Status of Missing Physical Facilities in Government Schools of Punjab

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Abstract: The present study has been designed to investigate the missing physical facilities and actual needs of the public sector schools of Punjab province, Pakistan. In the 1st phase, six districts were selected from southern and eastern Punjab for data collection and in the 2nd phase, 79 schools were drawn randomly by giving due representation to school type (primary, elementary, secondary and higher secondary), gender and locality from the sampled districts. An inspection Performa and informal discussions with the school head teachers were used as research tools. The data were analyzed using simple descriptive statistics and Chi Square Test. The survey revealed that majority of the schools had problems such as shortage of furniture; lack of science, math, computer and English teachers; inadequate IT facilities; inadequate building; shortage of classrooms; inadequate light, drinking water and toilet facilities. The study concludes that there is a dire need for school improvement in terms of missing physical facilities to meet the actual needs.

Keywords: missing facilities, actual needs, public schools, Punjab

Introduction

Since the very beginning, human beings have done a lot to facilitate their lives with all the physical facilities of the world. The first need aroused for the human beings was the physical comfort. Physical facilities provide and maintain, safe, clean, and creative educational environments that are conducive to high achievements of the students. Physical facilities strive to give students a comfortable atmosphere in which they work and learn. In developing countries, low levels of learning among children can partly be attributed to poor or inadequate facilities of the schools. Physical facilities are the fundamental factors in better learning and achievements of the students.

All facilities must be provided to the schools for the students' better, concrete, and real experiences. Leeper et al. (1968) claim that the child learns through concrete rather than abstract experiences. Physical facilities help to enhance the learning of the

students. Research shows that availability of the physical facilities including drinking water, electricity, boundary wall, toilets, furniture, playgrounds, libraries, and dispensaries have a significant positive influence on the performance of the students and their achievement. The study undertaken by Shami and Hussain (2005) revealed that the availability of physical facilities in a school had a significance impact on students' performance. In the context to school facilities, environment in which the students learn is very crucial and without the suitable environment effective learning can not take place. Bruce (2006) has rightly called the learning environment as the third teacher but it is important that the environment is not an end in itself; we have to look at the settings. Space is an important factor in providing a rich environment for learning, but it is only significant to the degree that it assists in providing a suitable climate for learning. He further investigated that environment should provide a rich range of resources which is always available to children. This gives them scope to build on developing interests and to practice and apply what they have learned. Children then make their own learning. The room should be on the ground floor and has no hidden areas so that it can be easily supervised. It should also be adjacent to toilet facilities, approximately 40 to 60 square feet per child is recommended.

Bruce (2006) stated both indoor and outdoor environments can tempt children to learn. Indoor and outdoor space may not only differ according to climate, location, and situation, but also in terms of the program to be developed. Moreover, the furniture in the classroom should be movable, durable, comfortable, attractive, child-sized, and storable. Specifically for chairs it is required that it should be light enough for child to handle, movable without noise, and with backs about 22 inches high. Chairs need to be varied sizes, from 15 to 20 inches high, depending on ages and sizes of children. Display rack and bookshelves need to be movable and to be easily accessible to child. Each class should have a clock with a large face. Clean environment has positive effect on child's personality. Hussain (2003) supported this idea that influence of the environment starts much before the birth of the child. Child environment includes both home and school.

Over the past three decades many hundreds of studies have been conducted to ascertain the effect of the physical environment on education outcomes. Some studies have been statewide in scope; others have focused on only one or two schools. Some

have examined dozens of potential variables, while others have concentrated on single factors such as lighting or noise. Some have looked at the condition of school buildings, while others have focused more on individual classrooms. These studies conclude that adequate student capacity and appropriate acoustical conditions are important factors in a school environment (Fisher, 2001; Schneider, 2002; Earthman, 2004).

School buildings are of critical importance to the teaching and learning process. A study of 24 elementary schools in Georgia attributed quality of school design to a 14.2 percent difference in third grade achievement scores and a 9.7 percent difference in fifth grade achievement scores on the Iowa Test of Basic Skills (University of Georgia, 2000). Corcoran et al. (1988) found that physical conditions have direct positive and negative effects on teacher morale, sense of personal safety, feelings of effectiveness in the classroom, and on the general learning environment. Building renovations in one district led teachers to feel a renewed sense of hope, of commitment, a belief that the district cared about what went on that building. In dilapidated buildings in another district, the atmosphere was punctuated more by despair and frustration, with teachers reporting that leaking roofs, burned out lights, and broken toilets were the typical backdrop for teaching and learning.

