Analysis of Impact of Rural Development Project: A Case Study of Renovation of Primary and Secondary Schools in Riverside Rural Communities in Cross River State, Nigeria.

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ABSTRACT: This study analyzed the impact of renovation of primary and secondary schools on pupils and students enrolment and academic performance in riverside rural communities in Cross River State. The specific objectives were to determine the number of primary and secondary schools that benefited from renovation and those that are yet to be renovated, determine the enrolment of pupils and students in schools that benefited from renovation and those that are yet to be renovated, as well as analyze the academic performance of pupils and students in schools with renovation and those without. Data were collected from 24 and 16 primary and secondary schools respectively. The data were analyzed using percentage change, difference in difference and paired t-test. The findings of the study showed that the total enrolment increased at 10% and 16% for primary and secondary schools with renovation respectively, while those without renovation were six percent and 12% for primary and secondary schools respectively. The difference in difference mean enrolment and paired t-test at 5% were also significant. Also, the overall academic performance of pupils and students in primary and secondary schools that benefited from renovation were greater than those in schools that are yet to benefit from renovation as at the time of the study. Hence; renovation impact on the enrolment and academic performance of pupils and students in the study area. The study recommends that government, riverside rural communities, community based organizations and agencies that are involved in primary and secondary schools management should ensure constant renovation of school facilities.

Keywords: Academic Performance, Enrolment, Impact, Renovation, Riverside Communities.

1. Introduction

The management of education in Nigeria by law is vested under the three tiers of government namely, federal, state and local governments. The primary level of education is the level at which education is considered as a fundamental right, as well as important for human and social development [6]. Secondary level of education is the link between primary and tertiary education in Nigeria. Cross River State government from 1999 to 2013 adopted integrated rural development approach aimed at reaching out to the rural areas in the state. The approach encompasses agriculture, education, health, rural roads, rural electrification and water. Some agencies were put in place to facilitates rural development. Some of these agencies are Rural Development Agency (RUDA), State Electrification Agency (SEA), Rural, Water and Sanitation Agency (RUWATSAN), etc. all saddled with the mandate of rural transformation which is aimed at improving the standard of living of the rural poor [5].

Rural development projects can be categorized into three components; these are social infrastructures, physical infrastructures and institutional infrastructures[7]. The academic performance of pupils and students in primary and secondary schools is dependent on several factors. Renovation of school facilities is one of them. Educational curriculum cannot be sound and well operated with poor and badly managed school facilities [1], [2]. Conducive school physical environment could enhance students' attendance, involvement in academic activities and academic performance positively [3], [8].

School facilities are physical resources that facilitate effective teaching and learning. They include classrooms, laboratories, workshops, libraries, equipments, consumables, electricity, water, visual and audio-visual aids, tables, desks, chairs, playground, storage space, toilets, etc.

The state government determination to revamp and position the educational sector for excellence was underlined by a clear definition of the "Cross River State Standard" for academic benchmark. Under this policy, 110 secondary schools and 123 primary schools have undergone comprehensive renovation. Each of the secondary schools was provided with laboratories for the basic sciences and ICT. This renovation also includes construction of modern classrooms, assembly halls, provision of desks and chairs, libraries, sports and recreational facilities, conveniences, and other infrastructure to assist in the all-round holistic academic, physical and social development of young people. Ten thousand teachers across primary and secondary schools in the state were provided with laptops and corresponding

training to enhance the delivery of the state e-learning programme in schools. Each of the laptops is equipped with internet access, learning resource materials on 30 subjects as well as an archive of West African Examination Council past questions and answers, as well as past questions and answers for First School Leaving Certificate Examinations for secondary and primary school respectively.

These renovation programmes are expected to led to increase in school enrolment and remarkable improvement in pupils and students academic performance. Despite all these programmes, the percentage of failure of pupils and students at First School Certificate Examination, Junior Secondary Certificate Examination and Senior Secondary School Certificate Examination respectively is still a serious concern to government and educational stakeholders in the state.

The study therefore was designed to analyze the impact of rural development project, using renovation of primary and secondary schools in riverside rural communities in Cross River State, Nigeria as a case study. The specific objectives are to; determine the number of primary and secondary schools that benefited from renovation and those that are yet to be renovated, determine the enrolment of pupils and students in schools that benefited from renovation and those that are yet to be renovated as well as analyze the academic performance of pupils and students in schools that benefited from renovation and those that are yet to be renovated. There are two hypotheses of the study. The first one stated that there is no significant difference between pupils and students' enrolment in riverside rural committees with primary and secondary schools that benefited from renovation and those that are yet to be renovated. The second one stated that there is no significant difference between pupils and students' academic performance in riverside rural communities with primary and secondary schools that benefited from renovation and those that are yet to be renovated.

