

**RELATIONAL ANALYSIS OF PHYSICAL FACILITIES IN GOVERNMENT
SCHOOLS AND THEIR IMPACTS ON STUDENTS' ACADEMIC ACHIEVEMENTS
AND BEHAVIORAL DEVELOPMENT IN MALAKAND DIVISION**

By

Dr. Arab Naz¹,
Waseem Khan²,
Nasim Khan³

Abstract

Physical infrastructure plays a pivotal role in performance of students in academics as well as co-curricular performance. The study is framed to investigate students' academic performance in relation to the available physical facilities in *Malakand* division of *Khyber Pakhtunkhwa* Pakistan. The data has been obtained from secondary and field sources related to the issue of building and class size, quality of physical facilities as well as their impacts on test scores, grades, class participation etc. The field information is obtained from 300 samples of four selected boys' high schools through stratified sampling technique using interview schedule. The field data was finally classified in the form of tables, and given frequency with respect to various observations with detailed discussion at the end. The information thus concludes that physical infrastructural facilities highly influence students' academic performance and personality development.

Key words: Physical facilities, grades, score, class, building, academic achievement etc.

¹Chairman Department of Sociology and Social Work, University of Malakand *Khyber Pakhtunkhwa* Pakistan

²Lecturer and PhD scholar, Department of Sociology and Social Work, University of Malakand *Khyber Pakhtunkhwa* Pakistan

³Lecturer Department of Sociology AIOU Islamabad Pakistan

Study Background

Physical infrastructure is pivotal for any educational institution and is directly associated with performance of students in academics as well as in co-curricular development (McGuffey's, 1982). Similarly, a close and constant link between building availability and tests scores among students has been observed by Earthman & Lemasters, (1998) while Plumley (1978) and Chan (1979) are of the opinion that physical facilities improve basic skills and higher grade across a range of tests. Research studies show that students in facilitated infrastructure in school perform well for health, attendance, and discipline (Bowers & Burkett, 1987) and even in behavior and achievements in personality as well (Phillips, 1997 and Jago & Tanner, 1999). Further, the available design, mapping and topography is also important as noted by Andersen (1999) whereas Lewis (2000) has judged the effects of such qualities over students learning and skill development and has found positive outputs.

Another important aspect of such facilities is personality organization where Earthman et al. (1995) argue that structural differences are the indicators in quality education and behavioral formation. Besides, the comfortable physical environment as noted by Coopers (2001) is playing an important role in teachers' motivation, school leadership, and students learning (Henderson & Raywid, 1994). However, research scholars have linked the availability of school and its size to cultural environment (Howley, Strange, & Bickel, 1999) and even to the government policies (Cotton, 1996 & 2001) because in both the cases whether large or small, valuable results are available. Further, many of the scholars treated school as an ecological environment for behavior formation and large size are considered as signs of power and rightness (Barker & Gump, 1964).

Similarly, many scholars have pointed towards the positive outcomes of school size as noted by Wasley et al. (2000) that small size improves education through intimate learning communities while Schneider et al, (2000) and Nathan & Febey (2001) add that small schools encourage parental involvement that facilitate both teachers and students. Besides, school size has advantages and disadvantages as Raywid (1999) favors small size of the schools for students' satisfaction and to reduce dropout ratio while Fowler & Walberg (1991) and Lee & Smith, (1997) and Keller, (2000) found that higher test scores are linked with school size.

The school size and other infrastructural components are also effective in students socio-psychological and personality development i.e. small size schools can reduce violence, aggression and disruptive behavior as stated by Gregory (1992), Stockard & Mayberry (1992) and Kershaw & Blank (1993). Further, school size can improve students' attitudes, behavior and social conformity and produces "we feeling" (Barker & Gump, 1964). Further, school size can enhance students' participation in school activities, their satisfaction, attendance, and feeling of belongingness (Fowler & Walberg, 1991 and Stockard & Mayberry 1992) and to Toenjes (1989) it is playing a pivotal role in reducing drop-out as well as increases higher graduation ratio with positive attitude towards academic performance (Pittman & Haughwout 1987, Gottfredson 1985, Stockard & Mayberry 1992, Lee & Loeb, 2000). In a similar context, school infrastructure and physical facilities along-with proper size of class room is very much important in students' academics i.e. large or small size has its own benefits to enhance the academic performance (National Association of Elementary School Principals, 2000, Hanushek, 1999). Similarly, using a range of data have found that reducing class size has no effect on educational outcomes as noted by Hoxby (2000) while analysis of the relationship between class size and students' achievement, Johnson (2000) finds no effect of class size on reading scores, other things being equal while Mosteller (1995) and Slavin (1989) find effects only for very large declines in class size. However, Ferguson (1991) is of the view that a significant relationship among teacher

quality, class size, and student achievement exists and such argument is also supported by Folger & Breda (1989) and, Ferguson & Ladd (1996). Thus, it can be concluded that school infrastructure, availability and size of buildings, quality and size of schools, class room and class rooms' size have multiple positive impacts on students' academic performance and achievement.