Lowe (1990) found that the ability to control classroom temperature is crucial to the effective performance of both students and teachers. The good proxy measure of the quality of facility management is that of building condition. School buildings deteriorate with age and since a building's age is a factor in building deterioration, the condition of older buildings depends to a large extent on the adequacy of maintenance and operations. A research study conducted in the US context found that educational building conditions were hampering student performance, and estimated that improved facilities could lead to a 5.5% to 11% improvement on standardized tests (Edwards, 1991). In another study of school building design and student learning, Cash (1993) found that comfort factors appeared to have more effect on student achievement than did structural factors. High achievement was associated with schools that were air conditioned, enjoyed less noisy external environments, had less graffiti, and where classroom furniture and student lockers were in good repair. More recent reviews have consistently found relationships between building quality and academic outcomes (Earthman & Lemasters, 1996, 1998; Schneider, 2002; Earthman, 2004; Higgins, Hall, Wall, Woolner, & McCaughey, 2005).

These studies have also found that that design criteria and building conditions related to human comfort, indoor air quality, lighting, acoustical control, and secondary science laboratories have demonstrable impact on student achievement.

The quality of school buildings has also been related to student behavior, including vandalism, absenteeism, suspensions, disciplinary incidents, violence, and smoking (Schneider, 2002). There is now considerable empirical support for the argument that a variety of sustainable design characteristics that can have a significant influence on student behaviour and academic achievement. Awareness of design options are a very important part of improving and evaluating educational settings; therefore, as efforts are made to build or renovate schools and educational facilities, urgency is created regarding understanding designs that represent the most effective learning environment (Schneider, 2002).

A good school facility supports the educational enterprise. Research has shown that clean air, good light, and a small, quiet, comfortable, and safe learning environment are important for academic achievement (Cash 1993; Earthman & Lemasters 1996; Lemasters 1997; Lackney 1999; Cotton 2001; Schneider 2002). The condition, adequacy and management of a school building are directly under the control of the school district and state, hence improving school facilities offers opportunity for improving academic performance. A study of the District of Columbia school system found that students' standardized achievement scores were lower in schools with poor building conditions. Students in school buildings in poor condition had achievement that was 6% below schools in fair condition and 11% below schools in excellent condition (Edwards, 1991).

Cash (1993) examined the relationship between building condition and student achievement in small rural Virginia high schools. Student scores on achievement tests, adjusted for socioeconomic status, were found to be up to 5 percentile points lower in buildings with lower quality ratings. Achievement also appeared to be more directly related to cosmetic factors than to structural ones. Poorer achievement was associated with specific building condition factors such as substandard science facilities, air conditioning, locker conditions, classroom furniture, more graffiti, and noisy external environments. Similarly, Hines' (1996) study of large, urban high schools in Virginia also found a relationship between building condition and student achievement. Indeed, Hines

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found that student achievement was as much as 11 percentile points lower in substandard buildings as compared to above-standard buildings.

McGuffey (1982) concluded that heating and air conditioning systems appeared to be very important factors, along with special instructional facilities (i.e. science laboratories or equipment) and colour and interior painting, in contributing to student achievement. Proper building maintenance was also found to be related to better attitudes and fewer disciplinary problems in one cited study. Research indicates that the quality of air inside public school facilities may significantly affect students' ability to concentrate. The evidence suggests that youth, especially those under ten years of age, are more vulnerable than adults to the types of contaminants (asbestos, radon, and formaldehyde) found in some school facilities (Andrews & Neuroth, 1988).