2. Methodology

The study was conducted in riverside rural communities in Cross River State. These are rural communities located along the Cross River and those that are within the range of 5 kilometres from the River. These surrounding communities depend largely on the resources of the Rivers for survival. The area is characterized by two distinctive seasons – the dry which last from November to the middle of April and the wet which starts from middle of April to October. The riverside rural communities are endowed with abundant swamp suitable for swamp rice cultivation and dry season farming especially of vegetables. Major crops grown in the area include cassava, yam, maize, plantain, cocoa, banana, fruits and tree crops. Livestock such as poultry, sheep and goats, etc are kept in all the communities which survive by scavenging around the homestead and nearby bush.

A multi-stage sampling technique was adopted for the study as follows; stage one, simple random sampling method was used to select the Cross River from five Rivers in Cross Rive State. Stage two, purposive sampling technique was employed to select 12 primary schools that benefited from renovation and the same number of 12 primary schools that are yet to be renovated. Stage 3, the same purposive sampling technique was adopted to select 8 secondary schools that benefitted from renovation and 8 secondary schools that are yet to be renovated in the study area.

Data for the study were mainly from secondary sources. These data were obtained from reports, publications, registers, etc. List of primary and secondary schools in the study area were obtained from Local Education Authorities (LEA) and Zonal Secondary Schools Management Boards (ZSSMB) respectively. For enrolment for any given year in primary schools, it is the total enrolment from primary one to primary six in a given primary school. That of secondary schools is total enrolment in any given year in all the classes from Junior secondary school level to the Senior Secondary School level. For the academic performance in primary schools, is the total number of pupils that passed the First School Leaving Certificate Examination. In the case of secondary schools, it is the addition of the total number of students that passed Junior Secondary School Certificate Examination and those that passed Senior Secondary School Certificate Examination.

3. Analytical Framework

The study employed percentage change, difference in difference and paired t-test approaches. A positive value from the percentage change is an increase, while negative value is a decrease. The formular for percentage change in outcome is stated as:

$$\% \text{ change in outcome} = \frac{\text{Outcome after} - \text{Outcome before}}{\text{Outcome before}} \times 100$$

Where outcome after = Outcome after renovation
Outcome before = Outcome before renovation [10].

The study further employed difference in difference to analyze the impact of renovation on enrolment and academic performance of benefiting schools. For example, enrolment in primary schools. The model specification for the difference in difference using the in box approach is stated as:

$$DD = \Sigma[Y_1^T] - \Sigma[Y_0^T] - (\Sigma[Y_1^C] - \Sigma[Y_0^C])$$

Where DD = Difference in difference, which is the enrolment difference between primary schools that benefited from renovation and those that are yet to benefit from renovation.

Σ = Summation sign
$[Y_1^T]$ = Mean enrolment of benefiting primary schools after renovation
$[Y_0^T]$ = Mean enrolment of benefiting primary

schools before renovation

$[Y_1^C]$ = Mean enrolment of non-benefiting primary schools after renovation

$[Y_0^C]$ = Mean enrolment of non-benefiting primary schools before renovation [4], [10].

The level of significant of the mean difference was tested using paired t-test as specified:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where t = t – calculated

$\overline{X_1}$ =Mean outcome of benefiting schools as group 1

$\overline{X_2}$ =Mean outcome of non-benefiting schools as group 2

S_1^2 =Variance of group 1

S_2^2 =Variance of group 2

n_1 =Total number of benefiting schools in group 1

n_2 =Total number of non benefiting schools in group 2

$n_1 + n_2 - 2$ = Degree of freedom

4. Results and Discussion

The results of the study are showed in Table 1 to Table 9 as presented in the appendix

4.1 Schools that Benefited from Renovation and those that are not Renovated

The distribution of benefiting and non-benefiting primary schools in Table 1 showed that out of a total of 27 primary schools identified in the study area, 15 primary schools benefitted from renovation, while 12 primary schools are yet to be renovated. Abi Local Government Area benefited 33.33% out of the number of primary schools that were renovated, as well as recorded 25% of the total number of primary schools that are yet to benefit from renovation.

Also, Table 1, revealed that 22 secondary schools were identified in the study area. Out of the 22 secondary schools, eight secondary schools benefited from renovation, while 14 secondary schools are yet to benefit from renovation. Abi Local Government Area accounted for 37.5% of the secondary schools that were renovated. For the secondary schools that are yet to be renovated, Obubra Local Government Area accounted for 28.6%.

