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School Resource Utilisation and its Relationship with School Performance in District Gilgit, GB, Pakistan

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Keywords	Abstract
School Facilities, Resource Utilisation, Academic Performance, School System.	*One of the crucial factors contributing to school success is the resource utilisation. In this study, we report findings on resource utilization and its relationship with school performance in the elementary schools in Gilgit, Gilgit-Baltistan, Pakistan. A sample of 100 randomly selected school principals/senior teachers from a total of 194 secondary schools participated in this survey. A self-made questionnaire was used to measure Resource Utilisation (RU). Each school performance was measured in terms of average scores of the 8th grade students. The exam board results were obtained from the relevant government department. Using SPSS V.26, the Pearson correlation analysis was run. A medium, positive, and statistically significant correlation (r=.327, p<.05) was found between the Resources Utilization (RU) and School Performance (SP). The second sub-dimension of Resource Utilization, i.e., the labs and libraries, showed relatively the highest correlation with academic performance (r= .402, p<.05). No significant difference between public and private schools was found in the relationship of total utilisation of school facilities and students' academic performance (r_{Pu}=.110, r_{Pr} = .183). The study findings have implications for how school administrations align their resource availability and resource utilization with overall school performance in the context of Gilgit-Baltistan.*

INTRODUCTION

According to Mugure (2012), resource utilisation in the field of education refers to utilisation of human resources, instructional material, equipment of infrastructure, hygienic environmental conditions, procedures, programmes, and strategies. School resources may include academically and professionally qualified teachers, libraries, science and computer laboratories, teaching and learning materials, and adequate infrastructure (Suleman & Hussain, 2014). School facilities are crucial in providing an effective learning environment for students. However, without appropriate utilisation of facilities, there is no meaningful impact on a school's academic performance (Barrett et al., 2015). Ali et al. (2020) provided evidence for a positive relationship between the availability of school facilities and academic performance in Pakistani schools. Conversely, inadequate facilities, such as a lack of classrooms, laboratories, and libraries, have a negative impact on students' learning and academic performance (Henry et al., 2013; Shahzad et al., 2019). According to Ali and Aziz (2017), in addition to the proper availability of resources, its effective utilisation establishes a good education system by ensuring

that standards of teaching and learning are raised (Ramdass & Gowrie, 2014; Sheibani, 2014).

As the literature shows how important school facilities are, recognise that the federal and provincial governments of Pakistan have been targeting improving the performance of school students from kindergarten to grade 12 (Awan & Zia, 2015). However, low performance of school students in Pakistan has remained a challenge for the teachers as well as the management of the schools (Maria & Awan, 2019). Due to the low performance, schools have been under pressure, as they have to work on updating their policies and resources continuously so that students' performance could be improved.

There are a number of reasons highlighted that make resource availability and utilisation both challenging in the Pakistani context. These include financial constraints, inappropriate building & infrastructure, poor physical facilities, lack of teacher quality, low enrolment rates, and high-scale dropouts (Ali & Aziz, 2017; Suleman & Hussain, 2014). A more trending challenge in school resource management is the ICT resources, which are thought to have the potential to empower schools (Mothibi, 2015). According to Peter (2017), there is a favourable influence on student success when certain ICTs are utilised in conjunction with a teacher's current educational philosophy. The study by Nabi (2019) indicated that public school facilities are somewhat better than those of private schools; however, private school educational outcomes are reported to be better.

The efforts made by the Government of Pakistan in terms of ensuring physical facilities are remarkable in recent years; however, students' poor academic performance remains a matter of debate. In this regard, reasons related to school resource utilisation in schools are underemphasised. Therefore, the present study will provide us with an understanding of how school resources are utilised and how the use of resources is associated with students' academic achievements in the complex geographical and cultural environment of Gilgit-Baltistan, Pakistan. The study aims to achieve the following objectives:

1. To explore the relationship between perceived utilisation of school resources and school academic performance in elementary schools in district Gilgit.
2. To explore differences in perceived utilisation across school systems (public/private).

REVIEW OF RELATED LITERATURE

The literature review encompasses two key aspects: (1) the theory and concepts of resource utilisation and school performance in terms of teacher and student learning outcomes; (2) studies showing the impact of various school resources on school success and performance. A thematic analysis of the literature yielded various underlying themes highlighting key aspects of school resources, their utilization and their impact on teacher and students' performance.

