

Working Paper, No # **190**

**Impact of school facilities and teachers'  
training on child education: Evidence from  
Balochistan and KP**

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September 2021

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A publication of the Sustainable Development Policy Institute (SDPI).

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Sustainable Development Policy Institute is an independent, non-profit research institute on sustainable development.

**First edition:** September 2021

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## **Abstract**

*The study examines the impact of school facilities and teachers' training on learning at different levels of education in selected districts of Balochistan and the Khyber Pakhtunkhwa provinces of Pakistan. The research methodology is based on three key instruments that help in systematically approaching the research questions: the review of existing secondary information, primary data collection through a survey, and key informant interviews. A total of 517 parents and 35 teachers were interviewed through a semi-structured questionnaire. The results indicate that improvement in school infrastructure positively relates to child learning and better sanitation and waste disposal are vital in improving child health and learning in school. The service delivery of teachers can be improved through the provision of training. During the study, it was learnt that there was a shortage of teachers at every educational level; hence, the number of teachers should be increased along with their capacity building. It is suggested that Community-based Organizations and Non-Government Organizations can help provide quality educational services in remote areas.*

**Keywords:** Students learning, teachers training, school facilities, school infrastructure, educational services



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## 1. Introduction and Background

There are certain factors that play a critical role in children's learning and education and contribute to their academic achievements. Among them are: school environment, quality of teaching, administration, and counseling (Akinbote & Ogunranti, 2004; Danesty 2004; Darling-Hammond 2000). Physical infrastructure, technologies, and e-learning tools also lead to effective learning outputs (Toru and Ahmed 2019).

Similarly, infrastructure development has a particular significance. It not only helps increase the attendance of students but also motivates staff and students to achieve better academic results (Ahmed et al. 2013; Alimi 2004); this particularly holds for female students (Tabbasum et al. 2019) especially in remote areas. Many studies highlight that a clean as well as safe environment in schools is essential for learning and academic achievement (Cash 1993; Earthman & Lemaster 1996). However, infrastructure development requires massive financial resources. In Pakistan, public spending on education sector remains low (Ahmed and Javed 2017), due to which there is a lack of infrastructure development in public sector educational institutes.

Apart from infrastructure, the role of teachers in enhancing child's education and learning at school is also very important, as it is the teacher who inspires and influences students (Ibode 2004; Akanbe 1988). The overall organizational performance rests upon the teachers' performance (Chung et al. 2016), and any failure in delivery affects students' learning behaviour. That is why, the capacity building of teaching staff is considered paramount in improving students learning outcomes (Noah and Olusola 2015; Schroeder and Adesope 2015). Various training frameworks have so far been designed to enhance teachers' skills and teaching methods (Navarro et al. 2016). Any deficiencies in teachers' training impact students' performance and sometimes lead to dropouts at higher level in addition to causing shortcomings in overall organizational performance (Chen-Chung et al. 2016).

Though, a considerable research is available in this regard in the context of Pakistan, remote areas have yet to face years of neglect. This study aims to assess the impact of school facilities and teachers' training on students' educational performance at primary, middle, and secondary

levels in some of the poorest regions of the country (Yamin & Malik 2014; Grare 2013; Javed & Nabi 2018). More specifically, the study addresses the following research questions

1. Do school facilities, including the availability of teachers and decent infrastructure in poor regions, improve student performance?
2. Does teachers' training influence students' learning attitudes?

## 2. Literature Review

### 2.1 Impact of school facilities on students and teachers' performance

The availability and quality of school facilities positively affect the performance of students and teachers. Barret et al. (2013; 2016) identified the impact of school design on pupils' learning rate while considering the classroom environment. Wargocki & Wyon (2007) studied the effect of school infrastructures (such as moderately raised classroom temperatures and classroom ventilation rate) on the performance of schoolwork by children and found a correlation between them. Khurshid and Arshad (2012) examined students' skill development and personal development through their satisfaction with campus facilities, educational experience, and services. Ileoye (2015) also states that students' satisfaction with school facilities affects the child's quality of life. Classrooms designed in a better way and decorated with different types of furniture help improve the child's learning ability (Barrett et al. 2015). While analyzing the impact of school facilities on teachers' performance, Blazer and Kraft (2017) find positive effects on teachers' commitment, retention, and efforts. Therefore, the provision of school facilities enhances teachers and students' performance.