4.2 Enrolment of Pupils in Benefiting and Non-benefiting Primary Schools

Table 2 shows the percentage change and the difference in difference analysis of pupils' enrolment in primary schools that benefited and those that are yet to benefit from renovation. The results indicates that, the total enrolment in primary schools that benefited from renovation was 1,877 pupils after renovation, while before renovation 1,702 pupils were enrolled. The benefiting schools recorded 10% increase in enrolment. For the non-benefiting primary schools a total 2,107 pupils were enrolled after renovation were carried out in the benefiting schools, while before the renovation a total of 1,987 pupils were enrolled. The percentage change in enrolment of pupils in non-benefiting primary schools before and after renovation was six percent. This means that enrolment of pupils in primary schools that benefited from renovation increased at four percent greater than enrolment in primary schools that are yet to benefit from renovation.

Also, Table 2 showed the difference in difference of mean values of enrolment. The mean of enrolment after renovation in benefiting primary schools was 156.41, while before renovation; the mean value of enrolment was 141.83. For the non-benefiting primary schools, the mean enrolment after renovation was 175.58, while before renovation the mean was 165.58. The mean difference of benefiting primary schools before and after renovation was 14.58, while that of non-benefiting primary schools was 10.00. Difference in difference of means of pupils' enrolment between primary schools that benefited from renovation and those that are yet to benefit from renovation was 4.58. Since the value is positive, it implies renovation impact on enrolment of pupils in primary schools that benefited from renovation in the study area.

The level of significance of the mean enrolment disparity was tested by employing paired t-test. Table 3 reveals that the mean difference in enrolment in primary schools that benefited from renovation was 14.58 with a variance of 36.19, while the mean difference in enrolment before and after renovation for primary schools that are yet to be renovated was 10.00 with a variance of 2.73. The outcome of paired t-test analysis revealed t-calculated value of 2.54 greater than table value of 1.717 at 0.05 percent level of significance. This implies that renovation impact on pupils' enrolment in primary schools that benefited from renovation. This shows that renovation is one of the variables that influence pupils enrolment in primary schools.

4.3 Academic Performance of Pupils in Benefiting and Non-benefiting Primary Schools.

Table 4 shows that after renovation a total of 276 pupils passed First School Leaving Certificate Examination in the selected 12 primary schools that benefited from renovation, while before renovation a total of 217 pupils

passed the same type of examination in the same schools that benefited from renovation. The percentage change in the number of pupils that passed First School Leaving Certificate Examination before and after renovation was 27%.

For the primary schools that are yet to benefit from renovation, the total number of pupils that passed First School Leaving Certificate Examination after renovation was carried out in benefiting schools was 237 pupils, while before renovation a total number of 202 pupils passed their examinations. The percentage change in the number of pupils that passed First School Leaving Certificate Examination in non-benefiting schools before and after renovation was 17%. This means that the percentage change in the total number of pupils that passed their First School Leaving Certificate Examination before and after renovation in primary schools that benefited from renovation was 10% greater than that of pupils in primary schools yet to benefit from renovation.

Also, Table 4, showed the difference in difference estimates of academic performance pupils in benefiting and non-benefiting primary schools in the study area. The mean of pupils that passed their First School Leaving Certificate Examination after renovation in benefiting primary schools was 23, while before renovation the mean of pupils that passed their examination was 18.08.

For the primary schools that are yet to benefit from renovation the mean of pupil's that passed their First School Leaving Certificate Examination was 19.75, while before renovation the mean was 16.83, this gives a difference in difference between the two categories of primary schools as 2.00. This implies that the renovation impact on the academic performance of pupils in primary schools that benefited from renovation since the outcome of the academic performance mean difference in difference is positive and significant.

The level of significance of the academic performance mean difference was tested using paired t-test. From Table 5, the outcome of the analysis revealed t-calculated value of 3.10 greater than the table or critical value of 1.717 at 0.05 percent level of significance. This implies renovation impact on academic performance of pupils in primary schools that benefited from renovation. This results collaborates [9], that proper management of school facilities have positive influence on education outcomes such as pupils and students' enrolment and academic performance.

4.4 Enrolment of students in benefiting and non-benefiting schools.

Table 6 reveals that, after renovation a total of 3,836 students were enrolled in eight secondary schools that constitute benefiting secondary schools. Before renovation a total of 3,317 students were enrolled in the same benefiting secondary schools. The percentage change in enrolment was 16%. This implies an increase of 16% in total enrolment before and after renovation in benefiting secondary schools.

