in its educational system in order to get skilled human capital. This desire is the case of the Government of Rwanda (GoR) that needs to empower the students in nine and twelve year's basic education (9&12 YBE) to produce skilled people with needed knowledge on the labor market of Rwanda and abroad. One of the strategies that the GoR adopted to reach this general objective is to provide food for students at school in basic education in the program called School feeding program (SFP) (MINEDUC, 2021).

School feeding program was practiced in many other countries. The study conducted on SFP in Tanzania by Majjo (2018), has demonstrated a significant effect of this practice on the academic performance of students who have been in this program. This impact was shown in reducing student's absenteeism, increasing in examinations performance, and enhancing their enrollment in the given program of studies (MINEDUC, 2021). In the same line, Adrogue and

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Orlicki, (2013) demonstrated that SFP has enabled student's performance in Argentina, the country that has chronic problems of malnutrition.

In addition, SAP is influenced by many factors such as qualified teachers, availability of teaching and learning materials, school infrastructures like classrooms, staff offices, dining hall, libraries, and playing grounds of students (Mushtaq& Khan, 2012). According to Ayeni&Adelabu (2012), creating conducive learning infrastructures and environment increases the performance of students at all levels. Not only that, but also the educational managers suggested that motivating teachers and students may be also the factors of successful in the academic journey.

With this regard, the GoR adopted the system of nourishing students at school in order to reduce time consuming during going and back at home for getting food or missing food totally. This decision is a motivational factor of students who may come from low social- economic income families and it is called SFP (MINEDUC, 2021). After SFP has been established, in 2014 in Rwanda, the significant impact on the performance of students was observed. The number of dropped out and absenteeism among students has been reduced. There was an increasing in enrollment of students in schools and the learning process has improved (Sesonga, 2016). The implementation of school feeding is a jointed action of the GoR, the parents, and educational stakeholders.

In order to enhance SAP, the GoR pays Rwf 56 per child per day to support SFP (Buningwire, 2021) and the parent contribution is Rwf 94 per child per day (MINEDUC, 2021). Moreover, the GoR decided to abolish school fees and to make education affordable for parents (MINEDUC, 2021; Nyirandikubwimana, Njihia, &Mwalwâ, 2019). In the same line, the parents may support this SFP by providing firewood, water, utensils, and working as volunteer cooks at school (Sesonga, 2016). However, this support from parents is converted in paying a variation of amount as their contribution and this variation goes from 5000 to 15000 Rwf per child per term. Since many parents are in low social economic income, the GoR collaborated with local and international NGOs working in Rwanda to support this free school feeding and free education in 9&12 YBE by paying for those who are unable to pay for their children (Mpozembizi, 2021).

All those effort are made to promote SAP. In addition, the GoR tried also to increase in number of school infrastructures where they are needed. Note that for some schools did not have enough classrooms, dining halls, kitchens, libraries, and latrines. Those missing infrastructures are now being constructed by the GoR in collaboration with World Bank (Ashimwe, 2020). For dining halls, some schools are using classrooms for taking meal at lunch time (Buningwire, 2021). This practice reduces hygiene in classrooms and affects time for studying by cleaning where food were taken, sometimes the first hour after lunch is lost for these reasons which may impede SAP.

However, the academic performance of students is also influenced by motivated and qualified teachers, the availability of teaching materials, such as books,

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computers, and teaching aids. It is also motivated by the available and enough science and computer laboratories which may be connected to the internet. This study is focusing only on the effect that school feeding has on academic performance of students in 9& 12 YBE in Rubavu district. Rubavu district is chosen to be the research setting because of its characteristics of being one of the secondary cities after Kigali city. These characteristics offered the opportunity of having information needed on how the students perceive SFP in relation with their performance at school.

It has noticed that Rubavu district has a higher number of absenteeism and drop out students before the introduction of SFP. This problem of absenteeism , drop out, and low Students' academic performance were at high level in this district at the level of provoking the leaders of the country to involve themselves in mobilization for improving the above stated issues. In addition, a study on effect of domestic violence on learning effectiveness conducted in Rubavu district by Sikubwabo (2021) found that there are absenteeism, dop out, and low academic performance of students in elementary schools of Rubavudistrict due to the domestic violence. This observation worries local authorities because those students are the ones who will attend 9&12 YBE in the future and if the elementary studies are not well completed, it will affect their performance in secondary studies. The SFP has come as one of the solutions to stop absenteeism of students, reduce drop out students, and then improve SAP.

Research Questions

What is the status of school feeding program in Nine and Twelve Years basic Schools of Rubavudistrict?;What is the status of students' academic performance in nine and Twelve Years basic schools of Rubavu district?; What is the relationship between school feeding program and students' academic performance in Nine Years and Twelve years basic education schools of Rubavu district?; What is the predictive model of students' academic performance based on school feeding program?