### 2.2. Impact of teacher training on student learning attitude

Research shows that teachers' training positively influences students learning, education planning and management skills. Teachers training enhances teachers' competence in interacting with students as it improves student cognitive learning strategies, encouraging a deep learning approach (Zachary et al. 2016).

Conversely, Ashraf et al. (2015) find that factors like lack of skills and training negatively affect teacher's performance, in turn, affecting child learning.

### 2.3 Gaps in literature

During literature review, it was learnt that no study had ever considered the impact of comprehensive infrastructure (i.e. waste disposal mechanisms, clean drinking water, sanitation



facilities, etc.) and teachers' training (both quantitative and qualitative aspects) on child education, particularly in remote areas where access to education is still a biggest challenge.

### 3. Conceptual Framework

In the light of above discussion, this study implies the principal agent model<sup>1</sup>. The framework here signifies that there are service providers and those benefiting from the services provided. "Principal" is someone authorizing another person to act on their behalf as an agent<sup>2</sup>. It may appear in many contexts, including when education service providers (those working in education departments, schools, and teachers) act on consumers (children and parents) by receiving certain benefits due to consumer actions.

The problem of principal-agent occurs in the theory of firm, subject to micro-level study. In this study, the public is the principal ensuring good public services, for instance, parents ensuring quality education for their children through monitoring. The public's mandate is entrusted to the Ministry of Education, which bridges the gap between educational institutions and consumers. Authority for management and enforcement devolves down the system to the district level and field level. School administration, heads, and teachers are agents providing good schooling. The public's only enforcement mechanism is raising their voice for quality services.

Within this framework, parents seeking alternative schooling for their children, i.e. shifting from a government school to a community school or vice versa, is the enforcement mechanism for good schooling. In the absence of competition, complaints (voice) are all parents can resort to, and even then, there is no guarantee of response. Assuming competition between government and community school and looking at the identity of parents and owner interests, good schooling depends on effective motivation of the "principal" to the "agents" (teachers). Good environment, training, and financial incentives motivate teachers and are the approaches most frequently used. Furthermore, these tools turn teachers into effective agents. Sometimes, development players involved in educational functions mobilize communities to contribute to and enforce standards through informal or formal channels; an example of the latter is a parent-teacher committee that gives parents the role of co-principal.

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<sup>1</sup> The principal agent problem in political science and economics occur when one person or entity (the "agent") is able to make decisions and/or take actions on behalf, or that impact, another person or entity: the principal ([https://en.wikipedia.org/wiki/Principal%E2%80%93agent\\_problem](https://en.wikipedia.org/wiki/Principal%E2%80%93agent_problem)). Mitnick (1975) is the primary work in this regard who has described this whole phenomenon in theory of agency.

<sup>2</sup> <https://www.upcounsel.com/principal-agent-model-definition>

## **Limitations of the Study**

A key challenge for this study was obtaining information from teachers, who had undergone any capacity development programme or training for improved service delivery. Several teachers who received training were transferred to other districts, it was learnt during the Focus Group Discussions (FDGs), however, no data was available in this regard; this turnover of teaching staff resulted in limited information from teachers. We, however, tried to overcome this issue through FDGs.