Objectives of the Study

1. To analyze how students perceive school size as an indicator in their academic achievement
2. To know about the impacts of physical facilities in students' personality and behavioral modification
- 3.

Proposed Hypothesis

1. Availability of better infrastructural facilities are directly concerned with students' academic achievement
2. Better availability of physical and infrastructural facilities elegantly develop students' behaviors and bring lucrative changes in their personality

Methods and Material

The current study is about the analysis of the available school buildings, rooms, play grounds and other such physical facilities and their impacts on students' academic performance, behavioral and personality development in *Malakand* division of *Khyber Pakhtunkhwa* Pakistan. A pure quantitative design has been adopted for empirical data on student's educational and behavioral performance in relation to physical infrastructure. The field data is obtained from 300 samples of four selected boys' high schools coded as Government High School Number-1 GHS-1, GHS-2, GHS-3, and GHS-4, from two selected towns of *Thana* and *Batkhela* through stratified sampling technique by using interview schedule. The collected information was finally classified and coded with the specific observations, distributed into frequencies in tables along with discussion in various dimensions of the study.

Results and Discussion

Physical facilities and Students' Academic Performance

The perception of human being is usually based on model of the world and their demonstrated utility as stated by Smith et al, (2003) while students' perceive the utility of school size as an indicator for achieved academic performance. The field data shows that physical facilities have multiple impacts on students' academic performance and the statistical enumeration explicates that class participation and other class related activities have been promoted due to physical facilities and the statement is supported by a majority of 73% students to a greater extent while 82% of the sample data reflects that physical facilities at school enhances students' confidence level to a major extent. Besides, the information from the field data indicate the availability of physical facilities increases students' learning and motivation for class participation i.e. 84% of the sample support the statement to a greater extent whereas 83% data analyzed in the table clearly shows that better grades are result of physical facilities. Similarly, achieving better results and improving students' creativity (i.e. supported by 87% of the data to a greater extent) and promoting students' participation in co-curricular activities i.e.

85% student support the statement to a greater extent are directly associated with the available physical or infrastructural facilities available to students in schools (see Table-1).

Table-1
Physical Facilities and Nature of Academic Performance
(Cross Tabulation, Sample Size, N=300)

Nature of Performance	Level and Extent of Performance	
	To Some Extent	To Greater Extent
Increase in Class Work and Activities	27%	73%
Promoting level of Confidence	18%	82%
Increase in Class Attendance	21%	79%
Increase in Students Learning and Motivation	16%	84%
Performance in Grade Achievement	17%	83%
Achieving Better Results and Students' Creativity	17%	87%
Promoting Participation in C-Curricular activities	15%	85%

Note: ($P=.000^{**} < .05$ shows that the relation of the physical facilities with students' academic achievement is highly significant as ($\chi^2 = 76.93$, D.f. =9)

Resultantly, the test statistics obtained for physical facilities and students' academic performance with the application of chi-square test with the results as $P=.000^{**} < .05$ shows highly significant relationship at ($\chi^2 = 76.93$, D.f. =9) whereas the correlation for the association is given as under:

Correlation of physical facilities and Students Academic Performance

		Performance/areas that is affected	Data regarding physical facilities available
Nature of Academic aspects	Pearson Correlation	1	0.934**
	Sig. (2-tailed)		.000
	N	300	300
Physical facilities available	Pearson Correlation	.932**	1
	Sig. (2-tailed)	.000	
	N	300	300

(** The given value of Correlation is highly significant where the judgment is 0.01 level (2-tailed), $r(300) = 0.934^{**}$; $p < .01$, $r^2 = 0.91$) and the sharing is 87% of the variance which demonstrate strong association

The results of the correlation as given **Correlation is significant at the 0.01 level (2-tailed), $r(300) = 0.932^{**}$; $p < .01$, $r^2 = 0.91$, while 87% of the variance is shared which is obviously showing a strong association for the given variables.

