The Nexus Between the Allocation of School Resources and Learners' Achievement in Public Schools: A Case of Limpopo Province, South Africa

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ABSTRACT

This is an empirical study based on research that was conducted in Limpopo Province. The study investigates resource provisioning as a predictor of learners' achievement in public schools in Limpopo Province, South Africa. However, the central purpose of this study is to determine the nexus between the allocation of school resources and learners' achievement in public schools. It is evident that the resourcing of schools in developing countries, like South Africa, are characterized by huge inequalities, and an attempt should be made to redress this situation. Moreover, there is a need to address the legacy of apartheid in education through transformation by enacting new legislation and policies. The study took a quantitative approach, with survey questionnaires distributed to 222 schools' personnel composed of principals, educators, heads of departments and School Governing Body (SGB) members drawn from 68 public secondary schools from different quintiles (1-to-5) in Limpopo Province using a probability stratified and random sampling technique. Descriptive statistics, Pearson correlations, and regression were used in data analysis. The study's findings revealed how school resource allocation has an impact on learners' achievement. The study concludes that the allocation of school resources has an impact on learners' achievement and that the relationship between resources allocation and learners' achievement ought to be forged. Therefore, the study recommends that school resources ought to be allocated equally without favour and prejudice.

Key words: Allocation, Learners' achievement, Public schools, Resources provisioning and South Africa

INTRODUCTION

At the dawn of democracy in South Africa in 1994, there was an urgent need to transform the apartheid education system in the country. As a result, Chapter 2 of the Bill of Rights as enshrined by the Constitution of the Republic of South Africa, 1996, has provided an educational clause. The education sector affected a paradigm shift from Bantu Education to Outcome-Based Education (OBE), which has evolved into the current National Curriculum Statement (NCS). The new dispensation saw a new legal framework for schooling in which its main education laws and policies comprised the National Education Policy Act of 1996 (Act 27 of 1996) and the South African Schools Act of 1996 (known as the Schools Act) (Bol, Witschge, Van de Werfhorst & Dronkers, 2014). The critical aspects provided in the education law and policy form the basis for the desegregation and integration of schools, compulsory school-going age, decentralization of both management and governance through the establishment of school management teams and School Governing Bodies including parents and learners and a new funding model for public schools (Simonson, Smaldino & Zvacek, 2014). Despite the number of critical changes made, inequality remains intact. Historically, former Model C schools were privileged to receive capital investments, including quality teachers. On the other hand, former African schools were historically

characterized by overcrowded classes, poorly qualified educators, as well as a lack of school facilities such as libraries, laboratories and sports grounds (Tarus, Gichoya, & Mumbo, 2015).

The study investigates resource provisioning but specifically the allocation of resources as a predictor of learners' achievement in public secondary schools in the Limpopo Province. The Limpopo Province is one of the most rural and poor provinces in South Africa, and the majority of public secondary schools are located in poor rural areas.

PROBLEM STATEMENT

This study was motivated by the inequalities in the allocation and provisioning of school resources. The inequalities in the provisioning of resources are also exacerbated by the post-apartheid funding model. There are perpetuated inequalities despite the funding model and mechanisms to redress the situation. In the model C, wealthier schools charge school fees to make up for deficits in state funding, while the schools serving poor communities either charge low fees or (since 2006) are fee-free, following a reform in the legal framework. In addition, it is worth noting that though former Model C schools, including former Indian schools, have become more racially mixed, the integration has occurred along class lines, leaving the poor, predominantly Africans, in historically poor performing schools in both informal settlements, townships, and rural areas (Andersen, Heinesen, & Pedersen, 2014). Researchers have deemed this phenomenon "income-based education", as access to a better education is dependent on the learner's family socio-economic background. Notwithstanding, the South African schooling system was referred to as a "dual education" system, thereby indicating the fact that there are two different schooling systems in the public sector (Murtin, 2013; Van der Berg, Taylor, Gustafsson, Spaull & Armstrong, 2011). The first system comprises of well-resourced former Model C schools and to a lesser extent, former Indian schools, while the second system consists of predominantly poor African learners attending poorly resourced and dysfunctional schools. The study shows that the latter system serves between 70 and 80% of learners (Nazarko & Saparauskas, 2014).

