

Independent Play and the Learning Performance of Children at Early Childhood Centers in Rwanda

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Abstract: Low learning performance can be witnessed in children who do not experience independent play at the early childhood centers they attend. This study sought to find out the effects of independent play on the learning performance of children in Gasabo district. The specific objective includes; to determine effects of independent play on the learning performance of children in Gasabo district. The research used descriptive research design. The target population was 794 teachers and head teachers corresponding to the sample size of 266. The research used stratified random sampling. Additionally, questionnaires were used for teachers while interviews were used for head teachers as instruments of collecting data. Quantitative data was analyzed using SPSS software version 21. Descriptive analysis was done using means and percentages while inferential analysis was done by conducting correlation and regression analysis. Qualitative data was analyzed using thematic approach. From the findings, over 60% of teachers indicated that schools practice play-based teaching strategy whereas 70% of head teachers indicated the same. There was also indication that less than 65% did support the practice of independent play in schools. This indicates that independent play is not largely practiced in early childhood centers. The mean for of independent play was 3. Correlation coefficient between learning performance and independent play, were 0.720 which positively implies a direct and strong association between independent play and learning performance. Beta coefficients for independent play was 0.092 with 0.000 significance. This further implies a positive effect of independent play on learning performance. The study concluded that there is a positive and significant effect of independent play on learning performance. The study recommends that head teachers should monitor implementation of play-based teaching for effective implementation to be realized. Additionally, they should ensure play materials are available and enough time is allocated for independent play. Head teachers should ensure students go through independent play in order to realize fully the expected performance outcomes of independent play. The ministry of education has to also ensure that the schools are well equipped with play resources in order to promote effective independent play in ECDE schools. The implementation of these recommendations will eventually help children attain most of the Generic competencies stated in the Competent based curriculum (CBC).

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I. Introduction

According to Danniels (2018), play-based teaching strategy is learning through play. Play can be either guided by teacher or child centered, where the child initiates and takes control of it. Play-based teaching strategy is very significant in early year's education and therefore very essential for every preschool to implement.

Muluvi, Mwanja, Kimatu, and Mwinzi (2016), explained that in Kenya Low funding is a big hindrance in excellent learning and development in ECDE centers. Play-based teaching strategy being one of the principles to quality learning in ECDE centers will be well executed in Kenya if funding is increased. The experience children get at this level improves or inhibits one's potential in adult life. The first five years of life are the best to learn specific skills attitudes knowledge and concepts fast and with minimal efforts.

Gerde, Apol, Skibbe and Bucyanna (2019), believed that play-based teaching strategy is rarely experienced in developing countries especially in Sub Saharan Africa. This is due to the fact that the educational materials are expensive and lack of skilled educators in early childhood who have limited knowledge on appropriate child growth and development principles. Rwanda introduced early childhood centers in the year 2013. This facilitated child to get access to early childhood centers before joining school.

According to Imbuto foundation and UNICEF in a baseline survey done in Rwanda in 10 districts presented only 12% (106 out of 884) of caregivers of children 24–35 months old engaged in three or more activities to promote learning or school readiness (singing songs or storytelling, inquiry based activities and picture reading in journals, books or magazines with the child. Additionally, the evaluation explained that a quarter (27 per cent) of children 4–6 years old were enrolled in an ECDE center (UNICEF. Imbuto Foundation.2015). This is a clear indication that children are not enjoying play in their early childhood years.

This study therefore, seek to determine the effect of independent play on the learning performance of children at ECDE centers in Gasabo District.

II. Material and Methods

This descriptive study was carried out on teachers and head teachers of early childhood centers in Rwanda at Gasabo district from November 2021 to May 2022. A total of 266 participants were used. This comprised of 218 teachers and 48 head teachers of early childhood centers in Gasabo district.

Study Design: The descriptive method of research was used to conduct this research

Study Location: This study took place in Rwanda at early childhood centers in Gasabo district.

Study Duration: from November 2021 to May 2022

Sample size: A total of 266 participants were used. This comprised of 218 teachers and 48 head teachers.