Importance of School Facilities: Both theory and field practices show that school facilities encompass various physical resources and spaces within the school, including classrooms, libraries, laboratories, physical education facilities and information technology infrastructure. The significance of well-designed and adequately maintained school facilities cannot be underrated, as they contribute to the overall educational experience and academic achievement of students. Many studies have shown a significant positive relationship between the utilisation of

school facilities and school academic performance (Bragazzi et al., 2020; Hussein et al., 2018). According to the Resource Dependency Theory (as discussed in Pfeffer & Salancik, 2003), organisational effectiveness depends on resources. According to Becker (1964), the Human Capital Theory emphasizes that quality school facilities lead to desired educational outcomes. In line with these theories, a number of studies have explored the relationship between school facilities, the quality of school facilities and their impact on school performance. A study from the Pakistani context, Hussain et al. (2019) reiterated school facilities make it possible to create a conducive learning environment. Appropriate classroom space, seating, lighting, ventilation and atmosphere lead to comfort of learners, which in turn helps them have more concentration on academic activities (Hoxby & Weingarth, 2020). In addition, teachers require tools to design and deliver effective instruction. Healthy, clean, and hygienic rooms with sanitation make a school environment a healthy and pleasing environment (Al-Dabbagh & Almahafdhi, 2021). Playgrounds are necessary for promoting physical health activities as well as organising recreational activities such as festivals and celebrations, which, then, overall contribute to the well-being of students (Owens et al., 2019). Teachers' resource centres, libraries, and other digital resources; specialised language; and other laboratories are essential for truly experiencing learning and solving practical problems (Hussain et al., 2019; Mokhtar et al., 2016; Sanjeev, 2017; Zhai & Brooks, 2018).

Types of School Facilities

1. Building and Infrastructure: A key element that is linked to academic achievement is the school building. Infrastructure for education includes everything from classrooms to outdoor learning and play spaces, furniture, water and sanitation to administration buildings, storage, cooking, and transportation facilities, all of which are necessary for efficient teaching and learning (Ammermüller, 2005; Cash, 1993; Huisman et al., 2010). Studies have proven that the physical structure of a building affects the educational opportunities, productivity, and well-being of the people. Academic resources and building environments are helpful for academic progress (Cash, 1993).

Fisher (2006) reported that urban and/or poverty-stricken regions sometimes suffer from flawed infrastructure, health facilities, and safety. Because of the ever-increasing usage of information technology in educational contexts, technology resources are required to be provided with due maintenance in this context (Mononen-Aaltonen, 2008).

The basic education hierarchy provides the basis for all other educational levels to grow. It is surprising, however, that this sector has remained susceptible to both the inadequate physical and instructional facilities in Pakistan. No considerable effort was made to ensure a solid basis for elementary education, in addition to physical facilities, resulting in a focus on paperwork. Over time, greater attention has been paid to the education sector, and more current figures show that the literacy ratio has improved since independence and is unchanged to this day (Naz et al., 2011).

2. Academic Facilities: In addition to school buildings and infrastructure, other significant aspects of school facilities include school labs, textbooks and libraries, which play an important role in school performance (Ali & Anwar, 2020). Afana et al. (2013) discussed how the importance of books and writing utensils in school leads to the improvement of students'

achievement. Libraries and resource centres with a wide range of books, digital resources, and study areas provide opportunities for independent learning and research (Mokhtar et al., 2016). Libraries serve as repositories of knowledge, offering books, journals, digital resources, and other educational materials that supplement classroom instruction and encourage students' exploration and research (Ali & Anwar, 2020; Rahman et al., 2018; Shah, 2019). Access to well-equipped libraries enhances students' reading habits, information retrieval skills, and critical thinking abilities. According to Bashir et al. (2020), academic facilities are specialised facilities, which are in addition to the building and other infrastructure of a school. These facilities have a specialised function to provide students practical experiences and technological and communication skill development. Special computer laboratories help in developing analytical skills necessary for the digital age (Hoskins et al., 2018; Sultana & Uddin, 2020).