Seidel & Shavelson (2017) agree that school resource provisioning and learner's achievements pose an enormous challenge to South African schools, as experienced by the majority of school managers, governing bodies, school communities, administrators and policymakers. Research evidence has shown that there is still a markedly inequitable or tilted allocation of educational resources and learners' achievements in public schools, especially those located in the marginalized rural communities like in Limpopo Province.

THE PURPOSE OF THE STUDY

The research purpose is a statement of "why" the study is being conducted, or the goal of the study. The purpose of a study might be to identify or describe a concept or to explain or predict a situation or solution to a situation that indicates the type of study to be conducted. The purpose statement identifies the variables, population and setting for a study (Beckingham, 1974). Therefore, the purpose of this paper is mainly to determine the nexus between the allocation of school resources and learners' achievement in public schools, using Limpopo Province schools as a sample frame.

THEORETICAL FRAMEWORK

Education Production Function (EPF) Theory on the Allocation of School Resources

This study used a neoclassical economic theory known as the education production function theory (EPF). The theory, which originated in the 1950s, is based on Jacob Mincer's application of human capital theory (HCT) to the measurement of the economic return to education. One of the assumptions derived from this theory is that the number of years of schooling an individual received has an impact on earnings. There is little consensus on the definition and measurement of the inputs and outputs of education. However, it would appear that this arises from a lack of agreed-upon goals for education that may be translated into operational and measurable objectives and, hence, there is no standardized unit of outputs and inputs. Thus, the inputs refer to the allocation of resources which include qualified teachers and the school's physical facilities while the result – the output-is the students' performance and achievement. In this study, measures such as the experience and qualifications of head teachers and teachers, physical facilities, and all material resources used in teaching and learning were used as inputs, while specific measures of outputs were the grades attained by the students in examinations. The problem, however, with the input measures is the qualitative dimensions, which are difficult both to define and to measure.

Application of the theory to the study

In the discussion below, the researchers indicated the usefulness and relevancy of the theory to the study and showed how the theory applied to the study or to the problem which was being investigated.

This research study applied the education production function in guiding the discussion on resource provisioning as a predictor of learners' achievement in public secondary schools in the Limpopo province. The theory uses the input-process-output model. According to Bowles (1970), the education production function (EPF) refers to the relationship between school and student inputs and a measure of school output. Hanushek (2003, 2007) views education production function as a simple production model which lies behind much of the analysis in the economics of education. Johnson (1978) contended that economic theory could be used to explain education production theory. The researcher in this study indicated that the common inputs included school resources, teacher quality and family attributes while the outcome was student achievement. The latter aspect was relevant to this research study which focused on resource provisioning as the predictor of learners' achievements in public schools in Limpopo province. Rice and Schwartz (2008) define education production functions as those functions that link "school inputs to educational outcomes and identify the impact of changes in inputs (e.g., teachers) on student outcomes (e.g. achievement as measured by test scores)".

(i) *In the education production function theory, distinguish between two approaches (input and output).*

The explanation for the differences in the emphasis of both the input and output approaches may help us identify the constraints within the education production function theory. Some researchers argued that money does matter and, therefore, they advanced the argument that more resources (inputs) should be allocated to schools to improve learners' achievement (Hedges, Laine & Greenwald, 2014). The output approach, in contrast, argues that money, as an input, does not seem to matter and, therefore, proposes that both the planners and policymakers must be directed to focus primarily on what has been achieved and also what incentives should be provided to intrigue more achievement. Both approaches agree that money "may" matter but question

whether money "does" matter and, if so, how it matters. The crucial difference between the input and output approaches is their prediction about the students' outcomes after an increase in expenditure. The input approach predicts that, when there is an increase in school expenditure on certain inputs, including reducing class sizes and employing more qualified teachers in terms of education and years of teaching experiences, there will be an increase in student outcome. On the other hand, the output approach predicts that, when there is an incentive for those who achieve more, the incentive encourages a greater contribution from teachers to help students to achieve more.

