

QUALITY OF EDUCATION
LEARNING ACHIEVEMENT
AT
PRIMARY LEVEL

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PREFACE

This is the fourth study of the series on the qualitative aspects of primary education with a focus on the assessment of learning achievement of the students. The first study assessed learning achievement at primary level whereas second and third studies investigated the factors associated with learning achievement of grade V students. This study targeted fourteen districts of Pakistan, including FATA, FANA and A.J.K. in which third study was conducted by AEPAM in 2004 to ensure compatibility of the sample.

The Quality of Education at primary level in Pakistan depends upon the optimal utilization of available human and physical resources, which have direct influence on teaching learning process. Since the inception of Pakistan, different national education policies were implemented and provincial governments were also provided guidelines for the improvement of quality of education in the country. Present government introduced Education Sector Reforms and action plan with emphasis on the improvement of quality of education at all levels, through revision of curricula, teacher training and provision of physical facilities in the schools of public sector. These reforms resulted into many changes in the development of education system. There is need to obtain feedback for policy and decision makers.

This study is an effort to assess and compare the performance of public and private schools regarding learning achievement of the students. The related variables such as teachers' academic and professional qualification, physical facilities, socio-economic background of the students, parental education and other indicators that influence on students' achievement were also included. This research provides information on level and comparison of the performance of different schools and subsequently the quality of education in public and private sector at national, provincial and district levels.

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Executive Summary

The study was designed to access the quality of education at primary level by comparing school performance. The focus of the study was to assess the learning achievement of grade five students studying in both public and private schools in Pakistan. For this study, 14 districts from all over the country were selected. From each district 12 primary schools (8 government and 4 private schools) were randomly selected and from each school 20 students studying in 5th class were also randomly picked for testing. The total sample of this study consisted of 3276 (1839 boys and 1437 girls). As far as rural urban ratio was concerned, 1539 urban and 1737 rural students were included. 160 Head teachers and 160 teachers (male 60 female 100), were also included in the sample.

Standardized tests based on national curricula were designed from the textbooks published by Provincial Textbook Boards for class 1-4. The tests were developed in consultation with the Provincial Governments in the subjects of Mathematics, Science and Language (Urdu). The test for each subject consisted of 25 items. The tests were administered to the randomly selected students of 5th class by the research team of AEPAM.

The study was aimed at assessing learning achievement of grade-5 students of both public and private schools in Mathematics, Science and Language (Urdu). It also aimed at identifying important factors such as teachers' attributes, availability of physical facilities in schools and socio-economic factors affecting the quality of education.

The students' average percentage scores in the above subjects were computed and compared with reference to public and private schools, by gender and location. The average achievement scores in Science, Mathematics and Language of both public and private schools are presented in the following tables.

Average Percentage Score by Region/District

Districts	Mathematics			Urdu			Science		
	Public	Pvt.	Total	Public	Pvt.	Total	Public	Pvt.	Total
Islamabad	58	64	60	72	75	73	64	65	65
Multan	61	52	58	67	57	63	59	47	55
Attock	48	51	49	56	66	60	52	57	54
Bhakkar	63	58	61	73	74	74	66	65	66
Thatta	32	36	33	41	38	40	39	37	38
Khairpur	36	44	39	41	63	49	41	54	45
Khuzdar	41	41	41	50	52	50	49	54	50
Zhob	35	69	44	55	67	58	51	66	55
D.I.Khan	49	57	52	60	76	65	58	60	59
Kohistan	32	42	36	44	52	46	38	51	42
Khyber Agency	45	51	47	55	61	57	55	56	55
FR Kohat	46	42	45	57	60	58	51	47	50
Gilgit	35	48	39	57	66	60	46	55	49
Rawalakot	41	50	45	66	56	62	59	53	57
National	45	51	47	57	62	58	52	55	53

Pvt. = Private

1) The national mean percentage score in Mathematics, Urdu, and Science was 47, 58 and 53 respectively at national level. Performance of most of the students in Mathematics was very poor, whereas most of the students performed slightly better in Urdu and Science than in Mathematics. The performance of private school students in most subjects was better than that of public school students. Similarly the performance of urban students in all subjects was better than rural students. It was interesting to note that the performance of rural and urban students of private sector was the same in Mathematics, whereas performance of urban students was better than that of rural students in public schools in Mathematics. Performance of urban boys of both sectors was better than their girls counterparts. The findings of this study indicate that the performance of boys students in Mathematics was better than that of girls students, whereas performance of girls students was better than that of boys in subjects of Urdu and Science.

2) Inter-District difference shows that students of Bhakker, Islamabad and Multan, were the highest achievers in Mathematics whereas the students of Thatta, Khairpur and Gilgit were the lowest scorers. The students of Bhakkar, Islamabad and D.I.Khan got highest scores in Urdu whereas the students of Thatta and Kohistan got lowest scores. The students of Bhakkar, Islamabad and D.I. Khan got highest scores in Science whereas the students of Thatta and Kohistan got lowest scores.