3. Physical Education Facilities: Physical education refers to equipping teachers and students with the necessary knowledge, skills and attitude towards ensuring and maintaining their physical health. A well-maintained playground is essential for not only physical activities but also for enhancing students' organising skills through co-curricular activities (Owens et al., 2019). Next to a well-maintained playground are sports facilities such as playing kits and instructors for physical exercise, teamwork, and discipline (Zhai & Brooks, 2018; Khan et al., 2018). Access to well-designed and adequately equipped physical education facilities encourages students' participation in physical activities, which in turn contributes to their physical health and cognitive development (Zeng & Gao, 2020). Engaging in regular physical exercise has been linked to improved concentration, enhanced memory and increased academic achievement (Huang et al., 2020; Ding et al., 2018).

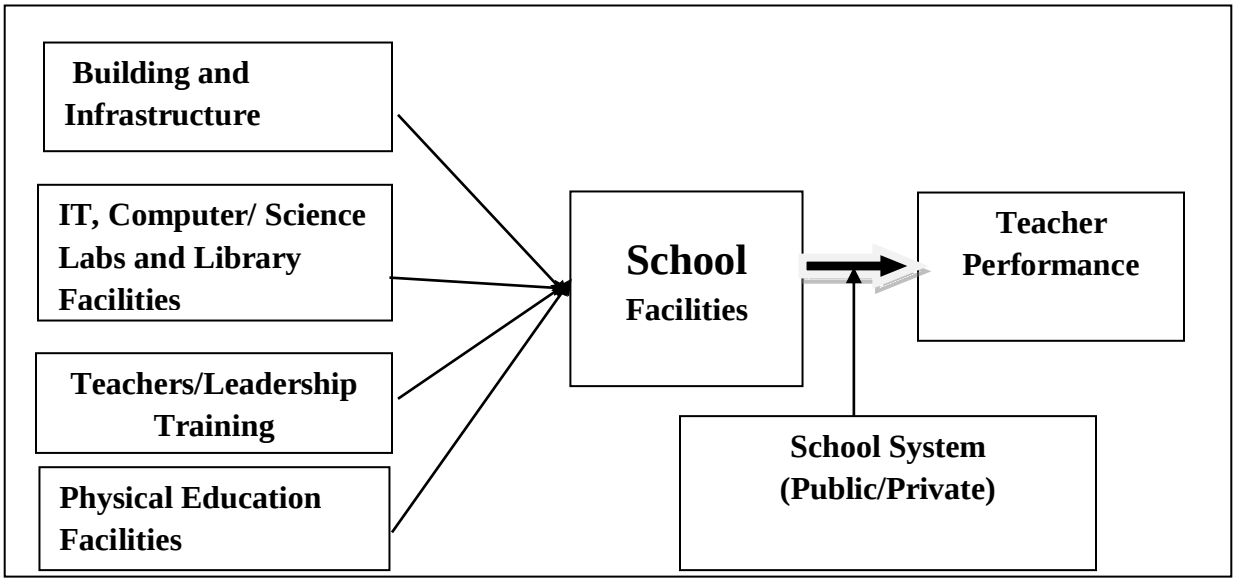
A study conducted in Pakistan found that lack of access to clean water and sanitation facilities in schools negatively impacted students' health and attendance, ultimately affecting their academic performance (Mumtaz et al., 2016). Therefore, it is important to consider these factors as well when assessing the relationship between perceived utilisation of school facilities and academic performance. Therefore, investigating the perceived utilisation and effectiveness of physical education facilities in District Gilgit, GB, Pakistan, is crucial for understanding their impact on students' academic performance and identifying strategies to enhance their utilisation and provision.

4. Quality School Facilities and Academic Performance: Numerous studies from the context of Pakistan consistently report that the relationship between school facilities and academic performance in educational settings has been a topic of attention and concern. Several studies have emphasised the crucial role of school facilities in shaping students' academic achievements. For instance, Arshad et al. (2019) highlighted the positive impact of well-equipped science laboratories on students' understanding of scientific concepts and their performance in science subjects. Javed et al. (2017) revealed that students who had access to well-stocked libraries and technology resources demonstrated higher levels of academic achievement compared to those with limited access. Mustafa et al. (2017) highlighted disparities in school facilities in rural and urban areas of Pakistan. Nevertheless, the government of Pakistan has succeeded in providing school facilities; however, there is a need for survey studies, such as the current study, to explore how those resources are being used for academic purposes and how they impact students' performance.