Jago and Tanner (1999) found that adequate lighting and appropriate colour choices play a significant role in the achievement of students, affecting their ability to interpret the written word and their attention span.). Bruce (2006) claimed that the indoor and outdoor environments should complement rather than duplicate each other. Simple and safe facilities, equipment, and furnishings permit freedom of activity and provide for creativity on the part of the child. Concept of the learning environment makes it essential that all physical facilities, equipment, and materials are considered carefully in their relationship to the total learning situation and those they are selected and used in accordance with the basic principles of child growth. Naseer and Saeed (2007) found in the Pakistani context that there is a strong relationship among school size and class size and students' achievement. Class size research, most notably the longitudinal research represented by the Tennessee Student/ Teacher Area Ratio STAR Project and the follow-up Lasting Benefits Study, points directly to a social and physical link to achievement (Achilles, 1992; Finn & Achilles, 1990). Project STAR followed 6,500 children from kindergarten through third grade. Children in smaller classes (13-17 per room) outperformed those in regular-sized classes (22-25 per room) as measured by test scores such as the Stanford Achievement Test.

Adequate provision of school facilities in relation to the students' population is important because the quality of education that our children receive is affected by the availability or non-availability of physical facilities (Adesina, 1990). Furthermore, provision of necessary facilities in schools provides a challenging environment for

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students to learn and for effective teaching by the teachers (Bolorunduro, 1998). On the other hand, lack of adequate facilities such as textbooks, ill-equipped classrooms, laboratories, workshops and library are among the probable causes of student's poor performance in examinations (Olubor, 1998).

Keeping in view the above literature review, the present study has been designed to investigate the status of missing physical facilities and actual needs in public sector schools in Punjab province of Pakistan, so that some research-based recommendations may be put forwarded to the government to fill in the gaps with regard to missing physical facilities in these schools. The study was based on the following key questions.

1. What are the missing physical facilities in the sampled schools?
2. Is there any tehsil-wise difference in regard to missing physical facilities in the sampled schools?
3. Is there any district-wise difference in regard to the missing physical facilities in the sampled schools?
4. Is there any difference in regard to missing physical facilities in different school types in the sampled schools?
5. Is there any gender-wise difference in regard to missing physical facilities in the sampled schools?
6. Is there any locality-wise (rural/urban) difference regarding missing physical facilities in the sampled schools?
7. What are the actual needs in the context to physical facilities in the sampled schools?

Methodology

The study was descriptive (survey-type) in nature. It was conducted in the six sampled districts drawn from southern and eastern parts of the Punjab province of Pakistan. A total of 79 schools were drawn at random. All categories of schools i.e. primary, elementary, high and higher secondary were included in the sample. Stratified random sampling technique was used for schools selection to give due representation to the male/ female and rural/urban schools of all types in these districts. Table 1 shows the sample selection from different dimensions.

Sr. No.	District	Gender		Location		School type*				Total
		Male	Female	Rural	Urban	P	E	H	HS	
1	Bahawal nagar	3	9	6	6	3	5	4	-	12
2	Bahawalpur	5	7	5	7	7	3	2	-	12
3	Layyah	8	9	10	7	4	5	8	-	17
4	Multan	7	5	3	9	2	3	5	2	12
5	Narowal	7	5	7	5	3	3	6	-	12
6	Sialkot	8	6	9	5	4	3	5	2	14
Total		38	41	40	39	23	22	30	4	79

*P = Primary, E = Elementary, H = High, HS = Higher Secondary

Table 1 describes the sample of the study which consists of 79 schools including: 38 male, 41 female; 40 rural, 39 urban schools; 23 primary, 22 elementary, 30 high and four higher secondary schools. In southern Punjab, from district Bahawalnagar, a total of 12 schools including three male and nine female were selected. Of these 12 schools, six were urban and the remaining six were rural. Regarding school type, three were primary, five were elementary, and four were high schools. In Bahawalpur district, the number of selected schools was also 12 including five male and seven female, and the same number of rural and urban schools in the same order. As far as type of schools is concerned, seven were primary, three were elementary and two were high. From district Layyah, a total of 17 schools were drawn in which eight were boys and nine were girls, and ten were rural and seven were urban. Among these schools four were primary, five were elementary, and eight were high. The sample from district Multan comprised of seven boys and five girls schools; three rural and nine urban schools. As regards school type, these included two primary, three elementary, five high and two higher secondary schools.

As regards the sample drawn from the two districts of eastern Punjab, i.e. Narowal and Sialkot, a total of 26 schools 12 from Narowal and 14 from Sialkot. In Narowal, seven schools were of boys and five were of girls and same was the number with respect to rural and urban schools. In Sialkot, eight schools were of boys and six were of girls and with respect to locality, nine schools were rural and five schools were urban. Regarding school type, four were primary, three were elementary, five were high

and the remaining two were higher secondary.