## **4. Methodology**

To answer the research questions, our methodology relies on three key instruments, i.e. the review of existing secondary information, primary data collection through survey, and Key Informant Interviews (KIIs). Primary data was collected through surveys conducted in seven selected districts of Balochistan (i.e. Zhob, Lasbela and Pishin) and Khyber Pakhtunkhwa (Upper Dir, Chitral, Dera Ismail Khan and Swabi). In both provinces, 517 beneficiaries (parents along with children enrolled in schools where local civil society organizations did interventions) were interviewed. At the same time, data from 35 teachers, who had undergone training programmes organized by local civil society organizations was also collected.

### **4.1 Sampling Methodology**

In this study, the sampling technique used is called multistage stratified random sampling. The sample selection steps have been described below.

#### **Stage-1 Selection of districts**

The selection of districts was dependent on regional coverage for Khyber Pakhtunkhwa and ethnic coverage for Balochistan, i.e. Baloch belt and Pashtun belt. This selection criterion allowed for sample heterogeneity and helped cover schools at primary, middle, and secondary levels. Seven districts were covered to study the state of education; this allowed us to reach and survey most of the beneficiaries and capture their overall feedback.

#### **Stage-2: Selection of Union Councils (UCs), Villages, and Beneficiaries**

The selection of Union Councils was based on population and educational participation rate. Across UCs, villages with the highest population were selected based on random sampling. To draw a random sample from a total population of 65,391, which include students and teachers, 517 beneficiaries were extracted at 5% level of significance after adjustment for gender and

type of schools. The table below shows the district-level sampling, which accounts for parents and teachers (Table-1).

**Table 1: Sampling Distribution based on Beneficiaries (Parents and Teachers)**

<b>Balochistan</b>		
<b>Districts</b>	<b>Beneficiaries (Parents)</b>	<b>Beneficiaries (Teachers)</b>
<b>Lasbela</b>	95	9
<b>Pishin</b>	59	-
<b>Zhob</b>	41	-
<b>Total</b>	195	9
<b>Khyber Pakhtunkhwa</b>		
<b>Districts</b>	<b>Beneficiaries (Parents)</b>	<b>Beneficiaries (Teachers)</b>
<b>Chitral</b>	123	7
<b>Dera Ismail Khan</b>	41	10
<b>Swabi</b>	46	1
<b>Upper Dir</b>	112	8
<b>Total</b>	322	26

Source: SDPI Survey

## 5. Discussion and Findings

In this section, a brief overview of the status of primary, middle, and secondary level education has been presented. It further examines the impact of infrastructure and teachers' training on students' learning and performance in the selected districts.

### **Finding-I: Impact of Infrastructural facilities on Child's Education**

This section briefly discusses the infrastructural facilities and their impact on a child's education at the primary, middle, and secondary levels. The focus was on the availability of teachers, classrooms, furniture, electricity, toilets, playgrounds, essential apparatus, and equipment to ensure clean environment, and safe waste disposal system.

**Table 2: Satisfaction with availability of teachers**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	1.3	0.7	1.3	0.5	1.0	0.0	1.5	0.9	1.9	1.4	2.0	-
Upper Dir	1.8	0.8	2.4	0.7	1.8	0.8	1.8	0.7	2.3	0.9	2.0	-
Chitral	1.4	0.7	1.3	0.6	1.0	0.0	1.5	0.8	1.5	1.1	1.7	0.6
Dera Ismail Khan	1.8	1.1	1.8	1.2	1.0		1.9	1.0	2.7	2.1	1.0	-
Pishin	2.1	1.2	3.0	0.0	-	-	2.6	1.0	3.7	0.5	3.0	-
Zhob	3.0	1.8	2.8	1.8	2.5	0.7	2.3	1.7	1.0		-	-
Lasbela	1.8	1.0	2.8	0.5	1.6	1.1	2.1	0.4	1.0		2.5	0.7
Total	1.7	1.1	2.0	1.0	1.5	0.9	1.8	0.9	2.1	1.3	2.0	0.7

Table 2 shows respondents' satisfaction in connection with the availability of teachers at primary, middle, and secondary levels in both boys and girls schools. For boys schools at the primary level in Balochistan, respondents in Zhob (M=3.0) were most satisfied. In Khyber Pakhtunkhwa, respondents in Upper Dir and D I Khan (M=1.8) were more satisfied with teachers' availability compared to other districts. Ashraf and Ismat (2016) come up with the opinion that one of the main reasons behind dropout is the lack of teachers. The least satisfaction regarding teacher's availability was witnessed in girls primary and middle schools in Chitral. Respondents in Lasbela were least satisfied with the unavailability of teachers in girls primary schools.