(ii) *Policy implications and critique.*

Research evidence has identified two challenges or constraints relating to the education production function theory (i.e. input and output approach). Firstly, the researchers argue that one of the challenges is that it is very difficult to concretely define what the input approach or model entails (Hanushek, 1989, 2003; Case & Deaton, 1999). The constraint of the input approach is that inputs are difficult to define. Although teacher-learner ratio (TLR), textbooks per learner, expenditure per learner, teacher qualifications and several years of teaching experience have commonly been known as inputs in the education production function, there has not been any significant evidence claiming any strong relationship between specific inputs and higher learners' achievement. Picus (1995) & Behrman (2010) have further extended the limitation of input estimation by questioning: firstly, the selection of sample size for the estimation, secondly, the type of inputs – either before schooling or during schooling – and thirdly, the unobservable inputs outside of the educational systems but impacting on the learners' outcomes. The types of input that are outside of the educational sector include the availability of home educational resources, parental level of education, buying houses in areas near good schools and parental willingness to support their children with homework. For example, if increasing resource input leads to higher learners' achievement, when there is an increase in per learner expenditure as an input, there should be a significant improvement in student outcomes. However, the research evidence did not address the issue of inefficient spending methods, which may have negative repercussions such as not showing any impact of improved outcomes even if there were an increase in expenditure (Picus, 1995).

REVIEWED LITERATURE

Significance of Resources Allocation in Public Secondary Schools

Resource provisioning refers to the supply of various school inputs, which are essential to the provision of quality education in public schools. A number of social movements, including civil society, have advocated the provision of quality education. Their main focus was on the provision of school inputs or resources, which are sometimes viewed as a "basket of entitlements" that are critical to learners' right to basic education as enshrined in the new Constitution (Fowles, 2014). Reback, Rockoff, & Schwartz (2014) confirm that in South Africa today, there are still several schools that are forced to function without sufficient or adequate "basket of entitlements," which are critical for the provision of basic quality education, especially in the majority of historically under-resourced African schools. The study argued that in cases where there are limited resources (entitlements), teaching and learning are adversely affected, and learners are unable to enjoy their basic rights to

education (Reback et al. 2014). In 2008, civil society pursued a number of campaigns, viz. Centre for Child Law (CCL), the Legal Resource Centre (LRC), Section 27 and Equal Education. The above-mentioned campaigns were conducted in response to the demand for better quality education in historically disadvantaged public schools. In many cases, these campaigns were accompanied by litigation for improved resource provisioning. For example, some of the cases raised issues related to poor/lack of infrastructure, poor quality of educators, provision of school furniture, the delivery of learner and teacher support materials (LTSM) to schools and provision of scholar transport for learners who walk a distance of more than 10 km to and from their nearest school (Walker, Lee & Bryant, 2014).

Civil society organizations and individuals make use of several international and national instruments to protect their rights to education. The most important of these, for an overview of resource provisioning, is probably the International Covenant on Economic, Social and Cultural Rights (ICESCR) of 1996. The right to education is enshrined in Articles 13 and 14 of this Covenant. The ICESCR has issued some general comments focusing on the interpretation of the rights in the Covenant. The study by Tomasevski (2001) shows that the Covenant for Economic, Social and Cultural Rights (CESCR) has used the 4-A Right to Education Framework (viz. availability, accessibility, acceptability & adaptability) to broadly define and interpret the right to education provision of ICESCR. It is argued from the above study that the 4-A framework efficiently captures the many facets of the right to education. Therefore, this framework has the potential to be of assistance to stakeholders, including parents, learners, and civil society, in assessing education departments' performance in terms of enforcing the right to education provisions. As such, education rights groups would be able to identify cases where an infringement or violation of the right to education has occurred (Darling-Hammond, Wilhoit, & Pittenger, 2014).