In nutshell among the 79 selected schools, 38 were male and 41 were female. Similarly with reference to locality 40 were rural and 39 were urban. In this way the number of selected schools was almost the same with reference to gender and locality strata. Regarding school type, the number of selected schools was 23 primary, 22 elementary, 30 high and four higher secondary.

Instrumentation and data collection

An inspection Performa for head teachers and informal discussion with head teachers and senior teachers were used as data collection tools. The Inspection Performa was developed by a team of experts in Education Department, Government of the Punjab. It consisted of ten questions along with some biographical information required to be filled in by the respondents. Among these questions, seven were in the form of checklist, mostly having answers in yes/no and the remaining were in open ended form and the respondents were free to give their opinions.

The questions were asked about school building, class rooms, furniture, toilets, IT lab, drinking water, plantation, enrolment campaign, cleanliness of building roof and outlet drainage points, boards bearing school names, and school requirements/needs. For clarity and cross check the information, some questions were asked from the head teachers and senior teachers in informal mode in 29 schools out of the total 79 sampled schools. To ensure the validity of the instrument, the instrument was presented to a panel of experts. In the light of their opinion, necessary amendments were made with regard to number of questions, language and format of the tool, prior to data collection.

Some of the data was collected by senior education management. Prior to visit, lists of schools were obtained from the EDO (Education) offices and they were properly informed about the visits. They approached the head teachers of the respective schools and obtained necessary information on prescribed structured instrument as per schedule already conveyed to them.

Data Analysis and Findings

Analysis of questions in checklist form. In the inspection Performa, two types of questions were included. One type was 'checklist' having answers in yes/no form and the other was 'open ended form'. Out of 10 questions, seven belonged to the first category and the rest of them belonged to the second category.

Table 2: Responses of the respondents to checklist type questions

Sr. No	Statements	Yes	%	No	%	NR*	%
1	Whether irreparable furniture has been auctioned or not or it is still in the school store?	10	12.7	65	82.3	04	5.1
2	Whether the school building roofs and drains at outlet points have been cleaned or not?	36	45.6	28	35.4	15	19
3(a)	Whether toilets are functional or not? If not, then whether this facility would be available after summer vacation or not?	47	59.5	24	30.4	08	10.1
3(b)	Whether drinking water facility is available or not? If not, then whether this facility will be available after summer vacation or not?	48	60.8	24	30.4	07	8.9
4	Whether the school furniture has been repaired or not?	35	44.3	35	44.3	09	11.4
5	Whether the school building has been whitewashed and repaired in general?	33	41.8	41	51.9	05	6.3
6	Whether the boards bearing school names, outside the school have been repaired and the school names have been corrected?	50	63.3	22	27.8	07	8.9
7(a)	Whether room for IT lab has been constructed or not?	33	41.8	30	38	16	20.3
7(b)	Whether necessary equipment and computer teacher has been provided or not?	16	20.3	46	58.2	17	21.5

* No Response

Table 2 indicates that 12.7 % school heads auctioned their irreparable furniture, while 82.3 % school heads did not auction such furniture; 5.1 % school heads did not respond to this question. In response to the question regarding cleaning of school building roofs and drainage outlet points, 45.6 % school heads completed this target but 35.4 % schools did not complete it; 19 % school heads did not respond. The third question consisted of two parts, the first part was concerned with the availability of functional toilets and the second part was related to the availability of drinking water. While responding to first part of this question 59.5% respondents were of the view that they had this facility while 30.4% were of the view that they had not the provision of this facility;

10.1% heads did not reply. In response to the second part of this question, 60.8% heads were of the view that they avail this facility, but on the other hand 30.4 % responded that they had not this facility and the remaining 8.9% did not reply.

In response to the question about the repair of school furniture, almost same number of schools responded positively and negatively and the remaining 11.4% did not respond. Regarding the question of school building whitewash and general repair, 41.8 % heads were of the view that they had completed these tasks, while 51.9% were of the view that they had not completed these tasks; 6.3 % remained silent. In response to the question regarding the repair and correction of boards bearing school names outside the building, 63.3% school heads answered positively but 27.8 % answered negatively and 8.9% did not respond. As far as the question regarding IT lab and related facilities was concerned, again there were two parts of this question. The first part was about the availability of IT lab and the second part was concerned with the related facilities like lab furniture, availability of computers and computer teacher etc. In response to the first part of this question, 41.8 % responded that they had this facility and 38% responded that they did not avail this facility; 20.3% of the head teachers did not respond at all.