Sample size calculation: The number of sample respondents of this study was computed through employing Slovin's formula where $n = N / [1 + N (e)^2]$. Thus, N: Target population, n: Sample size and e: Marginal error (Yamane, 1976). The researcher used this formula to get small number of respondents that are able to be managed during data collection due to time and budget constraints.

This study assumed the 95 percent as confidence level and maximum variance (P=95%). Therefore, $e = 1 - 0.95 = 0.05$ and the target population corresponding to 794 people.

$$n = 794 / [1 + 794 (0.05)^2]$$

$$n = 794 / [1 + (794 \times 0.0025)]$$

$$n = 794 / (1 + 1.985)$$

$$n = 794 / 2.985 = 266 \text{ respondents.}$$

The sample comprised of 266 respondents and proportional method was used to get the respondents representing each category.

Target population and sample size

No	Participants	Target population	Sample size
	Teachers	653	218
	Head teachers	141	48
	Total	794	266

Source: Mineduc, 2021

Subjects & selection method: The study population was picked from early childhood centers in Gasabo district. This comprised of schools that practiced independent play.

Procedure methodology

The researcher acquired written consents from the university and Gasabo district office. The researcher then developed a questionnaire that was used to collect information from teachers and an interview schedule to collect information from head teachers. Both the questionnaire and interview schedule focused on socio-demographic characteristics such as age, gender, education level, work experience and marital status

Questions about play-based learning were also incorporated to find out how independent play affects learning performance of children in early childhood centers.

Statistical analysis

The study focused on a specific objective which was to determine the effects of independent play on learning performance of children. The study provides the findings on these study objective. The presentation is done using both descriptive and statistical analysis including percentages, means and standard deviation and inferential statistics using correlation and regression techniques. Quantitative data is analyzed using SPSS software version 21.

III. Result

The study focuses on a specific objective which is to determine the effects of independent play on learning performance of children. This section provides the findings on these study objective but first of all starts by presenting the analysis of the extent of implementation of independent play in ECDE centers. The presentation is done using both descriptive statistics including percentages, means and standard deviation and inferential statistics using correlation and regression techniques.

Play-based teaching strategy in ECDE Centers in Gasabo District

The researcher sought teachers' opinion on the state of practice of play-based teaching strategy in ECDE Centers in Gasabo district and the findings are presented in the table 1 below.

Table 1: Play-based teaching strategy in ECDE Schools

Statement	1	2	3	4	5	Mean	St. Dev
The school physical environment support play-based teaching.	4.5%	7.6%	13.6%	18.2%	56.1%	4.14	0.09
The classroom environment supports play-based teaching strategy.	3.1%	1.5%	12.3%	30.8%	52.3%	4.27	0.07
The classroom has enough play materials.	7.6%	10.6%	18.2%	31.8%	31.8%	3.70	0.09
Children have access to play materials.	9.1%	6.1%	12.1%	28.8%	43.9%	3.92	0.10
The school daily plan has enough time for play-based teaching strategy.	7.6%	12.1%	18.2%	27.3%	34.8%	3.70	0.10
There is formal assessments of play in the school for every child	12.3%	18.5%	13.8%	21.5%	33.8%	3.50	0.11

Source: Primary data, 2022

Key

1. Strongly disagree 2. disagree 3. uncertain 4. agree 5. strongly agree

From the findings in table 1 above, over 60% of teachers did agree that the physical environment of the school supports play-based teaching, classroom environment is also conducive for play-based teaching, there is enough play materials and children have access to them and lastly there is enough time in the school daily plan for play-based teaching. Indeed, the school physical environment supporting play-based teaching and classroom environment too attracted the highest support at 74.3% and 83.1% respectively. However only 55% of teachers did agree that there is formal assessment of play in school for every child. The means for the statements are 4 and some closely approaching 4 with low deviations from the mean meaning that majority of respondents agreed with the statements these results indeed indicate that ECDE schools embrace and practice play-based teaching strategy and the materials are in place to enhance smooth implementation of the play-based teaching strategy.