In 2010 and 2013, the DBE published both "The Draft National Policy for the Equitable Provision of an Enabling School Physical and Teaching and Learning Environment" and "The Draft National Minimum Norms and Standards for School Infrastructure" respectively. The Department is drafting the two documents intended to provide the blueprint to guide the provision of infrastructure resources for public schools in South Africa. With that objective, the Policy on National Norms and Standards for School Infrastructure was finalized by DBE in 2010. The National Policy acknowledges a clear link between poor infrastructure and poor learner outcomes and therefore, aims to develop new criteria for infrastructural planning (Jackson, Johnson, & Persico, 2015). The study by (Jackson et al. 2015) noted the gaps created by the delay in finalizing the Infrastructure Regulations, which were not completed until the end of November 2013. Finalizing the Regulations was a critical step, as they establish the appropriate benchmarks needed for the adequate provision of school facilities such as classrooms, electricity, water and sanitation, libraries, laboratories, electronic connectivity and perimeter security. The regulations also assist in determining and setting target dates for specific goals. For example, provincial education departments (PEDs) were also required to develop school infrastructure plans within a year of the publication of the regulations, and to report annually to the Minister of Basic Education on their progress in implementing the regulations (Bohmstedt, Kitmitto, Ogut, Sherman & Chan, 2015).

The Nexus between Educational Resources and Learners' Achievement at School

Cobb-Clark & Jha (2013:2), affirm that institutional design and resource management have taken centre stage in the ongoing debate about education reform. Policy initiatives are gradually driven by a desire to ensure that educational resources are organised, managed and used effectively so that schools can deliver better achievements for learners. Moreover, the education systems ought to be organised, monitored, and managed efficiently and effectively to realise learners' achievement. This implies that there should be clear links between the allocations of resources (Schneeweis, 2011). Cobb-Clark et al. (2013) further opine that the governments in many countries have therefore moved to provide schools with more independence to make decisions that are more responsive to the needs of individual school populations. However, the issue of whether educational resources have an impact on learner attainment has long been a contested issue among scholars, civil society, and practitioners. Contrary to the conventional understanding, Rice (2007) concludes that the total level of school resources is not closely related to student performance, although he challenged this interpretation of the research evidence in the case of smaller class sizes. Therefore, this paper discusses the allocation of resources guided by the following research themes; Physical, financial and human resources.

Physical Resources

Researchers for this paper contend that physical resources are tangible goods and real estate, including materials, office space, production facilities, office equipment, classrooms, and vehicles. Furthermore, they indicate that it is not clear what level of resources determines the academic achievement of students. Broadbent & Poon (2015) recognise the impact of physical and economic resources on achievement. In the South African context, there is serious debate on the relationship between school resources and learners' achievement. Therefore, there is a need to obtain empirical evidence on the extent to which school resources determine the academic achievements of learners in South Africa. Alexander (2013) argues that immediate attention should be paid to the concerns raised regarding the unequally resourced classrooms, unsafe schools and traumatised teachers in the country. The study conducted by Moleke & Mamokhere (2021:445), revealed that classroom size with high capacity negatively affects interaction and participation between students and lecturers. In this regard, it is important for policymakers to take into consideration the need to provide more physical resources like classrooms to ensure academic achievement and reduce overcrowding.