Analysis of Open-ended Questions

In the open ended questions, responses of the respondents were recorded and the both type of data were analyzed on the basis of frequency and percentage. One of the key questions asked in open ended form was about the plantation in the institution. The question was asked to know that whether the school administration has initiated plantation in their schools in the rainy season or not? A probing question was added that if it has been started, then how the planning was done and how many plants were planted in the current year. Table 3 reveals the opinions of the respondents about various aspects of plantation.

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Table 3: Head teachers' opinions about plantation

Sr. No.	Statements	Number	%
1	Plantation will begin next week	4	5.1
2	Plants grown	29	36.7
3	Plantation will be done in future	16	20.2
4	Plantation under consideration	7	8.9
5	No plants were grown	12	15.2

In response to the question concerning plantation in the schools, a number of opinions were provided by the respondents. A few (5.1%) of the respondents said that they will begin this campaign next week, while 36.7% said that they had planted the plants and some of them also mentioned the number of plants grown. 20.2% declared that they will grow plants in future but did not disclose any time limit; 8.9 % said that the process of plantation was under consideration; and 15.2 % disclosed that they did not grow any plants.

The second question in open ended form was about the enrolment campaign initiated by the institution. The respondents were asked about the steps taken by them to enhancing the enrolment rate of the students. Table 4 gives different opinions provided by the respondents in this regard.

Table 4: Steps taken for enrolment campaign

Sr. No.	Statements	Number	%
1	Approached parents	13	16.4
2	School Council	32	40.5
3	No steps taken	7	8.9
4	Others	13	16.4

Table 4 explains the situation about enrolment campaign. In response to this question 16.4% school heads were of the view that they approached the parents to convince them to send their children to schools; 40.5 said that they have initiated this tasks at the platform of school councils; 8.9% said that so far they did not take any measures in this regard; and 16.4 % opined that they have taken some measures like visit of teachers to the community especially on the occasion of harvesting the crops so as to motivate them to send their children to schools. Some of the teachers motivated the

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community members that they will arrange some technical and computer courses for their children so as to enhance their practical skills. A few of the head teachers asserted that that their schools were already overcrowded in terms of students enrolment, therefore they don't need for any campaign in this regard.

The third and the last open ended question was about the needs and requirements of the school. Regarding the needs, the respondents were asked about the requirements of their institution. Moreover, they were also asked to tell about their actual needs. A number of opinions were put forwarded in response to this question which can be seen in table 5.

Table 5: Views about needs and requirements of the schools

Sr. No.	Statement	Number	%
1	Furniture required	28	35.4
2	Classrooms required	45	56.9
3	Boundary wall	8	10.1
4	Drinking water	8	10.1
5	Teachers required	23	29.1
6	Others	17	21.5

Table 5 describes the analysis of the question about the schools' actual need and requirements. A number of opinions and suggestions were put forwarded by the head teachers. Regarding the requirements of the schools, different needs were focused by the school representatives such as lack of furniture and class rooms including science and computer labs and a big hall, absence of boundary wall or requirement of raising its height, provision of drinking water, provision of functional toilets and proper drainage system, lack of teachers especially science, math, computer and English teachers, repair of building, provision of class four staff like peons, naib qasids , security guards etc. A most important factor was that many schools were working in rented buildings, and there were cases in the courts against these schools by the land lords; the head teachers or their representatives have to go to the courts to defend their cases. In this way a much of the time of head teacher or senior teacher was wasted in court matter and it resulted in the loss of teaching learning. Hence, the schools constantly work in a state of fear that any day they may vacate the building.

In response to question 3, 35.4% of the head teachers said that they face the problem of shortage of furniture, 56.9% demanded classrooms including labs and halls, 10.1% were of the view that the boundary wall should be constructed or improved, and the same percentage of respondents complained against the non-availability of drinking water, 29.1% were facing the shortage of teachers especially science, math, computer and English teachers, and the remaining 21.5% asserted for other needs like provision of play grounds, up-gradation of their schools, provision of functional toilets and drainage system, repair of damaged buildings, and shortage of class four staff. A few expressed that schools have their own buildings. It was surprising that a few (hardly 5%) seemed quite satisfied in regard to the provision of the existing physical facilities and they were of the opinion that they have all the facilities and they need nothing.

