



## The Link between School Resource Distribution and Academic Performance: An Investigation of Public Schools in Limpopo Province, South Africa

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<http://dx.doi.org/10.47814/ijssrr.v6i5.1337>

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### **Abstract**

This study explores the relationship between the distribution of school resources and learners' academic achievement in public schools in Limpopo Province, South Africa. The research employs a quantitative approach, using data collected from a sample of 222 learners from 68 randomly selected public schools in the province. The study uses regression analysis to examine the impact of school resources, including teachers' qualifications, availability of textbooks, and classroom infrastructure, on learners' academic achievement. The results indicate that the distribution of school resources significantly affects learners' academic performance. Specifically, the availability of textbooks, teachers' qualifications, and classroom infrastructure has a positive impact on learners' academic achievement. However, the findings reveal that there are disparities in the distribution of resources across schools, with learners in some schools having access to better resources than others. The study concludes that there is a need for policymakers to prioritize the equitable distribution of school resources to enhance the academic performance of learners in public schools in Limpopo Province.

**Keywords:** *Distribution; Resources provisioning; Learners' academic achievement; Public Schools and South Africa*

### **Introduction//Problem Statement**

Rural Schools in South Africa are characterised by poor service delivery and low academic achievements. The learners in rural schools face several challenges that lower their chances of attaining academic excellence. Some of these issues include low socioeconomic status, inadequate service delivery which leads to a lack of basic infrastructure, such as classrooms, libraries, and other resources such as textbooks and computers, which would assist to advance learners (Baloyi, 2020). The equitable

distribution of school resources, including human resources, facilities, and materials, is essential for ensuring that all learners have access to quality education and equal opportunities for academic success. In South Africa, despite the government's efforts to promote equity in education, there are still significant disparities in school resource distribution and allocation, particularly in rural and underprivileged areas (Baloyi, 2020; Molaudzi, Netshidzivhani & Mamokhere, 2022). This uneven distribution of resources may contribute to the persistent achievement gap between learners in different socio-economic backgrounds (Makondo & Khoza, 2020; Baloyi, 2020). UNESCO (2019) and Baloyi (2020) indicate that despite the constitutional guarantee of equal educational opportunities, many public schools in South Africa, particularly in Limpopo Province, face resource constraints that have a negative impact on learners' academic performance. Research indicates that school resources, such as textbooks, qualified teachers, infrastructure, and learning materials, play a vital role in improving academic achievement. Similarly, Mouton, Louw, & Strydom (2013) that critical challenges in resource distribution among public schools have been reported, leading to concerns about the impact of such discrepancies on academic performance. Despite some efforts to address the issue, there is still a need to investigate the extent of the problem and its effects on academic outcomes. Therefore, this study aims to investigate the link between school resource distribution and academic performance in public schools in Limpopo Province, South Africa, and to identify the factors that influence resource distribution in schools.

### ***The Purpose of the Study***

The purpose of study is to investigate the relationship between school resource distribution and academic performance in public schools in Limpopo Province, South Africa. The study aims to investigate how the distribution of resources, such as teaching materials, infrastructure, and teacher support, affects learners' achievement in the province. The goal of this research is to provide insight into how resource distribution policies can be improved to enhance learners' learning outcomes in public schools in Limpopo Province, South Africa.

### **Conflict Theory as a Theoretical Framework**

The conflict theory, first introduced by Karl Marx in 1800, argues that society is in constant competition for resources, with the wealthy holding most of the resources and oppressing the poor. This theory has been used to explain various social imbalances such as poverty, structural inequality, class conflict, war, and revolutions. Conflict theory central concerns are the unequal distribution of scarce resources and power, with each theorist defining these resources differently (Baloyi, 2020). According to Shornack (1987), conflict theory believes that progress towards equality is liberating for all. It investigates how efforts by social categories lacking material resources to redress inequality result in recent developments. The conflict theory ideology plays a prominent role in public discussion of issues related to the family today. Research tends to focus on how social predicaments are a result of a lack of research, government funding, and lack of awareness. However, there needs to be a focus on the family and the community where people's attitudes, desires, aspirations, and outlook on life are shaped. (Coser, 2003; Shornack, 1987)

Therefore, the adopted theory is relevant in this study based on its ground and argument for inequalities in the distribution of resources between the poor and those who have. The theory also imply that resource allocation as indicated by Molaudzi et al., (2022) is critical for organizational survival, and unequal distribution of resources leads to organizational inefficiencies and suboptimal performance. This theory provides a framework for understanding how school resource distribution affects academic performance in public schools.