**Table 3: Satisfaction with availability of classrooms**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	1.9	1.0	1.8	1.0	1.2	0.4	2.0	1.0	1.7	1.0	2.5	0.7
Upper Dir	2.0	1.2	2.5	0.7	2.0	0.6	1.9	0.6	2.4	0.5	3.0	
Chitral	1.6	0.9	1.2	0.5	1.1	0.4	1.5	0.8	1.5	0.8	2.0	0.8
Dera Ismail Khan	2.3	1.0	2.2	1.1	1.0		2.4	0.9	1.0	0.0	2.0	
Pishin	2.0	1.1	3.0	0.0			2.6	1.1	3.5	0.6	3.0	
Zhob	2.9	1.5	2.4	1.3	2.0		2.9	1.8	1.0		-	-
Lasbela	2.0	1.0	2.8	0.5	1.9	1.4	2.1	0.5	3.3	1.5	3.7	2.1
Total	2.0	1.1	2.1	1.0	1.7	1.1	2.0	1.0	2.0	1.1	2.7	1.2

There is a significant relationship between infrastructural development and learning; for instance, overcrowded classes and lack of classrooms affect child learning (Ashraf et al. 2015). According to survey results, for boys' schools at the primary level, respondents in Zhob (M=2.9) in the Balochistan region and respondents in Dera Ismail Khan (2.3) region were more satisfied with the availability of classrooms as compared to other districts (Table 3). The least satisfaction was reported over the availability of classrooms in girls middle and secondary schools in D I Khan.

**Table 4: Satisfaction with availability of furniture**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	1.7	1.1	1.9	1.3	1.8	1.3	1.6	0.9	1.6	0.5	2.0	
Upper Dir	2.6	1.1	2.2	0.9	2.6	1.0	2.2	1.1	2.6	0.7	3.7	2.1
Chitral	1.6	1.1	1.5	0.7	1.8	1.0	1.7	1.0	1.7	0.6	2.0	0.0
Dera Ismail Khan	2.0	1.1	2.1	1.3	1.0		2.1	0.9	1.0	0.0	-	-
Pishin	2.4	1.2	-	-	4.0	0.0	2.5	1.3	3.1	0.3	4.0	
Zhob	3.7	1.8	3.6	1.8	3.0		3.5	2.2	2.0		-	-
Lasbella	2.6	1.1	2.1	0.3	2.1	1.2	1.5	0.6	2.9	0.4	2.5	0.7
Total	2.1	1.4	2.0	1.1	2.2	1.2	2.0	1.2	2.4	0.8	2.7	1.3

Respondents in Upper Dir and Zhob showed more satisfaction with the availability of furniture in boys and girls primary schools compared to other districts (Table 4).

**Table 5: Satisfaction with availability of electricity**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	1.6	1.1	1.9	0.6	2.0	-	1.3	0.6	1.6	0.5	3.0	-
Upper Dir	2.0	0.9	2.6	0.9	2.3	1.0	2.0	0.8	2.8	0.9	2.0	-
Chitral	1.5	0.8	1.5	0.6	1.5	0.6	1.4	0.6	1.5	0.5	2.5	0.7
Dera Ismail Khan	2.1	1.3	3.0	2.6	1.0	-	1.6	1.0	2.0	-	-	-
Pishin	2.1	1.3	3.0	0.0	-	-	2.6	1.2	4.0	0.0	4.0	-
Zhob	4.2	2.1	2.8	1.8	6.0	-	3.0	2.3	1.0		-	-
Lasbella	2.2	1.2	2.8	0.5	1.8	1.2	2.0	0.4	3.3	1.5	1.0	1.7
Total	2.1	1.5	2.3	1.0	2.0	1.3	1.8	1.0	2.4	1.2	4.1	1.8