Analysis of Research Questions

In order to answer the research questions, the data were firstly coded and then analyzed using SPSS. Chi Square Test was used to test the significance difference across the different variables at 0.05 level of significance. Separate analysis was made with regard to the variables of tehsil/district, school type and gender, and school location (rural/urban).

Data analysis by tehsil and district

Data was analysed by district and also with respect to the tehsil, the next smaller unit of population. Usually each district contains two to four tehsils. Table 6 indicates the status of missing physical facilities by district and tehsil.

Table 6: Tehsil and district-wise results using Chi Square Test

Sr. No.	Aspects of missing physical facilities based on tehsils and districts	Sign. (2- tail) values	
		Tehsils	Districts
1	Auction of non repairable furniture	.304	.525
2	Cleaning of roofs and outlet drainage points	.238	.061
3	Availability of toilets	.546	.232
4	Availability of drinking water	.781	.578
5	Repair of furniture	.265	.033*
6	General repair of building and whitewash	.298	.280
7	Repair of boards bearing school names	.230	.843

8	Provision of IT rooms	.253	.044*
9	Provision of IT facilities	.130	.227
10	Plantation of plants	.138	.046*
11	Enrolment campaign	.001*	.000*
12	Furniture required	.620	.224
13	Classrooms required	.038*	.028*
14	Boundary wall required	.162	.492
15	Drinking water required	.026*	.145
16	Teachers required	.787	.960
17	Other requirements	.022*	.043*

* Difference is significant at 0.05 level of significance

Table 6 gives the picture showing results obtained through Chi Square Test at tehsil and district levels respectively. It is evident from the above values that there is a significant difference among different tehsils with reference to enrolment campaign, requirement of classrooms and drinking water and other requirements. Regarding other missing physical facilities (serial number 1-10, 12, 14, 16), there is no significant difference among the tehsils. The results show that in all tehsils there is severe problem of drinking water, and shortage of teachers in the subjects of science, mathematics, computer and English. On the other hand, the schools of some tehsils had launched the enrolment campaign effectively, while others either remained passive in launching enrolment campaign or they did not feel need for such campaign due to already overcrowded classes or no adequate building.

Table 6 also depicts the district-wise analysis. It reveals that there is a significant difference among districts with regard to repair of furniture, provision of IT rooms, plantation of plants, enrolment campaign, provision of classrooms and other requirements. No significant difference with respect to other missing physical facilities (serial numbers 1-4, 6-7, 9, 12, 14, 16). Statistical treatment to data revealed that there was found significant difference in the six districts with regard to missing physical facilities in repair of furniture, provision of IT rooms, enrolment campaign, plantation and other requirements. Enrolment campaign varied largely in the schools across the six districts while a little difference was found in regard to shortage of teachers which shows that the problem of teachers' shortage is common in all the districts.

Data analysis by school-type

Data was also analyzed by school category i.e. primary/elementary, high and higher secondary. Table 7 depicts the results obtained through Chi Square Test in regard to difference in the missing physical facilities.

Table 7: Results regarding school type

Sr. No.	Aspects of missing physical facilities regarding school type	Sign(2-tail) values
1	Auction of non repairable furniture	.371
2	Cleaning of roofs and outlet drainage points	.226
3	Availability of toilets	.073
4	Availability of drinking water	.049*
5	Repair of furniture	.060
6	General repair of building and whitewash	.422
7	Repair of boards bearing school names	.430
8	Provision of IT rooms	.010*
9	Provision of IT facilities	.048*
10	Plantation of plants	.192
11	Enrolment campaign	.460
12	Furniture required	.249
13	Classrooms required	.043*
14	Boundary wall required	.788
15	Drinking water required	.783
16	Teachers required	.049*
17	Other requirements	.542

*Difference is significant at 0.05 level of significance.

Table 7 describes whether or not there exists any significant difference in the various missing physical facilities among various schools belonging to different school types like primary, elementary, high and higher secondary. It is clear from the table that there is a significant difference with regard to availability of drinking water, provision of IT rooms, provision of IT facilities, requirement of class rooms and teachers while there is no significant difference in the remaining physical facilities.