Hanushek (2016) argues that the availability, relevance and adequacy of education resource items contribute to academic achievement while unattractive school buildings, crowded classrooms, non-availability of playing grounds and surroundings that have no aesthetic beauty may contribute to poor academic performance. This argument is supported by Grissmer, Flanagan, & Williamson (2008), who state that the absence of basic resources and the extreme classroom overcrowding in schools in many developing countries, including South Africa, affect academic learning processes. However, Rimm-Kaufman et al. (2014) found a positive relationship between the academic achievement of students against physical, financial and material resources. The Programme for International Student Assessment (PISA) report (2003) showed that the lack of physical resources has a negative effect on students and hinders their

learning. Yadar's (2007) findings in his/her study on teaching and learning resources and academic performance in mathematics in secondary schools in Ondo, Nigeria were in line with the findings of a report by UNESCO (2008) that teaching or learning materials, such as textbooks, classrooms, teaching aids (chalkboard, ruler and protractor), stationery and laboratories impact on the academic performance of learners. In addition, these results concur with those of Mutai (2006), who asserts that learning is strengthened when there are sufficient reference materials such as textbooks, as well as exercise books, teaching aids, and classrooms. He further asserts that academic achievement illustrates, par excellence, the correct use of such materials. This was also affirmed by Greenwald, Hedges & Laine (2016), who state that educational resources have an impact on school achievement by either promoting or hindering the ability to develop a school culture and high-quality instruction. They indicate that a lack of resources prohibits the development of a quality instructional programme.

Financial Resources

The term "financial resources" refers to all financial resources available for use in an organization. They are a part of a company's liquid assets, which are usually used as business continuity funds to provide continuous running of all processes in the organisation. Financial resources are the funds at the disposal of the enterprise and intended for the implementation of the current costs and expenses (CEOpedia, 2021).

The link between educational expenditure and outcomes has not been proven, although it has been pointed out that research has suffered from poor quality data and has failed to fully examine the interactions between school inputs and resources (Picus & Fazal, 2015). The apparent absence of resource effects is at odds with conventional economic reasoning (Monk & Rice, 2016). However, the range of empirical research that has failed to find a link between educational resources and school performance may be countered because school inspections are primarily output focused. In the context of South Africa, the same challenge was being experienced at the time of the study because the majority of school inspectors (circuit managers) appeared to lack the capacity required to understand and assist schools in identifying their main challenges, which in turn led to poor performance, especially in historically disadvantaged schools (HSRC & NMF, 2005; Gardiner, 2007).

Do public secondary schools appear to allocate their resources efficiently? In an attempt to answer that, Ballou (2008) compared wealthy schools and poor schools. According to Ballou (2008), poor schools frequently have fewer resources, either due to budget constraints or inequitable resource allocations between schools. This was also noted in the report on Equality of Educational Opportunity by Chambers (2015) that found that black students generally attended schools with fewer of the resources that seem most related to student achievement. Their schools had fewer laboratories while there were fewer books in their libraries and insufficient quantities of textbooks compared to the schools attended by their white counterparts. In addition, the schools attended by black students had fewer instructional resources and lower achievement levels than those of their white counterparts, thus suggesting a link between resources and achievement. Despite the dawn of democracy in 1994, the same situation is currently found in the majority of South African schools, which have poor resources and are characterised by poor learners' achievement (Bloch, 2012).

Deakin, Crick, & Goldspink (2014) affirm that the notion of students' academic achievement is related to individuals' differences. Deakin Crick et al. (2014) further opined that the socioeconomic features of the environment in which students grow up and the educational resources of their current schools determine their achievement somehow. However, this relationship between socioeconomic features and academic achievement is a contemporary debate in both a national and an international context.

Human Resources

Human resources, in the form of qualified teachers, play an important role in student achievement. According to the PISA report (2003), approximately three-quarters of the school managers highlighted "insufficiency in the number of teachers in schools" as another factor impacting student learning. Some studies point out the effect of a teacher's qualifications on academic achievement. Cueto, Guerrero, Leon, Zapata, & Freire (2014) show that the professional experience of teachers has a significant impact on the mathematics achievements of students. In other words, teachers with more experience have a significant effect on mathematics and other subjects' achievements when compared to newer teachers with one to three years of experience. Other factors that affect student achievement include the attitudes and behaviours of teachers. Teachers' values, attitudes, and experiences affect their students, colleagues, careers and society while, naturally, teachers' personal and professional existence is affected by the same factors (Sleeter, 2014).