In the case of non-benefiting secondary schools, after renovation a total of 2,318 students were enrolled. Before renovation non-benefiting secondary schools recorded a total enrolment of 2,239 students. The percentage change in enrolment for secondary schools that are yet to benefit from renovation before and after renovation in benefiting secondary schools was 12%. This implies that percentage change in enrolment in secondary schools that benefited from renovation is four percent greater than that of secondary schools yet to be renovated in the study area.

Also, Table 6 presents the difference in difference estimates of mean of total enrolment. After renovation the mean of total enrolment in secondary schools with renovation was 479.50, while before renovation the mean was 414.63. The mean difference of enrolment before and after renovation was 64.87. For the non-benefiting secondary schools the mean of total enrolment after renovation was 289.75, while before renovation the mean enrolment was 279.87. The mean difference of enrolment before and after renovation for non-benefiting secondary schools was 9.88. Therefore, the difference in difference in mean enrolment between benefiting and non-benefiting secondary schools before and after renovation was 54.99.

Table 7 presents level of significance of the mean enrolment disparity. Table 7 result indicates a t-calculated value of 2.93 higher than the table value of 1.761 at 0.05 percent. The results agrees with previous study that school facilities influence education outcomes such as pupils and students' enrolment and academic performance [9].

4.5 Academic Performance of students in benefiting and non-benefiting secondary schools

Table 8 presents the academic performance of students in the study area. The same approach as in that of primary schools was adopted. After renovation the total number of students that passed Junior Secondary School Certificate Examination (JSSCE) plus Senior Secondary School Certificate Examination (SSCE) in the eight secondary schools that constitute the benefiting secondary schools was 782 students, while before renovation 546 students passed their examinations. The percentage change in the total number of students that passed Junior Secondary School Certificate Examination plus Senior Secondary School Certificate Examination in benefiting secondary schools was 43 percent. This means that the percentage change in academic performance before and after renovation increase by 43 percent.

For the non-benefiting secondary schools the same number of eight secondary schools constitutes the non-benefiting secondary schools. After renovation the total number of students that passed JSSCE and SSSCE in non-

benefiting secondary schools was 504 students, while before renovation 404 students passed their examinations. The percentage change in the number of students that passed their examinations in non-benefiting secondary schools was 25 percent. Comparing their academic performance in terms of the percentage change in the total number of students that passed their examinations (JSSCE and SSSCE) implies the percentage change in benefiting schools was 18% greater than that of students in non-benefiting secondary schools.

The mean difference estimate in Table 8 reveals that, after renovation the mean of the total number of students that passed their examination in benefiting secondary schools was 97.75, while before renovation the mean was 68.25. For secondary schools that are yet to benefit from renovation the mean of the total number of students that passed their examination after renovation was 63.00, while before renovation the mean was 50.50. This gives a difference in difference of 17.00.

Table 9 is the paired t-test on level of significance of the mean difference of academic performance of benefiting and non-benefiting secondary schools. The result indicates a t-calculated value of 2.09 greater than the table value of 1.761. The result reveals that renovation is one of the variables that have positive influence on enrolment and academic performance of students in the study area. Therefore, the hypotheses of no significant difference are discarded. The policy implication of this outcome is that government, rural communities, private organizations, community based organizations and agencies that are involved in primary and secondary schools management should ensure constant renovation of school facilities as this can enhance pupils and students enrolment and academic performance. The result is related to other research outcome that school facilities influence education outcomes such as pupils and students enrolment and academic performance [9].

5. Conclusion and Recommendations

From the findings of the study, it has been possible to established the fact that, the total enrolment of primary and secondary schools that benefited from renovation increased significantly more than primary and secondary schools yet to benefit from renovation. Difference in difference and paired t-test analyses result further proved the fact that the increase in enrolment was attributed to renovation. The percentage change in enrolment in primary schools that benefited from renovation was 10%, while primary schools yet to benefit from renovation increased at six percent. Enrolment of students in secondary schools that benefited from renovation increased at 16%, while that of secondary schools yet to benefit from renovation increased at 12%.

The number of pupils and students in primary and secondary schools respectively that passed their examinations (academic performance) was greater in schools with renovation compared with primary and secondary schools without renovation. On the basis of this, the study recommends that, government, the riverside rural communities, private organizations, community based organizations and agencies that are involved in primary and secondary schools management should ensure constant renovation of school facilities as this can enhance pupils and students enrolment and academic performance, government should be more commitment to the renovation of primary and secondary school facilities in rural communities.

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Appendix

Table 1: Distribution of Benefiting and Non-benefiting Schools According to Local Government Area.