Statistical treatment to data revealed that significant difference exists regarding provision of IT rooms while a little difference was found in the aspects of boundary walls and drinking which shows that these are common problems in all the schools in the sampled six districts.

Data analysis by gender

Gender is generally considered as one of the most common variables studied in different research studies relating to social sciences. In the context of Pakistan, as all elementary, high and higher secondary schools for boys and girls are separate, therefore it was essential to analyze data by gender (male/female). Table 8 indicates gender-wise results obtained through Chi Square Test.

Table 8: Results regarding gender

Sr. No.	Aspects of missing physical facilities regarding gender	Sign. (2-tail) values
1	Auction of non repairable furniture	.716
2	Cleaning of roofs and outlet drainage points	.104
3	Availability of toilets	.943
4	Availability of drinking water	.737
5	Repair of furniture	.049*
6	General repair of building and whitewash	.284
7	Repair of boards bearing school names	.909
8	Provision of IT rooms	.360
9	Provision of IT facilities	.301
10	Plantation of plants	.953
11	Enrolment campaign	.531
12	Furniture required	.531
13	Classrooms required	.414
14	Boundary wall required	.721
15	Drinking water required	.246
16	Teachers required	.660
17	Other requirements	.341

*Difference is significant at 0.05 level of significance

Table 8 shows gender-wise difference in regard to the missing physical facilities. The results show that difference is significant only with regard to one aspect of missing physical facilities i.e. repair of furniture. There was found no significant difference in any of the other aspects. The least difference was found in regard to the components of repair of boards bearing school names, and plantation task achievement. It shows that all male and female head teachers were facing similar type of problems concerning missing physical facilities.

Data analysis by school location

After gender, the most popular variables to be studied in social science research is educational context is school location i.e. urban or rural location of schools. This can be seen in table 9.

Table 9: Results regarding locality (rural/urban)

Sr. No.	Aspects of missing physical facilities regarding locality	Sign(2-tail) values
1	Auction of non repairable furniture	.317
2	Cleaning of roofs and outlet drainage points	.014*
3	Availability of toilets	.360
4	Availability of drinking water	.045*
5	Repair of furniture	.631
6	General repair of building and whitewash	.065
7	Repair of boards bearing school names	.966
8	Provision of IT rooms	.516
9	Provision of IT facilities	.895
10	Plantation of plants	.152
11	Enrolment campaign	.464
12	Furniture required	.705
13	Classrooms required	.791
14	Boundary wall required	.213
15	Drinking water required	.790
16	Teachers required	.436
17	Other requirements	.204

* Difference is significant at 0.05 level of significance

Table 9 explores the status of missing physical facilities with respect to school locality i.e. rural and urban. It is evident from the chi-square results that there is a significant difference among rural and urban schools with respect to cleaning of roofs and outlet drainage points and availability of drinking water. Against all other missing facilities no significant difference was found. The least difference was found in regard to the items of repair of boards bearing school names and provision of IT rooms.

Discussion

In view of the findings of the study, it is evident that the physical facilities in public sector schools of Punjab province in Pakistan are unsatisfactory. All schools face almost similar problems in terms of lack of physical infrastructure, even the basic necessities such as drinking water, toilets, building and classrooms which Bruce (2006)

declared as 'third teacher'.

It is pertinent to mention here that the lack of physical facilities and staff is not a severe problem; rather in most cases exploitation of resources in an effective way is the problem. For example, many schools have furniture that can be repaired and can be used for students in the classrooms. In some cases, cleaning of school building roofs and outlet drainage points are desired. About one-thirds of the schools, particularly primary or elementary have no functional toilets. Under these circumstances, the students especially girls feel embarrassing and it seems one of the major causes of drop out as well. About one-thirds schools have no clean drinking water; in many schools it has been reported that no proper mechanism of cleaning water is exists which cause diseases among the children.

School outlook and appearance does matter. It has been found that about one third of the schools have no proper boards bearing names of schools. Similar situation prevails about boundary walls and play grounds. In most of the elementary schools, students do not have adequate access to co-curricular activities. The government could hardly meet the provision of computers and computer teacher for the secondary and higher secondary schools. Schools have been asked for adequate plantation, but this target could not have met due to poverty in certain localities and schools inadequate resources. Of course, certain cases, lack of commitment has been seen one of the major reasons i.e. the head teachers and teachers have not duly taken it up the campaign of plantation.