## **Literature Review**

### **The Link Between Resources Distribution and Learners' Achievement**

Teaching and learning resources consist of three basic components, namely, material resources, physical facilities and human resources. Past studies on the availability of teaching and learning resources in education have revealed that these resources are not always available in schools. This lack of teaching and learning resources has been of serious concern to educators (Baloyi, 2020; Du Plessis & Mestry, 2019). Tsang (2007) indicate that learning is a complex activity that involves the interplay of learners' motivation, physical facilities, teaching resources, teaching skills and curriculum demands. Thus, the availability of teaching learning resources enhances the effectiveness of schools as such resources are the basic resources that help to improve the academic performance of learners. The necessary resources that should be available for teaching and learning include material resources, human resources, such as teachers and support staff, and physical facilities such as laboratories, libraries and classrooms.

Teaching and learning resources help to improve access and educational outcomes as learners are less likely to be absent from schools that provide them with interesting, meaningful and relevant experiences as compared to their less fortunate counterparts. The resources that are provided to schools should be of sufficient quality and quantity to promote an effective teaching-learning process. Several studies have been conducted on the impact of instructional materials on education (Stiefel et al., 2010). At the time of this study South Africa was experiencing an economic recession and thus limited resources were available for the provision of services including educational resources.

It is assumed that increasing the distribution of school resources will increase the quality of education, as measured by learners' achievement data as one indicator (Jones, Greenberg & Crowley, 2015). Consequently, the relationship between school resources such as textbooks, computers, calculators and number of pupils per teacher as input and learners' achievement as output is of particular interest to the policymakers who are responsible for the allocation of school resources. However, this relationship is one of the most debated issues in education (Jones, Greenberg & Crowley, 2015). Cummins, Hu, Markus, and Kristiina Montero (2015) concluded that school resources are not related to learners' achievement.

#### **• Influence of the Availability of Teaching and Learning Materials on Learners' Performance in Public Schools**

Eguchi (2015) explains that material resources include textbooks, charts, maps, and audio-visual and electronic instructional materials such as radios, tape recorders, televisions and video tape recorders. Another category of material resources consists of paper supplies and writing materials such as pens, erasers, exercise books, crayons, chalk, drawing books, notebooks, pencils, rulers, slates, workbooks, etc (Atkinson, 2000). In the South African context, the learner and teaching support materials (LTSM) usually comprise stationery, textbooks, teachers guide, references and learning aids. Most of the LTSM are provided by the education department, especially for schools in quintiles 1 to 3. Halupa (2015) also supports the notion that learners' performance is affected by the quality and quantity of teaching and learning materials, noting that institutions with adequate resources such as textbooks are more likely to perform well in examinations compared to their more poorly equipped counterparts. It is, therefore, possible that poor performance may be attributed to inadequate teaching and learning materials and equipment.

#### **• Influence of the Adequacy of Physical Facilities on Learner Performance in Public Schools**

The development and maintenance of physical facilities in educational institutions by communities, parents, and sponsors should continue to be encouraged as it has been found that a lack of such facilities interferes with the learning process (Tsingos, Bosnic-Anticevich & Smith, 2015). Okongo,

Ngao, Rop, and Nyongesa (2015) highlight the importance of school facilities in relation to quality education with differences in school facilities being seen to account for differences in learner achievement. Physical facilities include classrooms, lecture theatres, auditoriums, administrative blocks, libraries, laboratories, workshops and playgrounds. Okongo et al. (2015) assert that learning experiences are fruitful when the quantity and quality of physical resources are adequate and that unattractive school buildings, crowded classrooms, non-availability of playing grounds and surroundings with no aesthetic beauty may contribute to poor academic performance. The same view is expressed by South African researchers in the ongoing debate on the relationship between school resources distribution and learners' achievement in well-resourced and poorly resourced schools (Alexander, 2013; Bloch, 2012; Spaul, 2011).

### ***Research Approach and Methodology***

1. **Research Design:** The study used a quantitative research design to examine the relationship between school resource distribution and academic performance in public schools in Limpopo Province, South Africa. The design used survey research to collect data from a sample of public schools in the province.
2. **Sampling:** The researchers used a stratified random sampling technique to select a representative sample of public schools in the province. The strata can be based on school size, location, and learners' population. A sample size of at least 68 public schools can be selected to provide sufficient statistical power.
3. **Data Collection:** The researchers collected data from both primary and secondary sources. Primary data was collected through questionnaires administered to school principals, HODs, educators and school governing body. Secondary data can be collected from government reports, academic articles, and other relevant sources.
4. **Data Analysis:** The principal researcher recorded the data on an excel spreadsheet. The data on the excel spreadsheet was cleaned up by looking for missing entries. A statistician used the Statistical Packages for Social Sciences (IBM SPSS 28.0) to analyse the data. The basic statistical techniques used in the study include descriptive and inferential statistics. Descriptive statistics such as means, frequencies, and percentages can be used to summarize the data. Inferential statistics such as correlation and regression analysis were used to test the hypothesis and determine the relationship between school resource distribution and academic performance.
5. **Ethical Considerations:** Ethical clearance to conduct the study was obtained from the Central Research Ethics Committee at a University of Pretoria. The study followed research ethics principles and guidelines, such as obtaining participants' informed consent, maintaining confidentiality, and avoiding harm or exploitation.