From the interview with thirty-five head teachers, 80% of them did indicate that children engage in play during break time and play takes place both indoor and outdoor, 100% did agree that there are enough materials for play which are sourced locally and some bought. Additionally, all head teachers did indicate that they assess play-based teaching through classroom observation, checking lesson plans and schemes of work. Lastly 70% of head teachers did indicate that children engage in independent play .This report strongly confirms that there is practice of play-based teaching strategy in ECDE centers in Rwanda.

Independent play teaching strategy in ECDE centers

The researcher sought opinion of respondents on the extent of practice of independent play in the schools and the results are summarized below.

Table 2 Independent play in ECDE Schools

Statement	1	2	3	4	5	Mean	St.Dev
Children are engaged in the play-based activities independently	7.5%	22.7%	9.2%	29.4%	31.2%	3.56	0.07
Children make independent choices of which activity to engage in	10.8%	6.2%	16.9%	15.4%	50.8%	3.80	0.10
Children interact with play materials independently	7.6%	16.7%	22.7%	22.7%	30.3%	3.52	0.10
Children make independent decision to interact with peers.	4.5%	18.5%	10.3%	25.5%	41.2%	3.80	0.10
Teachers are not involved in the play	15.8%	30%	12.5%	18%	23.7%	3.14	0.09

Source: Primary data, (2022)

Key

1. Strongly disagree 2. disagree 3. uncertain 4. agree 5. strongly agree

The findings in table 2 indicate that 60% to less than 70% of teachers did agree that children are involved in play activities independently, children make independent decisions on which activity to engage in and they make independent decisions regarding interacting with peers. However, 52% of teachers did indicate that children interact with play materials independently. Additionally, 41% of teachers opined that teachers are not involved in the play. The highest mean value was 3.80 which corresponds to children making independent

decision on interacting with peers and which activity to engage in while the lowest mean was 3.14 which corresponds to teachers not involved in play. The interview with teachers indicated that 60% of head teachers were of the agreement that children participate in independent play activities during break time. These finding clearly shows that independent play is practiced in schools though not to a great extent. A significant percentage of teachers remained undecided (10%-25%) and some disagreed in the scenarios (17%-45%). However, the extent of practice of independent play in schools outweighs the extent of non-practice.

Learning Performance of children in ECDE Schools

The researcher gathered opinion of teachers on the leaning performance of students in ECDE schools and the results were compiled as presented below.

Table 3: Learning Performance of children in ECDE Schools

Statement	1	2	3	4	5	Mean	St. Dev
Children of this school are skilled and knowledgeable	4.7%	6.3%	9.4%	34.4%	45.3%	4.08	0.08
Children have mastered moral values	3.2%	1.6%	17.5%	38.1%	39.7%	4.07	0.08
Children of this school are creative thinkers	4.8%	4.8%	11.1%	33.3%	46%	4.11	0.08
Children of this school are good communicators	4.8%	1.6%	7.9%	41.3%	44.4%	4.19	0.07
Children have developed good social/relationship skills	4.8%	4.8%	8.1%	25.8%	56.5%	4.24	0.08
Children have good their physical development	7.5%	10%	9.3%	32.6%	40.6%	3.88	0.10
Overall average						4.095	0.082

Source: Primary data, (2022)

Key

- 1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree**

The findings in table 3 indicate that over 70% of teachers did agree that students have acquired knowledge and skills, they are able to communicate effectively and think creatively, they have mastered moral values and are able to maintain good social relationship with others and lastly they have good physical development. Additionally, less than 20% of teachers also remained undecided in regards to learning performance assessment of students in ECDE schools. A small percentage of teachers were of a negative opinion as regards to whether the students have acquired learning performance traits. The mean values are all above or nearly agreed (mean of 4) with minimal deviations indicating that the teachers averagely agreed that students portray better learning performance. These results indeed are an indication that the majority of students of ECDE schools exhibits better performance in various capacities.

These results were also strengthened by the opinions of head teachers from the interview which indicated that 100% of head teachers did indicate that independent play benefits the student in various ways such as skills and knowledge development, physical development, social aspect and life and their creative thinking ability broadens.

Correlation Analysis

In order to find the strength of association between independent play and learning performance, the researcher conducted correlation analysis and the results are presented ion the following table.