Physical Facilities, Students Personality and Behavioral Development

Behavior of a person refers to his/her that is prevalent to change the relationship to the observed environment for producing actions and mannerism (Dusenbery, 2009). Similarly, educational institutions are pivotal in molding the behavior and personality of the individual through learning instruments and available social and physical infrastructure. The analysis with respect to the personality and behavior output illustrates that physical facilities are pivotal in behavioral development and personality formation of the students. The data analyzed in table-2 indicate that availability of physical facilities to students encourage positive attitudes and high

self-esteem among students in the academic institutions and the notion was supported to a greater extent by 83% of the sample population, which indirectly influences students' behavioral capacity and personality. The statistical interpretation of the data further demonstrates that availability of physical facilities increases positive social relations among students in school i.e. 87% of the students support the students to a greater level while 82% of the respondents were of the opinion that such facilities have a positive role in reducing aggression in behavioral aspects of the students to a greater extent. Further, the empirical data reflects that physical facilities develop friendly atmosphere among students and such statement has been supported by a majority of 86% of the respondents to a greater extent whereas such atmosphere bring emotional stability was supported by 79% of the sample population to a greater extent. Similarly, infrastructural components in educational institutions directly influences the personality and behavior of the students as the tabulated data in this context clearly demonstrate that physical facilities available to students at school provide conducive environment to bring compromising attitude among students as 81% of the students support the notion to a greater extent. Further, love and affection for fellow-beings was agreed upon by 82% of the students to greater extent, reduction of frustration, anxiety and tension was supported by 78% while the encouragement of absorption and flexibility in behavior of students was supported by 77% of the sample data to greater extent. Thus, the information illustrate that physical facilities have a positive relations with students behavior and personality development (see table-2 below):

Table-2
Physical Facilities, Students Behavioral and personality growth
(Cross Tabulation, Sample Size, N=300)

Nature of personality and Behavioral Development	Extent of Development	
	To Some Extent	To Greater Extent
Formation of positive and high Self-Esteem	17%	83%
Increase positivity in social relations	13%	87%
Decrease in behavioral Aggressiveness	18%	82%
Encourage friendly Relations	14%	86%
Develop Emotional Stability	21%	79%
Bringing Comprising attitudes	19%	81%
Encourage love and affection for fellow being	18%	82%
Reduces Frustration, tension and anxiety	22%	78%
Encourage Absorption and Flexibility in behavior	23%	77%

Note: (P=.000** < .05 and found a highly significant relationship between Physical Facilities, Behavioral and personality development with the value of $\chi^2 = 66.89$, D.f. =8

The application of the test statistics on the hypothetical statements was tested through the application of chi-square test whereas the value of $P=.000^{**} < .05$ that shows a significant relationship regarding the positive outcome of infrastructural facilities with obtained values as $\chi^2 = 66.89$, D.f. =8. Similarly, the associations of the given aspects were analyzed through correlation as given in the following table:

Correlation for Students Behavioral and personality Development

	Physical and infrastructural components	Personality and Behavioral Development
Physical and infrastructural	Pearson Correlation Sig. (2-tailed)	1 0.947** .000

components	N	300	300
Personality and Behavioral Development	Pearson Correlation	.947**	1
	Sig. (2-tailed)	.000	
	N	300	300

(The given **Correlation is significant with the value of 0.01 (2-tailed), $r(300) = 0.947^{**}$; $p < .01$. $r^2 = 0.91$)
 (As 83% of sample variance is shared, therefore the association is a strong one)

With the given tabulated information, the statistical results of the various test and correlation illustrates that the given results i.e. **Correlation is highly significant at the 0.01 level (2-tailed), $r(300) = 0.947^{**}$; $p < .01$. $r^2 = 0.91$ and the sharing of 83% of the variance indicate that the association is obviously a strong in nature and further, results of chi-square application prove that random and non-random variables and strongly linked with one another.

Conclusion

It is obvious that physical and infrastructural facilities are playing an important role in development of education and enhancement of students academics, behavior and personality formation. The analyses of the secondary information illustrate a consensus about the positive effects of physical and infrastructural facilities on students' performance at various levels. However, in support of the given argument, the empirical analyses also indicate that availability of physical and infrastructural components in education have greater positive impacts on students' overall performance. Such facilities enhance students' participation during class, increases attendance of the students, enhance students learning capacity as well as remove negativity in behavior of students for one another. Similarly, physical and infrastructural components have positive role in motivation of students, performance and grade achievement, producing better results in examination as well as promotion of co-curricular activities as well. Similarly, in relation to improve the behavioral and personality aspects students, the study findings express that physical and infrastructural facilities increase positivity in students behavior, create a sense of love and affection, promote positive self-esteem, reduces behavioral aggression, develop emotional stability, encourage compromising behavior, reduce frustration, anxiety and tension, and further enhances the capacity to absorb and bring flexibility in behavior and personality of the students. In the nutshell, students' academic, behavioral and personality outcome are dependent upon school physical as well infrastructural environment.

Recommendations

In order to improve the academic performance of the students and bring positive changes in behavior and personality of the students, the following are recommended:

1. Seating arrangement shall be made proper and according to the school and room size, students shall be provided with space.
2. There should be better transport and communication facilities for the students to improve their capacities and capabilities.
3. The administration should provide chairs, clean water, and politics-free environment to improve the behavioral and academic performance as well as personality of the students.
4. Time management for recreational and leisure activities shall be properly utilized and also the existing playground(s) must be made functional for such purposes.

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