Mestry & Ndhlovu (2014) maintain that significant teacher qualities include verbal ability, knowledge of the field in which they are teaching, knowledge of how to teach and learn, and the ability to use teaching strategies based on the needs of the students. In this regard, Demir (2009) found that the educational level of teachers, length of service, and whether or not they had participated in in-service training have a significant effect on the academic achievement of students. On the other hand, some studies indicate that length of service is not a good predictor of learning outcomes (Foster, 2014:12). To sum up, the educational resources in schools play an important role in diminishing the effect of socioeconomic factors on academic achievement and in creating equal opportunities for students.

RESEARCH APPROACH AND METHODOLOGY

Research approach

In this study, a quantitative research approach was adopted; this approach was considered the most appropriate because addressing the research problem depended on the analysis of quantitative data collected on many survey questions around the allocation of school resources and learners' achievement. Moreover, a quantitative approach was followed because the study was testing the causal relationships or nexus between the allocation of school resources and learners' achievement in public schools.

Sampling design

The study's target population consisted of five education districts in Limpopo Province, South Africa. This included their principals, educators, SGBs, and department heads. A combination of cluster and purposive techniques were used to select the sample. Schools were organized into clusters based on their respective districts. Following that, four key professionals with relevant information were chosen from each cluster using the purposive sampling technique. Principals, educators, SGBs, and department

heads were among the professionals considered as respondents. Because the field of study was technical and required individuals with the necessary information in each situation, the purposive sampling technique was used. The final sample was composed of 68 public secondary schools drawn from 1354 public secondary schools with different profiles, backgrounds and quintiles (1-to-5) was selected from five (05) districts (viz. Capricorn, Vhembe, Mopani, Sekhukhune & Waterberg).

Instrumentation and Data Collection Procedures

Data was collected by employing a questionnaire. A questionnaire was generated containing both open and close-ended questions and then administered to the principals, educators, heads of departments and SGB members. There were four categories of questionnaires, namely, for the principals, educators, heads of department and school governing body members. The questionnaires included a section that required basic demographic information such as the respondent's gender, length of service and qualifications, as well as the demographic characteristics of their school, for example, school enrolment and allocation of resources. After screening the questionnaires, 222 (82%) usable questionnaires were retained out of a total of 271 questionnaires emailed to respondents. Furthermore, out of a total of 222 questionnaires administered using the drop and collect method, 54 (24.4%) were returned by principals, while 56 (25.2%) were fully completed by educators, department heads, and school governing body members. This resulted in 222 questionnaires being used in the final data analysis. The questionnaire was given to respondents for two weeks to complete. Several ethical considerations were followed during the data collection process, including participant rights to anonymity, voluntary participation, confidentiality, and protection from victimization.

Data Analysis

Data was analysed using the Statistical Packages for the Social Sciences (version 27). The strengths and direction of the relationship between the allocation of school resources and learners' achievement in public schools were measured using Pearson Correlation analysis, whilst predictive relationships between constructs were measured using regression analysis.

Validity and Reliability

The questionnaire was reviewed by two University Statisticians who are experts in the field to determine face validity. The two panels' feedback was used to modify the questionnaire to establish face validity. A pilot study with a conveniently selected sample of 30 respondents was conducted to establish content validity. The pilot sample's feedback was used to make additional changes to the questionnaire. The pilot sample was left out of the main survey. Pearson's correlations were used to determine the construct validity. The correlation analysis results revealed positive correlations between the constructs, indicating acceptable construct validity. Regression analysis was used to test the predictive validity. The regression analysis results revealed statistically significant relationships between the constructs, indicating that the scales have adequate predictive validity. The Cronbach alpha coefficient was used to assess reliability. All measurement scales achieved alpha values greater than the recommended threshold of 0.7, indicating satisfactory reliability in the study.