### **Validity and Reliability**

Validity refers to the accuracy of the study's findings, while reliability refers to the consistency of the results obtained from the study (Scholtes, Terwee & Poolma, 2011). A set of measures were taken to establish the face and content validity of the measurement scales. To test for face validity, three academics who specialise in Research in Education at a University of Limpopo, reviewed the questionnaire to ensure that the context of the study remains as transparent as possible in guiding the respondents in their understanding of the survey. After effecting the revision of the questionnaire, a pilot study was undertaken to test for content validity and reliability of the questionnaire. The pilot study involved testing the questionnaire using 40 conveniently chosen respondents who were in the Limpopo province. This decision was taken to ensure that schools operating in this region did not form part of the final survey. Constructive feedback was obtained from the returned questionnaires, which indicated a number of minor issues that still needed to be addressed. These ranged from complex and technical

terminologies to acronyms that were used which made some questions vague. Further revisions were subsequently made in line with the feedback provided.

The degree to which measures are error-free and thus produce consistent results is referred to as reliability (Ang, 2014). The Cronbach's alpha coefficient was used to assess construct reliability. Alpha values (Table 1) ranged from 0.820 to 0.935, well above the recommended minimum of 0.7. (DeVellis, 2012; Kline, 2000). As a result, all measurement scales used in the study were deemed reliable.

### Data Analysis

The collected data was entered into an Excel spreadsheet. The data on the excel spreadsheet was cleaned up by looking for missing entries. The basic statistical techniques used in the study include descriptive statistics, normality tests, correlation, and regression.

### Normality Testing

Khoza, Mafini & Okoumba (2022) points out that the central limit theorem stipulates that the assumption of normality has little effect on data analysis for a large sample when measuring normality. Although the central theorem provides a studied theoretical background for the issue of normality in this study, Table 1 shows the skewness and kurtosis of each construct and item. Skewness and kurtosis values between -2 and +2 are considered acceptable for demonstrating a normal univariate distribution (Field, 2013). Table 1 shows that the scale items have acceptable skewness and kurtosis values overall. Skewness values ranged from -0.172 to 1.077, and kurtosis values varied from -0.852 to 0.011. As a result, the assumption of normality can be stated confidently. Mardia (1974), data is non-normal if skewness and kurtosis are greater than the recommended threshold of -3 to +3. In this study, the data were distributed normally, and the conceptual model was simple. As a result, the use-regression model was required to test the proposed relationships.

Table 1: Assessment of data normalcy

Dimension description	Sample size (n)	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Physical resource	166	13.75	3.967	-.172	.188	-.852	.375
Financial resource	166	8.71	2.824	1.077	.188	.011	.375
Human resource	166	11.31	3.269	.248	.188	-.510	.375

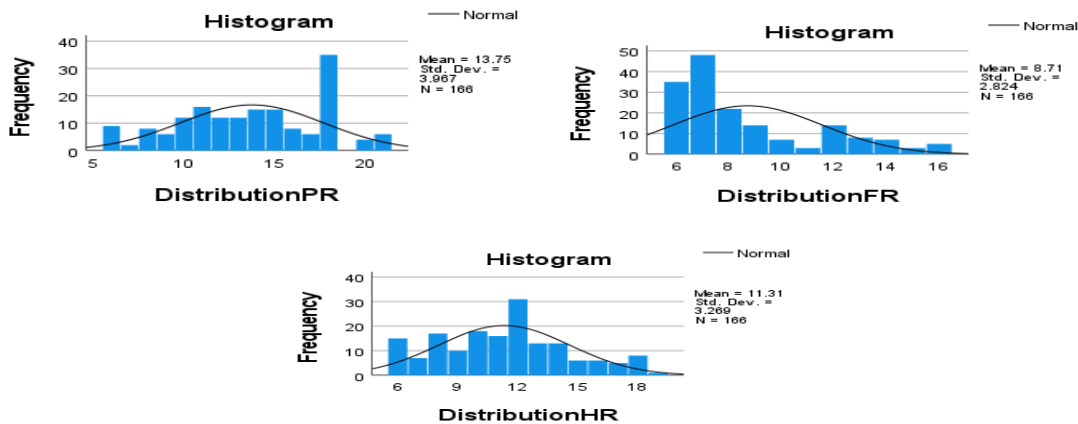


Figure 1:: Normal curve for Physical, Financial and Human resource

Figure 1 also shows that the distribution of all variables is normal. Both the Kolmogorov Smirnov and the Shapiro-Wilk tests yielded  $P < 0.01$ .