Methodology

This study used a correlation design. This design is according to Rutberg and Bouikidis (2018) correlation design studies the relationship between two variables. In this study, the researcher examined the relationship between SFP and SAP in 9&12 YBE of Rubavu district. However the studies also examined the perception of respondents on academic performance in relation to school feeding. Doing so, the researcher examined if there is a causal relationship between FSP and SAP. This design helped the researcher to obtain the accurate and reliable measurements that allowed him to conduct an analysis of data statistically (Queirós, Faria, & Almeida, 2017).

Study population

According to Goldstein, Lynn, Muniz-Terrera, Hardy, O'Muircheartaigh, Skinner, and Lehtonen (2015) population of a study is a set of a collection of

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unity of people or institutions that can be sampled for answering to research questions in the study. In this study, its population involved schools and students in 9&12 YBE in Rubavu district, Western province of Rwanda for the school year 2020-2021. Rubavu district has 44 nine and twelve years' basic education schools which constituted the school population of the study. The researcher chose randomly one school in each sector of Rubavu district. Since Rubavu district has 12 sectors this number implies 12 sampled schools, one school in every sector. Those twelve schools are constituted by 7660 students in which a sample of 380 was taken. The distribution of population and sample of respondents per school is presented in the table 1 below.

Table 1: Distribution of population and sample

N°	Sectors	N Schools	n Schools	N Students	n Students
1	Nyamyumba	5	1	823	41
2	Bugeshi	3	1	924	45
3	Busasamana	3	1	636	31
4	Cyanzarwe	3	1	309	16
5	Gisenyi	6	1	398	19
6	Kanama	2	1	1040	52
7	Kanzeze	2	1	435	22
8	Mudende	3	1	532	26
9	Nyakiriba	4	1	622	31
10	Nyundo	3	1	538	27
11	Rugerero	5	1	727	36
12	Rubavu	5	1	676	34
TOT		44	12	7660	380

Sampling Techniques

In the study, the school populations were chosen randomly. Regarding the students population the researcher used Slovin's formula (Tejada & Punzalan, 2012). The formula is shown below

N: Population of the study

e: Margin error of 0.05%, where the confident level is 95%

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{7660}{1 + 7660(0.05)^2} = 380$$

Findings

The findings of the study and highlights the results of the findings as set out in the research methodology are presented as follow:

The research question 1 was formulated as follows “what is the status of School feeding program in Nine and Twelve Years basic Schools of Rubavu district?” the results were presented according to the responses on school feeding program reflecting the level of students perception on each item either in terms of their agreement or disagreement with the statement.

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The secondary school students were asked to respond by answering the relevant number in the Likert scale questionnaire that described how they perceive school feeding program to students' academic performance. Each item was given one point and the main score was determined. The table 6 summarizes the responses.

Table 2: Perception of respondents on school feeding program

	N	Min	Max	M	Std. D	SR	V.I
My school has a kitchen	380	1	5	4.55	.881	SA	VH
This school provides food to students	380	1	5	4.33	1.006	A	H
I eat a variety of food at school	380	1	5	4.26	.943	A	H
School feeding program upgraded my success at school	380	1	5	4.22	1.010	A	H
I come to school regularly because I eat at school	380	1	5	4.07	1.196	A	H
There is a policy guidelines to ensure the sustainability of school feeding program	380	1	5	4.03	1.095	A	H
I have personal materials using in eating such as plate, spoon, and a cup	380	1	5	3.94	1.199	A	H
I receive lunch immediately after the lunch bell has been rung	380	1	5	3.90	1.335	A	H
My performance in quizzes and exams has improved because of school feeding program	380	1	5	3.87	1.260	A	H
My parents pay their contribution on school every term	380	1	5	3.84	1.262	A	H
The school has enough utensils such as pots and ladle to use in cooking	380	1	5	3.78	1.292	A	H
I receive enough food at school	380	1	5	3.75	1.251	A	H
I daily drink safety water at school	380	1	5	3.68	1.476	A	H
The meals served are assorted and nutritious	380	1	5	3.42	1.283	N	AV
My school has dining hall	380	1	5	1.73	1.087	SD	VL
Overall	380			3.82	1.17	A	H

Legend: N: Number of respondents; Min: Minimum; Max: Maximum; M: Mean; Std. D: Standard deviation; S.R: Scale Responses; V.I: Verbal Interpretation; SA: Strongly Agree; A: Agree; N: Neutral ; D: Disagree; SD: Strongly Disagree; VH: Very High; H: High; AV: Average; L: Low; VL: Very Low.