RESEARCH RESULTS

Demographic Profile of Respondents

An analysis of the demographic profile of the respondents reveals that 24.4% were principals, with the remainder (Head of Department, Educators, and SGB) accounting for 25.2% each. In terms of age groups, the majority of respondents (28%) were between the ages of 40 and 50 years. According to the racial profile, all but three of the mixed-race respondents (85%) were black. At least 53% of respondents were female, compared to 47% of their male counterparts. In terms of the distribution of respondents by highest qualification, the majority (28%) had a junior degree, 27% had an honors' degree, 20% had a diploma, 12% had a certificate, 9% had a master's degree, and only 1% had a doctorate. Further investigation revealed that 4% of respondents did not have tertiary qualifications.

5.1.Mean Scores and Reliabilities

The mean-scores and reliabilities of the measurement scales used in the study are reported in Table one (1).

Table 1: Mean scores and Reliabilities

Dimension description	Number of items	Cronbach Alpha	Average inter-item correlation	Mean	Standard Deviation
Physical Resource	15	0.937	0.510	20.71	4.765
Financial Resource	15	0.629	0.143	38.06	6.573
Human Resource	5	0.651	0.295	7.83	2.244
Overall	35	0.868	0.080	67.60	9.098
Scale; 1=Strongly Agree; 2= Agree; 3=Disagree; 4=Strongly Disagree;					

Source: Author (2021)

Mean scores for the three scales ranged between 7.83 and 20.71. These values depict an inclination towards the 'agree' point in the Likert-type scale. This implies that the majority of respondents thought resource allocation in their schools was adequate. Respondents believed that resource allocation should be balanced based on physical, financial, and human resources rather than implementing them separately. Cronbach alpha values ranged between 0.629 and 0.937, which were above the recommended minimum threshold of 0.6 (Malhotra, 2011), which confirms that the scales used in the study were reliable.

7.3 Correlation Analysis

Correlation analysis (Table 2) shows the strength and direction of association amongst the constructs under consideration in a research study (Genest, Kojadinovic, Neˇslehov´a & Yan, 2011). In this study, the constructs were physical resource, financial resource, human resource and Leaner's Achievement. A two-tailed Pearson Correlation Analysis was undertaken at a significance level of $p<0.01$ to establish the level of association between the hypothesised associations.

Table 2: Correlation Analysis

		Physical Resource	Financial Resource	Human Resource	Leaners achievement
Physical Resource	Pearson Correlation	1	.211**	-.133	-.014
	Sig. (2-tailed)		.006	.087	.856
	N	166	166	166	164
Financial Resource	Pearson Correlation	.211**	1	-.257**	-.378**
	Sig. (2-tailed)	.006		.001	.000
	N	166	166	166	164
Human Resource	Pearson Correlation	-.133	-.257**	1	-.045
	Sig. (2-tailed)	.087	.001		.567
	N	166	166	166	164
Leaners achievement	Pearson Correlation	-.014	-.378**	-.045	1
	Sig. (2-tailed)	.856	.000	.567	
	N	164	164	164	164
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Authors (2021)

In this study, positive inter-factor correlations were observed between the constructs under consideration. The strongest correlation was observed between financial resource and physical resource ($r = 0.211$; $p < 0.01$) while the weakest correlation was observed learners' achievement and Financial Resource ($r = -0.378$; $p < 0.01$). This indicates that when one of these constructs either increases or decreases, the other constructs either increase or decrease correspondingly.