Respondents in D I Khan (M=2.1) for boys' primary school and respondents in Upper Dir (M=2.0) for girls' primary school were most satisfied with the availability of electricity in schools as compared to other districts (Table 5). Respondents in Zhob expressed more satisfaction over the availability of electricity in boys and girls' primary schools.

**Table 6: Satisfaction with availability of toilet**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	1.5	1.0	1.4	0.7	1.4	0.5	1.7	1.2	1.9	0.6	2.0	
Upper Dir	2.1	0.8	2.6	0.8	1.8	0.8	2.3	0.9	2.4	1.0	2.5	0.7
Chitral	1.7	1.2	1.5	0.6	1.3	0.5	1.8	1.2	1.6	0.6	1.5	0.6
Dera Ismail Khan	1.6	0.8	1.7	0.9	1.0	-	1.8	0.9	1.3	0.6	2.0	
Pishin	2.1	1.3	3.0	0.0	4.0	-	2.6	1.2	3.5	0.6	3.5	0.7
Zhob	2.9	1.3	2.4	1.3	2.0		3.4	1.7	1.0		-	-
Lasbella	2.1	1.2	2.8	0.5	1.6	1.0	2.0	0.4	3.4	1.3	5.3	1.5
Total	1.9	1.1	2.0	0.9	1.6	0.9	2.1	1.2	2.1	1.0	3.8	2.0

Availability of toilet facilities is more critical in school enrolment for girls. Respondents in Upper Dir (M=2.3) and Zhob (M=3.4) said that they were most satisfied over the availability of toilets in girls' primary schools (Table 6).

**Table 7: Satisfaction with availability of playgrounds**

District	Boys						Girls					
	Primary		Middle		Secondary		Primary		Middle		Secondary	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Swabi	2.7	2.1	2.0	1.7	5.0	2.2	2.8	2.0	4.8	2.1	5.0	
Upper Dir	2.4	1.1	2.8	0.6	3.0	1.0	2.4	1.0	2.7	0.7	3.0	
Chitral	3.1	2.0	3.1	2.1	5.4	1.8	3.4	1.9	4.5	2.1	4.3	2.1
Dera Ismail Khan	2.2	1.5	2.1	1.4	1.0		2.5	1.5	2.3	1.5	5.0	
Pishin	1.8	1.1	3.0	0.0	-	-	2.4	1.0	3.5	0.6	3.0	
Zhob	3.1	1.3	2.8	2.2	5.0		2.6	1.0	4.0		-	-
Lasbella	2.3	1.2	2.8	0.5	1.9	1.4	2.3	0.5	3.3	1.5	5.0	1.7
Total	2.6	1.7	2.7	1.4	3.2	2.1	2.8	1.6	3.8	1.8	4.6	1.6

Playground is a crucial component of infrastructure (James 1927), It attracts children to perform physical activities through playing. Playing benefit their physical and mental health and lead to enhanced learning capacity (ed. Navidi 2016).

Respondents in Chitral and Zhob said they were most satisfied over the availability of playgrounds in boys and girls primary schools (Table 7). This satisfaction brings about a positive change in child behaviour (Kyne 2014).

Similarly, Joshi & Amadi (2013), Grossi et al. (2016) and McMichael (2019) established a relationship between children's education and water, sanitation and waste disposal facilities. In middle-income countries, these facilities help improve hygiene habits and health conditions of children (Cronk and Bartram 2015). Our findings show that inadequate drainage results in worms' generation as well as various infections. We also found that open dumping (36 per cent) was the most used method whereas keeping waste in bins (28 per cent) and burning (28 per cent) were the regularly used methods. Open dumping has a significant impact on children's health and usually results in poor school attendance and poor performance (Ferronato & Torreta, 2019; Okoye et al. 2015).