Table 4: Correlation Analysis

		Learning Performance	Independent Play Strategy	Guided Play Strategy	Integreated Play Strategy
Learning Performance	Pearson Correlation	1	.720**	.883**	.819**
	Sig. (2-tailed)	0.000	.000	.000	.000
	N	175	175	175	175

Independent Play Strategy	Pearson Correlation	.720**	1	.881**	.851**
	Sig. (2-tailed)	0.000	0.000	.000	.000
	N	175	175	175	175

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

Source: primary data, (2022)

The findings in table 4 show that the Pearson’s correlation coefficient between learning performance and independent play strategy is 0. 720. This result indicates that the there is a positive association between learning performance and independent play. An increase inindependent play increases the learning performance of children in ECDE schools and vice versa. The significance values in all cases is 0.00 meaning that the association between learning performance and independent playis significant. This means thatindependent playhas positive effects on learning performance.

Regression analysis

In order to determine the effects of the three categories of play-based teaching including independent, guided and integrated play strategies, multivariate analysis was conducted and the results presented in the table below.

Table 5: Model summary

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834	.831	.46151

Predictors: Independent play

Source: Primary data, (2022)

From the table 5, R squared value was found to be 0.834. This implies that the explanatory variablesin this study which includes the independent, account for 83.1% of the variations in learning performance. The remaining 16.9% of the variations in learning performance is explained by other factors that affect learning performance but not captured in this model. This percentage is high an indication that independent playcontributes greatly to the learning performance of children in ECDE schools.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	182.459	3	60.820	285.553	.000 ^a
	Residual	36.421	171	.213		
	Total	218.880	174			

Predictors: Independent play

Dependent variable: Learning Performance

Source: primary data, (2022)

The table 6 indicate that the calculated F statistics value is 285.553 and the significance value is 0.000.The F table value for F (3,96) at alpha value of 0.01 is 3.95 which is less than F calculated value of 285.553 an indication that the multivariate regression model adopted in this study is appropriate in analyzing the relationship betweenindependent playand learning performance in ECDE schools.

Table 7: Model Coefficients

Model	coefficient	Std Error	T Statistic	Significance
Constant	-.131	.171	-.770	.442
Independent play strategy	.092	.083	-6.026	.000

Dependent Variable: learning performance

Source: Primary data (2022)

The coefficients for the independent variables including independent play is .092104 with corresponding significance values of .000. This implies that theindependent play have positive effect on learning performance of ECDE children. Additionally, the effects of independent play are significant with a significance value of .000. A one percent change in independent play results to 9.2% change in learning performance in the same

direction keeping other factors constant. When there is no change in either independent play strategies, learning performance reduces by 13.1%.

Learning Performance = $-0.131 + 0.092$ independent play. Keeping other factors constant, a unit increase in independent play leads to increase in learning performance by 0.092, 0.414 and 0.104 respectively.

A one percent change in independent play strategies leads to 9.2% respective change in learning performance in the same direction keeping other factors constant.

IV. Discussion

The discussion of the above findings focuses on linking the above findings with the findings of the previous studies. This is done in line with the study objective.

Independent play teaching strategy and learning Performance of children

Independent play strategy is a situation where children are involved on play activities without the intervention of the teacher. The opinions of teachers did reveal that the independent play is practiced in ECDE schools in Rwanda but not to great extent as a good number of teachers did decline. Some head teachers also did indicate that students are sometimes left to play alone during break time. The correlation between independent play and learning performance did reveal a positive association between the two. Moreover, the regression analysis indicated that independent play strategy has positive significant effect on learning performance and a one percent increase in independent play strategy leads to 9.2% increase in learning performance. These findings are similar to those of Pyle, Poliszczuk and Danniels (2018) who found that play-based teaching encourage children developmental and academic learning in Ontario Canada

V. Conclusion

First the study concluded that there is a positive significant effect of independent play on learning performance of children in ECDE schools. However it is not fully practiced in Rwanda.

Lastly the study concluded that learning performance among children in ECDE schools is vibrant as they exhibit learning performance traits to a larger extent though not 100%. In some schools there are some children who do not possess performance traits as reported by teachers.

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