6.4 Regression Analysis

Since positive associations existed between Resource allocation dimensions and learner's achievement, it was necessary to establish whether resource allocation dimensions predicted learners' achievement. This was achieved through the application of the regression analysis procedure. Regression analysis is a statistical process for estimating predictive relationships amongst variables (Armstrong, 2012). To test predictive relationships, physical resource, financial resource and human resource were used as independent variables and learners' achievement was used as a dependent variable. The results of the regression analysis are reported in Table three (3).

Table 3: Regression Model Summary

Model Summary Dependent Variable: Leaners achievement	Beta	t	Sig.	Tolerance	VIF
Physical Resource	0.059	0.796	0.427	0.946	1.057
Financial Resource	-0.431	-5.661	0	0.898	1.116
Human Resource	-0.151	-2.019	0.045	0.923	1.083
R^2 = .169	P < .01				

Multicollinearity tests were conducted by calculating the tolerance value and variance inflation factor (VIF) associated with each independent variable. According to Tabachnick and Fidell, (2001) thresholds for testing for multicollinearity include a minimum of 0.1 for tolerance and a maximum of 10 for VIF. In the current study, tolerance and VIF values were within the recommended thresholds, indicating that multicollinearity did not constitute a problem in the study and the independent variables are not highly correlated (*r*= 0.90 and above). The regression analysis revealed an R^2 of 0.169, indicating that nearly 17% of the variation in learners' achievement is attributable to resource adoption and allocation at the high school in Limpopo province.

DISCUSSION OF RESULTS

The purpose of the study was to investigate the relationship between the allocation of school resources and learners' achievement in public schools. To achieve this purpose, three hypotheses were put forward. The first hypothesis (H1) suggested that there is a weak negative relationship between a physical resource and learners' achievement. This hypothesis was accepted in this study because as revealed in Table 2, there was no correlation between a physical resource and learners' achievement (r = -0.014; p> 0.01). Moreover, in the regression analysis, physical resource was statistically significant in predicting learners' achievement (β = 0.154; t= 0.796; p=0.427). The second hypothesis (H2) indicated that there is a negative relationship between financial resource and learners' achievement. This hypothesis was supported because a weak negative correlation was observed between financial resource and learners' achievement (r = -0.378; p <0.01). Also, analysis of the regression model shows that financial resource was statistically significant in learners' achievement (β=-0.670; t=-5.661; p=0.000). The third hypothesis (H3) stated that there is a negative relationship between a combined physical resource and learners' achievement. This hypothesis was supported because there was a weak negative correlation existed between a combined physical resource and learners' achievement (r= -0.045; p<0.05). Regression analysis indicates that combined human resource problems were statistically significant in predicting learners' achievement (β =-0.761; t=-2.019; p=0.045). These results illustrate that learners' achievement is likely to increase with an increase in the allocation of school resources in the public school in Limpopo province. The government should allocate more funds to provide and equip the physical facilities in public schools which were, at the time of the study, either inadequate or completely lacking. In addition, more funds should be allocated to provide schools with human resources, internet facilities and recreational facilities as well as to enable field trips and excursions. In addition, specific subject rooms, such as agriculture rooms, libraries and laboratories should be equipped to enhance effective teaching and learning.

CONCLUSION AND RECOMMENDATIONS

The study concludes that the allocation of school resources has an impact

on learners' achievement. According to the findings of the study, there are insufficient teaching and learning resources available, as well as a lack of physical facilities for learning processes. Furthermore, the few available physical facilities are in poor condition/state and are frequently too small/inadequate. However, even as the budget situation improves, more resources do not always generate a similar educational improvement. This may perhaps be because school and classroom organisation does not always adjust well to the efficient use of the additional resources, or because there may be threshold levels beyond which adding further resources does not yield significant additional benefits for learning. However, research in the South African context has shown that the provision of basic resources does have a positive effect on learners' achievement. The study recommends that school resources ought to be allocated equally without favour and prejudice. The policies should be transformed to redress the perpetuation of inequalities in the provisioning of school resources.

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