Theoretical Framework

The theoretical framework for this study was drawn from the resource dependency theory, which suggests that organisations (in this case, schools) are dependent on resources to achieve their goals, and that the more resources an organisation has, the more likely it is to be successful (Pfeffer & Salancik, 2003; Wong & McMahon, 2019). By incorporating these theoretical perspectives, this study explored how different types of school resources, including physical facilities, technological resources, IT facilities, library facilities, science laboratory facilities and other facilities, contribute to perceived utilisation and ultimately impact academic performance in schools in Gilgit, GB, Pakistan. Based on the literature, the conceptual framework developed for the present study is depicted in Figure 1.

Figure 1: Conceptual Frameworks



METHODS

Researchers employed survey design to empirically investigate the association between school facilities and school academic performance at the elementary level. All the elementary school heads/senior teachers of both the public and private schools of district Gilgit were the target population of the study (i.e., 194 elementary schools). School principals or senior teachers were thought to be more appropriate data, as they experience the resources and their utilisation on a day-to-day basis. Although the number of schools is not too high, the schools were scattered across districts, which made it difficult for researchers—without an external funding source for the research—to access all those schools. In addition, since the private schools were higher in number, a representative sample could be achieved through stratified random sampling, as shown in Table 1.

Table 1: Sample Distribution

School System	Population proportion	Sample proportion	Total Sample Size
Public	71 (37%)	37 (37%)	37
Private	123 (63%)	63 (63%)	63

Total	194 (100%)	100 (100%)	100 = (51% of 194)

*SRS (Simple Random Sampling) was used to select schools from each stratum

A tool contextually relevant and pertinent to school resources was not available for the study; therefore, a tool was developed by the researchers after reviewing the relevant literature in detail. Then items against each dimension were explored. Two PhD faculty reviewed the instrument for content and face validity. The first part of the questionnaire contains an informed consent letter. The second part consisted of questions regarding participants' personal characteristics, such as the school system, and the last part of the questionnaire consisted of four constructs (subscales) of resource utilisation. As shown in Table 2, these constructs were (a) Building & Infrastructure (BI: 12 items), (b) Labs and Libraries Facilities (Lab & Library Facilities: 4 items), Teacher Training Resources (TTR: 5 items) and Physical Education Facilities (PEF: 3 items). Items in this part were measured on a 5-point rating scale as 5 = Strongly Agree; 4= Agree; 3= Neutral; 2=Disagree; 1=Strongly Disagree, on statements measuring the perceptions of teachers about constructs of the study.

The face validity was improved by editing and formatting fonts, line spaces and other patterns of the items. To ensure the tool's reliability, a pilot test was made in an identical setting on a random sample of schools (n=50; Male=25, Female=25). The first dimension, building and physical resources, had the reliability Cronbach's $\alpha = .95$. The reliability values are presented in Table 2.

Table 2: Reliability Analysis

S. No.	Items	No of Items	Cronbach's Alpha
1.	Building and Infrastructure	12	0.95
2.	Lab & Library facilities	4	0.85
3.	Teacher Training Resources	5	0.78
4.	Physical Education Facilities	3	0.92

An initial factor analysis was carried out to ensure further validity of the constructs (using CFA), which confirmed the four-factor solution having Eigenvalues more than 1. These four factors explained 71% of the total variance.

ANALYSIS AND FINDINGS

The data showed approximate normal distribution; hence, the parametric test could be used. The values of skewness and kurtosis were computed to confirm that the data set were within the range of +1 and -1 skewness, indicating an approximate normality (Tabachnick & Fidell, 2007, p. 80). Furthermore, a concise descriptive analysis of the Mean and SD values can be seen in Table 3. In alignment with research objectives, the following hypotheses were developed and tested using inferential statistics, shown in Table 3.

> **$H_0$1:** There was no significant relationship between perceived utilisation of school resources and school performance.

The Pearson correlation coefficient was used to explore the relationship between utilisation of school resources and students' achievements, as shown in Table 3.