### **Finding-II: Impact of Teacher's Training on Child's Education**

Local civil society organizations conducted several training programmes for teachers. Literature (Khan, 1999; Abbas & Ahmed, 2016; Ahmed & Zeshan 2014; Ahmed et al. 2013; Khan et al. 2016; Ishfaq et al. 2017) spells out how these training programmes help improve teachers' service delivery in schools. In selected districts, teachers received training on school development planning, early childhood education, disaster preparedness, science, and pedagogy. About 80 per cent of teachers reported that this training enhanced their capacity in service delivery, i.e. the understanding of teaching methods and school management. Teachers claimed that training helped in adopting new methods and techniques in their classrooms. There were positive results from teachers' performance; parents reported children getting good grades and effectively participating in classroom. Gopang (2016) also mentioned that short training effectively enhances teachers' quality of teaching and communication skills.

42 per cent of beneficiaries reported that teachers' performance in terms of teaching and attendance had improved at primary level. 38 per cent beneficiaries in middle schools, 58 per cent in secondary schools, and 48 per cent in community schools termed teachers' performance satisfactory.

Research pointed out a few obstacles in teachers training. Since transport is a biggest issue in remote areas, therefore there was a low participation in training programmes which were held at distant venues. Sometimes, teachers were unaware of trainings programmes due to lack of communication. Furthermore, there were not enough training programmes conducted, therefore, many teachers did not get the opportunity to participate.

## 6. Conclusion and Recommendations

Both the school facilities and teacher training critically impact learning environment in the school. It improves the students' mental growth and their performance.

- Our key findings in this study are: There is a significant relationship between decent physical infrastructure and a child's learning in school.
- Proper sanitation and waste disposal mechanisms improve hygiene, students' health, and their learning in school.
- Child learning may be improved with teachers' training.

Findings regarding infrastructure were true for all the factors mentioned except for playground which was found to be the missing link in this regard. Lack of playgrounds in the schools causes low physical and mental growth, which thus influences child's education. Lack of this facility further suppresses the positives of other facilities.

Teachers' capacity building programmes not only improve child learning at school but also increase teachers' performance. School development planning, early childhood education, disaster preparedness, science, and pedagogy were a few types of trainings that teachers received in our sample areas. Obstacles in receiving trainings included locality remoteness and lack of awareness about the training. Based on the challenges mentioned above, we propose the following steps to improve children's education:

### 1. Public sector

- a. There is a need to build playgrounds in every school and carry out regular extracurricular activities such as field trips, competitions (quiz, speech, poetry reciting, story-writing,) tableaux, sports, community activities, etc. should be organized and promoted.



- b. Key performance indicators for teaching staff need to be regularly updated and linked with their capacity building, if teacher turnover is controlled. Teachers should be provided with updated and regular training on curriculum, school development, and early childhood education that may enhance their skills and mitigate the use of corporal punishments. Their participation in such trainings should be linked with their promotions and increments.

## **2. Community-based organisations (CBOs)**

- a. Key demand and supply side need a regular check for which Community-Based Organizations (CBOs) need to significantly play their role. These CBOs should plan locally and provide technical and financial help for strengthening educational institutions.
- b. To minimize educational losses, community schools managed by CBOs and NGOs should have strengthened frameworks to fill in the gap by providing decent physical infrastructure which can improve the classroom environment internally and externally.

## **3. Development partners**

- a. To impart quality education in remote areas, development partners assistance should be sought who, with the help of CBOs and NGOs, can strengthen the overall framework by analysing the needs for education and becoming a bridge between different stakeholders.

## **4. Local private sector and Academia**

- a. Collaboration between government and private schools at local level is required to build teachers capacity by conducting joint trainings.

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