Primary Schools/ Local Government Area	Benefiting Frequency	Benefiting Percentage	Non-benefiting Frequency	Non-benefiting Percentage
Abi	5	33.33	3	25.00
Biase	3	20.00	2	16.67
Etung	1	6.67	1	8.33
Obubra	1	6.67	2	16.67
Odukpani	2	13.33	2	16.67
Ikom	2	13.33	1	8.33
Yakurr	1	6.67	1	8.33
Total	**15**	**100**	**12**	**100**
Secondary Schools/ Local Government Area				
Abi	3	37.50	3	21.43
Biase	1	12.50	2	14.29
Etung	1	12.50	2	14.29
Obubra	1	12.50	4	28.60
Odukpani	0	0	0	0
Ikom	1	12.50	1	7.10
Yakurr	1	12.50	2	14.29
Total	**8**	**100**	**14**	**100**

Source: Estimated from field data, 2015.

Table 2: Results of Percentage Change and Difference in difference Estimates of Impact of Renovation of Primary Schools on Pupils Enrolment

Variable	Total enrolment After	Total enrolment Before	% Change	Mean After	Mean Before	MD	DD
Primary Schools With renovation	1,877	1,702	10	156.41	141.83	14.58	
							4.58
Primary Schools without renovation	2,107	1,987	6	175.58	165.58	10.00	

Source: Estimated from field data, 2015
MD = Mean difference; DD =Difference in difference

Table 3: Result of Paired t-test Analysis of Impact of Renovation of Primary Schools on Pupil's Enrolment

Variable	MD	DD	S^2	t-cal
Primary Schools With renovation	14.58		36.19	
		4.58		2.54
Primary Schools Without renovation	10.00		2.73	

Source: Estimated from field data, 2015
Df = 22, table t-value = 1.717 at 0.05 level of significance
MD = Mean difference; DD = Difference in difference.

Table 4: Results of Percentage Change and Difference in difference Estimates of Impact of Renovation of Primary Schools on Pupil's Academic Performance.

Variable	Total pass After	Total pass Before	% Change	Mean After	Mean Before	MD	DD
Primary Schools With renovation	276	217	27	23	18.08	4.92	2.00
Primary Schools without Renovation	237	202	17	19.75	16.83	2.92	

Source: Estimated from field data, 2015.

Table 5: Results of Paired t-test Analysis of Impact of Renovation of Primary Schools on Pupils' Academic Performance

Variable	MD	DD	S^2	t-cal
Primary Schools With renovation	4.92		3.14	
		2.00		3.10
Primary Schools Without renovation	2.92		1.88	

Source: Estimated from field data, 2015
df = 22, table t-value = 1.717 at 5%
MD = Mean difference; DD = Difference in difference.

Table 6: Results of Percentage Change and Difference in difference Estimates of Impact of Renovation of Secondary Schools on Students' Enrolment

Variable	Total enrolment After	Total enrolment Before	% Change	Mean After	Mean Before	MD	DD
Secondary Schools With renovation	3,836	3,317	16	479.50	414.63	64.87	54.99
Secondary Schools Without renovation	2,318	2,239	12	289.75	279.87	9.88	

Source: Estimated from field data, 2015
MD = Mean difference; DD = Difference in difference.

Table 7: Result of Paired t-test Analysis of Impact of Renovation of Secondary Schools on Student's Enrolment.

Variable	MD	DD	S^2	t-cal
Secondary School With renovation	64.87		2,798.58	
		54.99		2.93
Secondary Schools Without renovation	9.88		23.44	

Source: Estimated from field data, 2015
df = 14, table t-value = 1.943 at 0.05 level significance
MD = Mean difference; DD = Difference in difference.

Table 8: Results of Percentage Change and Difference in difference Estimates of Impact of Renovation of Secondary Schools on Students' Academic Performance.

Variable	Total pass After	Total pass Before	% Change	Mean After	Mean Before	MD	DD
Secondary Schools With renovation	782	546	43	97.75	68.25	29.50	
							17.00
Secondary Schools without Renovation	504	404	25	63.00	50.50	12.50	

Source: Estimated from field data, 2015
MD =Mean difference ; DD = Difference in difference.

Table 9: Result of Paired t-test Analysis of Impact of Renovation of Secondary Schools on Students' Academic Performance

Variable	MD	DD	S^2	t-cal
Secondary School With renovation	29.50		521.14	
		17.00		2.09
Secondary Schools Without renovation	12.50		9.43	

Source: Estimated from field data, 2015
df = 14, table t-value = 1.761 at 0.05 level significance
MD = Mean difference; DD = Difference in difference.

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