Table 3: Mean, SDs and the Correlation Matrix

	Variables	Mean	SD	1	2	3	4	5	6
1.	School Performance	78.50	27.9	1.00					
2.	Total Utilisation	74.90	22.05	.327**	1.00				
3.	Building and Infrastructure	34.80	13.58	.347**	.965**	1.00			
4.	Labs and Libraries	14.93	3.52	.402**	.719**	.645**	1.00		
5.	Teacher Training resources	16.51	4.62	.257**	.748**	.648**	.446**	1.00	
6.	Physical Education Resources	8.66	3.87	.287**	.780**	.707**	.605**	.513**	1.00

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

Table no. 3 shows Total Resource Utilisation (composite scores from relevant items for each construct) in the sampled schools has a significant medium-level positive correlation with school performance (r=.327, $p<.05$).

> **Ho2:** There is no significant difference in the relationship of the utilisation of school resources and school performance across school systems.

To test $H_0 2$, the correlation was run for public and private schools separately. Then these two correlations were compared. The significance of the difference of correlation was calculated using the online website calculator https://www.psychometrica.de/correlation.html with the following data: $r_1=.110$, $r_2=.183$, $n_1=37$, $n_2=63$. Then these values were transformed to Z-scores. Since $p>.05$ for the Z of both r values, the null was accepted, and it was concluded that the difference in the correlation between resource utilisation and school performance was not statistically significantly different for public and private sector schools.

DISCUSSION

Gilgit-Baltistan is the administrative province of Pakistan located in the remote northern parts of Pakistan with its own unique geographical location and multicultural dynamics. Since the province is situated in the extreme north of Pakistan, which makes it challenging to provide, maintain and use physical facilities in schools, on the one hand. On the other hand, physical resources in school are supposed to directly or indirectly contribute to teaching and learning. The assessment of physical resource utilization and its effectiveness was made based on how school principals/senior teachers perceived and reported on the use of physical resources for teaching and learning purposes. The school performance was represented by the exam board results, which is a centralised examination system conducted by an independent exam board focusing on only 8th grade: the highest grade for an elementary school. The results revealed a medium positive and statistically significant correlation between perceived utilisation of school resources and school (students') academic performance. This finding is in line with previous studies that show a positive relationship between school resources and academic performance (Hanushek & Jackson, 1977; Iqbal, 2014; Levin & Belfield, 2007). Khan and Naseer (2020) found that the availability of library facilities more positively impacted academic performance than any other facility. However, the analysis of the sub-components of total utilisation revealed that the labs and library facilities had the highest relations with academic performance as compared to the other three constructs. This was followed by Teacher Training Resources.

The physical education resources were reported to have the least use. It appeared that the schools' administrations gave less attention to this important aspect of school. This finding is consistent with previous research studies emphasizing the importance of infrastructure in schools (World Bank, 2014). The study found no significant differences between private and public schools in terms of the relationship between resource utilisation and school performance. However, the relationship was higher for private schools as compared to public schools. Since the difference was not statistically significant, more studies can validate this finding. Yet, one of the studies from the Pakistani context, the study of Nabi (2019), seems to go in line with the findings which pointed out that in spite of public schools having superior facilities than the private schools, public schools show lower performance. The findings of Nabi (2019) seem to be indicative of underutilisation or low utilisation of resources in public sector schools in relation to the availability of resources. However, this finding also needs further exploration into the existing resources and their utilisation mechanism. Other studies, such as the study of Shamis and Yaqoob (2018) and Shah (2019), also report a better performance by private sector schools as compared to public sector schools.

CONCLUSION AND RECOMMENDATIONS

The study found a medium, positive and significant correlation between school resource utilisation and school performance, indicating the impact and level of use of existing physical facilities available in the sampled schools in Gilgit district, GB, Pakistan. The study also brought forward that school buildings and infrastructure are crucial and key elements of school resources, having a strong correlation with school performance. It was also worth noticing that resource utilisation varied in relation to school performance, which has implications for school administrators and policymakers to set their priorities and make the important facilities available at schools, along with ensuring their maintenance and utilization to enhance the use of school resources optimally. While the school building provides spacious classrooms suitable for students and teachers to experience a conducive environment, the school facilities, such as books in libraries, IT labs with access to online learning resources, science labs for hands-on activities, and teachers' training facilities, such as teacher resource centers, all had nearly the same level of significant, positive correlation with teacher performance. The study findings bear implications for school administrations to develop the mechanisms to align physical resource utlization with teacher quality and thereby enhance student performance. Future researchers may want to explore effective strategies for optimal utilisation of resources, focusing on the specific circumstances as in the context of the present study.

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