In response to efforts for enrolment campaign on the part of schools, most of the schools use the platform of school councils, but no other special strategies have been reported. A small number of school heads have reported that they employed different other strategies. For example, some claimed that they and their teachers approach the community and encourage them to sending children to schools. Some of the schools have no adequate building and teachers; therefore do not desire to launch enrolment campaign. Teachers' shortage has become one of the key problems in most of the schools; this results relatively less inclination of parents to send their children in government schools. Many parent like to send their children to nearby English medium schools, where the heads make efforts to control the drop-outs of children and teachers at least get them busy

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in teaching learning process. The shortage of science, mathematics and English teachers has become a common problem in about two-thirds of the public sector schools, especially in the rural areas. One of the main reasons of students' absenteeism from schools, especially in the rural schools is that parent used to engage them in the harvesting season. In view of this scenario, teaching learning process in the government schools has been adversely affecting.

It is likely to mention here that against most of the physical facilities, no significant differences across the different variables have been investigated, which means that similar type of problems exist in all the government schools. Significant differences have been found in regard to classrooms and enrolment campaign (tehsil and district-wise analysis), drinking water (school-type and location-wise analysis), classrooms and provision of IT facilities (school-category-wise analysis), repair of furniture (gender-wise analysis), and cleaning of roofs and drainage outlet points (school location i.e. rural/urban-wise analysis). The situation in regard to physical facilities has been found relatively better in urban and female schools. The high and higher secondary schools are found relatively better in comparison to primary or elementary schools. This might be due to good leadership and/or better resources in terms of staff and finance in high and higher secondary schools. Our primary and elementary schools have no designated head teachers which may be one of the main causes of poor infrastructure in these schools. In such a non-conducive teaching learning environment, the quality of education seems difficult to ensure. The previous research has clearly revealed that conducive learning environment is essential for schools' better outcomes. The availability of better physical facilities in schools has a significant impact on students' achievement (Hussain, 2003; Shami and Hussain, 2005; Bruce, 2006). Other studies (Fisher, 2001; Schneider, 2002; Earthman, 2004) reveal that adequate student capacity and appropriate acoustical conditions are important factors in a school to accelerate the overall teaching learning environment.

Recommendations

Keeping in view the findings of the study, following recommendations are hereby put forwarded for the Government of Punjab, School Education Department to improve the situation of schools in regard to missing physical facilities.

- The schools facing shortage of furniture may be allowed to get repaired the damaged furniture present in the stores from the already available funds. The furniture which is in a very bad or poor condition should be auctioned, and the amount obtained so may be utilized for repair of other furniture or equipment.

- The heads may be directed to get the roofs and outlet drainage points cleaned and clear.

- Provision of toilets is necessary. Schools having no such facility should generate their resources, but where such opportunity can not be explored, the government needs to provide funds to meet this basic need.

- Schools should have adequate facility of drinking water. This problem may be temporarily overcome by encouraging students to bring water bottles from their homes, but the schools should make efforts to make permanent solution of this problem either generating their own resources or asking help from the government or community.

- Regarding whitewash and general repair of the building, if a school has no funds, then this problem can be overcome through exploiting the role of school council.

- If IT lab is not available, but other facilities like computers and teachers are available then some science labs may temporarily be used as computer lab. If lab and essential equipment exist, but teacher is not available then for the time being any science teacher having some know-how of the computer skills may be given this assignment or some volunteer from the community may be requested to take this responsibility.

- Teachers' shortage problem can be overcome to a large extent by proper rationalization of teaching staff in schools. The School Education Department has already taken up this issue.

- School councils may also play their pivotal role to launch enrolment campaigns and look for resources for proper boundary walls of schools.

- Plantation campaigns should be launched in schools and media should also play its role in this regard. The head teacher should keep liaison with the Forest

Department to seek advice and help. The schools may get plants on nominal rates.

- Designated head teachers of grade 17 should be appointed in all the government primary/elementary schools of Punjab.

- Government should take the initiative to settle down the problem of rented buildings. Either they should be purchased or community may be motivated for free land and the government should provide funds for construction of building and buy necessary equipment.

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