The overall mean and standard deviation score were ($M = 3.82$; $SD = 1.17$) which is *Agree* and it is interpreted *high*. The results suggested that the 9&12 YBE students of Rubavu district perceived themselves to be part of school feeding program, which is applied in the whole country. The same respondents *strongly agreed* that their schools have kitchen ($M = 4.55$; Std. D = .881) which is *very high*. This high agreement is reasonable because all of those students under SFP are prepared at school even if they *strongly degree* to have dining hall ($M = 1.73$; Std. D = 1.087). In addition, the same results demonstrated that the 9 and 12 YBE students *agreed* that School feeding program upgraded their success at school ($M = 4.33$; Std. D = 1.006) which is *high*.

These findings are obvious because the students who were used to spend the whole day without taking meal might be happy for the program that aims at improving their welfare at school. In addition, most of those students are

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coming from poor families which may eat hardly at their respective home, so found search program that strengthen their living may be a good help for their families also. These results are aligned with the GoR policy regulating School feeding program (MINEDUC, 2021). This policy promotes School feeding program as the approach to address students' hunger during the school day, to support Rwanda's human capital creation, and expand access to educational opportunities to disadvantaged children, particularly students from lower family incomes.

The results are supported by Maijo (2018) who confirmed that school feeding program reduced the absenteeism and rate enrollment of students in Tanzania schools which in return promoted their academic performance.

Research Question2

The research question 2 was presented as follows “What is the status of Students’ academic performance in Nine and Twelve Years basic schools of Rubavu district?” it was answered by using also the calculation of mean and standard deviation tools of SPSS. The respondents answered by encircling the best number corresponding to the choices. Table 7 presents the summary of results from respondents.

Table 3: Summary of results on students’ academic performance from respondents

Students’ academic performance	N	Min	Max	M	Std.D	SR	V.I
I got strength when I pass quizzes	380	1	5	4.67	.662	SA	VH
My passing to the next level was due to the practical work and hardworking that I demonstrated	380	2	5	4.56	.688	SA	VH
I want to get good grade in every subject	380	1	5	4.52	.710	SA	VH
I enjoy doing homework because it helps me to improve my skills in every subject	380	1	5	4.47	.742	A	H
My participation in group work activities demonstrates my academic performance	380	1	5	4.43	.833	A	H
I exert more effort when I do difficult assignment	380	1	5	4.43	.735	A	H
My overall academic grade demonstrate academic performance	380	1	5	4.39	.720	A	H
I actively participate in every classroom discussion	380	1	5	4.39	.800	A	H
When I am unsure about something related to my performance, I have access to appropriate advice for direction	380	1	5	4.29	.916	A	H
The teaching strategies that my teachers use in the classroom are in line with the performance they want to develop in me	380	1	5	4.29	.964	A	H
I perform well because I like my options	380	1	5	4.28	.767	A	H
I study well because I take meal at school	380	1	5	4.19	1.137	A	H
I am deeply involved in my courses.	380	1	5	4.07	.937	A	H
I gain focus when I see technical problems	380	1	5	4.00	1.172	A	H
The facilities at my school are suitable for the academic performance	380	1	5	3.88	1.275	A	H
Overall	380			4.32	0.87	A	H

Legend: N: Number of respondents; Min: Minimum; Max: Maximum; M: Mean; Std. D: Standard deviation; S.R: Scale Responses; V.I: Verbal Interpretation; SA:

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Strongly agree; A: Agree; N: Neutral ; D: Disagree; SD: Strongly disagree; H: High; VH: Very high

The study measured the academic performance by using 15 items which covered all the aspects of dimensions of SAP. The table 9 shows the descriptive statistics results of respondents *agreed* with the overall mean (M = 4.32; Std. D =.87) which is interpreted as *high* on performance of students in 9&12 YBE schools of Rubavu district. The students scored very high in the item that said I got strength when I pass quizzes (M= 4.67; Std. D = .662). This result sounded true because when a student is passing well the quizzes, it gives hope that he understands well the content which will lead to the success in internal and National exams. They also scored very high in the statement said my passing to the next level was due to the practical work and hardworking that I demonstrated (M = 4.56; Std. D= .688). in addition, all those students are passionate to get good grade as it demonstrated by (M = 4.52; Std. D = .710). Further, they *agree* that the facilities at school are suitable for their academic performance (M = 3.88; Std. D =1.275) which is *high*. This result comes the time when the GoR is renewing the school infrastructures and improving all facilities that are closely related to the learning and teaching. Doing so, it is helping to increase the Students’ academic performance (Ashimwe, 2020).

These results suggest that there should be continuous programs such as teacher training on teaching strategies and methods, provision of student’s facilities, and involving students in their own learning activities. All those programs aim at enhancing and maintaining academic performance in 9&12 YBE schools. These results are supported by the government policy which wants to build Rwandans with a knowledge based and technology led economy (Ganyaupfu, 2013).