### Correlation Analysis

Pearson correlations were used in this study to test the strength and direction of relationships between the research constructs. Table 2 shows that all research variables have significant positive correlations. The strongest correlation ( $r = 0.409$ ;  $p < 0.001$ ) was found between financial resource and learners' achievement. HR and FR, on the other hand, had the lowest correlation ( $r = 0.222$ ;  $p = 0.004$ ). While the weakest correlation was observed LA and HR ( $r = -0.342$ ;  $p < 0.01$ ). This means that when one of these constructs increases or decreases, the others increase or decrease correspondingly. This means that changing one construct will have an impact on the others, either positively or negatively.

Table 2: Correlation analysis of the variables

Research Variables		Physical resource (PR)	Financial resource (FR)	Human resource (HR)	Leaners achievement (LA)
Physical resource (PR)	Pearson Correlation	1	.161*	.222**	-.156*
	Sig. (2-tailed)		.038	.004	.046
	N	166	166	166	164
Financial resource (FR)	Pearson Correlation	.161*	1	-.175*	.409**
	Sig. (2-tailed)	.038		.024	<.001
	N	166	166	166	164
Human resource (HR)	Pearson Correlation	.222**	-.175*	1	-.342**
	Sig. (2-tailed)	.004	.024		<.001
	N	166	166	166	164
Leaners achievement (LA)	Pearson Correlation	-.156*	.409**	-.342**	1
	Sig. (2-tailed)	.046	<.001	<.001	
	N	164	164	164	164

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

### Regression Analysis

Tolerance and the variance inflation factor (VIF), both of which are regarded as measures of the impact of collinearity amongst the constructs in a regression model, were evaluated in the current study, and should ideally be Tolerance  $> 0.1$  and VIF  $< 10$  (O'Brien, 2017:673). All independent variable values were within recommended limits, indicating no serious threat of multicollinearity. The first multiple regression analysis looked at PR, FR, HR, and LA to see if they were predictors of attitudes toward lean culture.

Table 3: Regression analysis of learners' achievement

	Adjusted R	Beta ( $\beta$ )	t	p-level	Collinearity Statistics	
					Tolerance	VIF
(Constant)	0.253	-	9.651	<.001	-	-
Physical Resource (PR)	-	-.163	-2.303	.023	.912	1.097
Financial Resource (FR)	-	.392	5.587	<.001	.930	1.075
Human Resource (HR)	-	-.237	-3.328	.001	.905	1.105

$R = 0.517$ ;  $R^2 = 0.253$ ;  $F = 19.415$ ; Mean square = 2258.956; standard deviation = 12.482;  $n=166$ ;  $p < 0.001$ .

Table 3 demonstrates that PR (Tol = 0.912, VIF = 1.097), FR (Tol = 0.930, VIF = 1.075), and HR (Tol = 0.905, VIF = 1.105) were all significant predictors of learner achievement. The three learner achievement variables (PR, FR, and HR) served as predictor variables (independent variable). The dependent variable that was entered into the prediction model was learners' achievement. Examining the relationship between distribution of resource and learners' achievement. The regression analysis revealed



an  $R^2$  of 0.253, indicating that nearly 25% of the variation in learners' achievement is attributable to resource adoption and distribution of resources at the high school in Limpopo province.

### **Discussion of Results**

Regression analysis was used to test the direct causal relationships between the study constructs. The findings revealed the following empirical observations. The availability and distribution of resources in schools can have a significant impact on academic performance. This includes things like teacher quality, textbooks, technology, and classroom and laboratory facilities. This finding is consistent with the findings of a previous study by Molaudzi, Netshidzivhani & Mamokhere (2022), who found that the allocation of school resources influences learners' achievement and that a link between resource allocation and learner achievement should be established.

### **Conclusion**

Based on the findings of the study, there is a link between school resource distribution and academic performance in public schools in Limpopo Province, South Africa. However, further research is needed to confirm this relationship and identify the specific factors that are most strongly associated with academic performance.

### **Recommendation**

The distribution of school resources and academic performance are inextricably linked. Consider policy interventions that increase resource availability and distribution in Limpopo Province's public schools. Efforts could be made, for example, to increase provincial school funding or to improve teacher training and support. It is critical to ensure that any interventions are evidence-based and take into account the province's unique context. Furthermore, efforts should be made to include all stakeholders, including teachers, parents, and learners, in any decision-making processes related to resource allocation and education policy in Limpopo Province.

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