Research Question 3

The research question three was all about relationship between School feeding program and students’ academic performance. It was stated as follow “what is the relationship between School feeding program and Students’ academic performance in Nine Years and Twelve years basic education schools of Rubavu district?” the analysis was performed by using Pearson correlation tool of SPSS. Table 8 shows the relationship between School feeding program and Students’ academic performance.

Table 1: Correlation between School feeding program and Students’ academic performance

SFP	Pearson Correlation	SFP	SAP
	Sig. (2-tailed)	1	.529**
	N	380	380
SAP	Pearson Correlation	.529**	1
	Sig. (2-tailed)	.000	
	N	380	380

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

According to Pallant (2013) the strength of relationship between variables is comprised between -1 to +1. When the relation equals to zero it means that

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there is no relation at all. When it is in the negative side, it means that this relationship is negatively impacting the dependent variable. However when it goes to +1, this relation means that it is impacting positively the variable. In general, when the correlation is .10 to .29, this correlation is small. When the correlation is between .30 to .49, it means that this correlation is medium finally when the Pearson correlation is ranged from .50 to 1.0; it means that this correlation is large or strong. Based on the findings, the study demonstrated that there is strong positive correlation between SFP and SAP ($r = .529^{**}$; $N = 380$; $P = .000$). So, the null hypothesis which said there was no relationship between SFP and SAP of 9&12 YBE students in Rubavudistrict is *rejected*.

These results suggest that the greater the desire of the GoR to enhance students' academic performance, the greater the need of improving SFP in 9& 12 YBE schools. There should be more funds to put in SFP. The contribution of parents should be also improved and maintained, and finally the stakeholders in educational sector should keep supporting the SFP in Rwanda by providing food and money. Dufitumukiza, Ntakirutimana, Niyibizi, and Mukanziza (2020) in their study confirmed that many programs including school feeding have enhanced the performance of students in Rwanda.

These results were supported by (Bukari, Hajara, & Oloruntoba, 2015) who demonstrated in their study that there is a positive correlation between school feeding program and students' academic performance, where students under the program succeed well in their quizzes, internal and National exams. It is also reinforced by Maijo (2018) in his study in Tanzania where he found that school feeding program increased the examination performance of students. The students need to take meal at school to perform well the after lunch classes which helped them to excel in school and national examinations.

Research Question 4

The research question 4 was stated that "What is the model of students' academic performance based on school feeding program?" It was answered by using regression analysis tool of SPSS and the results showed that there is a predictive model of students' academic performance based on its independent variable which is SFP. The model summary indicated that there is a predictive model $F(df, residual) = F\text{ value}, P=.000, R^2 = .280$. This finding means that 28 % of variance constitutes the final model formed by using school feeding program. The findings suggested that school feeding program is an important tool of students' academic performance of the selected schools in Rubavu district. Therefore the null hypothesis two which says "there is no predicted model of SAP in 9& 12 YBE schools of Rubavu district" is *rejected*. Table 9 shows the predictive model of SAP.

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Table 2: The predictive model of students' academic performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.529 ^a	.280		5.33761	.280	147.259	1	378	.000
a. Predictors: (Constant), SFP									
b. Dependent Variable: SAP									

The same findings are highlighted by ANOVA test as it demonstrated in table 10 below.

Table 3: ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4195.416	1	4195.416	147.259	.000 ^a
	Residual	10769.266	378	28.490		
	Total	14964.682	379			
a. Predictors: (Constant), SFP						
b. Dependent Variable: SAP						

Analysis of variance results in Table 10 confirmed that school feeding program had positive and significant influence on the dependent variable $F(df\ 1, 378) = 147.259$, $p\ value = 0.000$). In the same context, the coefficients table strengthened the positive prediction of the model summary composed by school feeding program as it shown in table 11.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.023	1.740		25.305	.000
	SFP	.363	.030	.529	12.135	.000
a. Dependent Variable: SAP						

Regression coefficients resulted in Table 10 revealed that there was a positive and significant effect of school feeding program ($\beta = 0.363$, $p\ value = 0.000$). This is as per the following model:

$$Y = 44.023 + 0.363X + \epsilon$$

Where Y = Dependent variable (Academic performance)

X = School feeding program

ϵ = Error Term

These findings are supported by many related studies. Adekunle and Christiana (2016) found out that SFP promotes SAP by eliminating absenteeism, rate enrollment, and truancy, thus it increases SAP. In the same line, Bukari, Hajara, and Oloruntoba (2015) confirmed that school feeding had highly influenced student's performance in Ghana. This is passion of GoR by introducing SFP in 9&12 YBE schools countrywide for improving SAP (MINEDUC, 2021).

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