3) The study also collected information about teacher's attributes, parental attributes, and school attributes. These factors included teachers' qualification, socio-

economic background of the students and availability of physical facilities in the schools.

4) It was found that Teacher's academic and professional qualification had positive impact on the students' achievement. It had more impact on the performance of boys students than that on girl students. Similarly teachers' qualification had more influence on the performance of urban than on rural students. It was also found that students taught by teachers holding Master degree got the highest scores followed by students taught by teachers holding B.A. degree. The urban students taught by Matriculate teachers got the highest score followed by teachers with M.A. degree. Similarly rural students taught by teachers with M.A degree got the highest score followed by teachers having B.A degrees. It was evident that teachers' academic qualification had more impact on urban students than on rural students. Boys students taught by teachers holding master degree got the highest scores followed by teachers with B.A degree. Similarly girls students taught by teachers having M.A. degree scored better. Teacher's professional qualification had also significant effect on students' achievement. The rural students either taught by B.Ed teachers or M.Ed, were the highest achievers. Similarly urban students taught by PTC teachers or by B.Ed. teachers, got the highest scores. Girls students taught by M.Ed. or PTC teachers got the highest score whereas boys got highest score when they were taught by B.Ed teachers.

5) It was found that teachers' experience had a positive influence on students' achievement. Students taught by teachers having 1-5 years experience were the highest scorers followed by the students taught by teachers either with 6-10 years or with 16 years and more experience. It was interesting to note that teachers either in the first 10 years of their service were effective or after 16 years. Teachers experience had more influence on the boys than girls and it had more impact on the urban than on rural students.

6) It was observed from the data that availability of physical facilities in a school had a significant impact on students' performance. The availability of drinking water, electricity, boundary wall, toilets, furniture, playground, and dispensary were determining factors and had positive impact on students' achievement.

7) The parental education had very positive impact on the performance of children. A consistent increase in the mean percentage score of the students was observed with the increase in parents' education. The data showed that children of illiterate and literate fathers performed equally. As fathers' education increases from middle level to graduation, a consistent increase in average percentage score of children was noted. The level of father's education had more impact on urban students than on rural students. It had more influence on the boys' performance than on girls. A significant difference was found in average percentage scores of children with fathers having different levels of education. A consistent increase in the mean percentage score of students was also observed with increasing level of their mother's education. It was

formed that impact of mother's education was more on girls than on boys. Moreover, mother's education had more influence on urban students than on rural students.

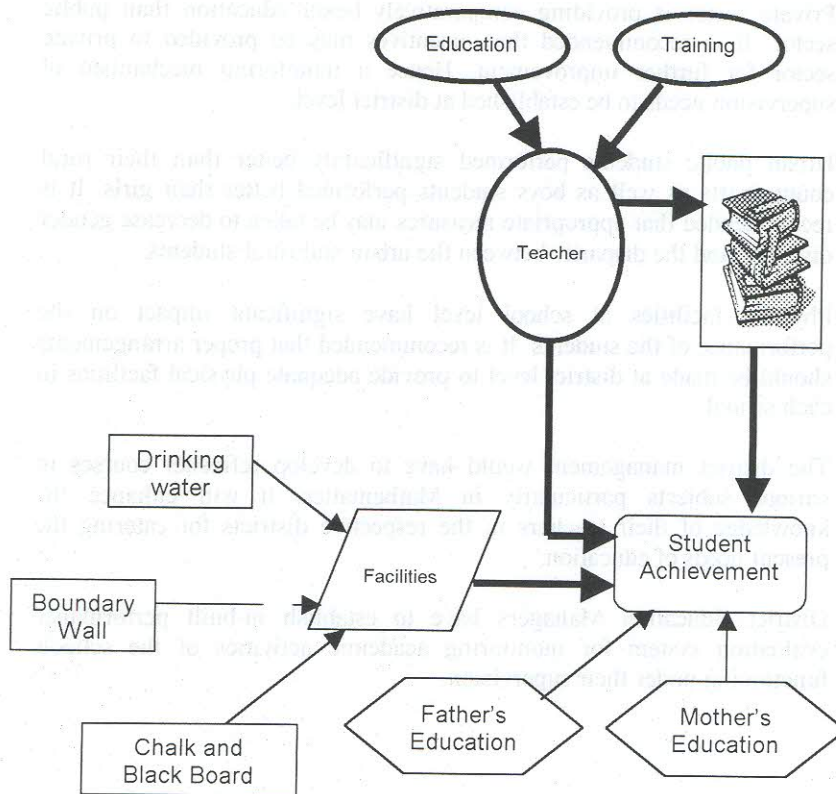
Conclusions:

- (i) It was concluded that the performance of most of students of both sectors in all subjects was poor in general and particularly in mathematics at national level.
- (ii) The performance of Private school students in most subjects was better than that of Public school students. Similarly performance of urban students in all subjects was better than that of rural students.
- (iii) Boys students' performed significantly better than their girls counter- parts in all subjects. In private schools 39% students got A1.A and B grades in mathematics, whereas only 30% student of public schools scored the same grades.
- (iv) In private schools, 60% students scored A1, A and B grades in Urdu whereas 52% students of Public schools scored the same grades. Similarly in science the performance of private schools was better than that of public schools. This indicates that private school students performed better as compared to public students.
- (v) Students of Bhakkar, Islamabad, Multan, got the highest scores in most of the subjects whereas the students of Thatta and Kohistan achieved lowest score in most subjects.
- (vi) Teacher's academic qualification had positive impact on the performance of students. It had more impact on urban than rural students. Students taught by teachers holding M.A. degree got the highest scores.
- (vii) Teacher's experience also had a positive influence on students' achievements. Students taught by teachers having 1-5 years of experience got the highest score followed by students taught by teachers having 16 years or more experience.
- (viii) The availability of drinking water, electricity, boundary wall, toilets, furniture, playground, and dispensary had positive impact on students' achievement.
- (ix) The level of parental education had significant impact on the performance of their children.

Recommendations: On the basis of findings and conclusions, the following recommendations are made for the policy makers, decision makers and educational planners.

- (i) Refresher courses for in service teachers may be arranged at district level to enhance the skills and knowledge in teaching of Mathematics, Science and language.
- (ii) Private sector is providing comparatively better education than public sector. It is recommended that incentives may be provided to private sector for further improvement. Hence a monitoring mechanism of supervision needs to be established at district level.
- (iii) Urban public students performed significantly better than their rural counterparts as well as boys students performed better than girls. It is recommended that appropriate measures may be taken to decrease gender disparity and the disparity between the urban and rural students.
- (iv) Physical facilities at school level have significant impact on the performance of the students. It is recommended that proper arrangements should be made at district level to provide adequate physical facilities in each school.
- (v) The district management would have to develop refresher courses in various subjects particularly in Mathematics. It will enhance the knowledge of their teachers in the respective districts for catering the present needs of education.
- (vi) District Education Managers have to establish in-built performance evaluation system for monitoring academic activities of the schools functioning under their supervision.

Physical facilities such as drinking water, boundary wall, chalk and board play an important role in learning and have serious implications for all managers.



Chapter 1

Introduction

The learning process starts with the arrival of the individual in this world. From the very beginning, learning takes place by imitating the elders and observing their activities at home. Most of the basic skills of life are learned at home. But these basic skills of life are not sufficient for preparing the individual to face the complexities of life. In order to socialize individual, educational institutions are established. The basic purpose of school is socialization of individual and helping in developing certain competencies in him. When a student enters educational institution, she/he has already attained a certain level of development. On one hand every individual has some peculiar intellectual, social and emotional characteristics and on the other hand, teachers possess distinct intellectual capabilities, professional competencies and experience which interact with each other during the education process.

School environment is the result of the interaction of teachers, students, learning materials, and activities undertaken for achieving its objectives. Consequently learning outcome is the result of a dynamic and complex interaction of a wide variety of factors. It is imperative that these factors should properly function for the quality of learning. According to Khan et al (2000) "the standard and quality of education varies from school to school". This variation is the result of inputs used by schools. There are various factors affecting the quality of education. In fact there is no standardized achievement test available in the provinces that can be used to examine the quality of education, which can present real picture in this regard.

Keeping in view the importance of quality of education in the present era of information technology and to develop qualitative database, AEPAM conducted this research study under the NEMIS Project. The main purpose of this research was to assess learning achievement of primary students of both public and private schools through standardized learning achievement tests in the subjects of Mathematics, Science and Urdu language at national level. The study also tried to identify those factors, which are affecting students' achievement in formal government and private primary schools at national level.

1.2 Rationale

Access to quality primary and elementary education is critical for poverty reduction and economic development of a country. One of the major indicators of quality education is the level of students' learning/achievement, which has been emphasized in various national education policies. The quality of education at primary level is dependent upon many factors which include teacher's qualifications, availability of teaching learning materials, physical facilities and socio-economic back-ground of students etc. Because of the poor state of affairs, related to quality of education, particularly at primary level, many parents feel that educating children in formal public primary schools is not worthwhile. If the environment of the school regarding quality of

education is improved, the enrolment can be increased and a greater return on investment can be obtained.

Various inputs are required for educating primary school age children; consequently quality of outcomes is dependent on these inputs. Assessment of students' achievement can be used as an instrument through which valuable information can be obtained to assess the quality of education at primary level. This information can help to rationalize inputs on quality especially with regard to availability of physical facilities, learning materials, and appropriateness of teacher training and revision of curricula. This would also provide feedback to policy makers and planners about the performance of education system at primary level.

Like most developing countries, Pakistan is also confronted with the dual challenges of quantitative expansion and qualitative improvement of the education system. Quality education implies meaningful learning and better learning which is usually the result of effective schooling. It implies the effective and efficient use of resources. The education system in Pakistan suffers from the lacuna of shortfall between optimum resources and the reality of budgets.

The purpose of this study is to identify those factors, which are considered effective in teaching and learning process. These factors include: availability of physical facilities, learning materials, teachers' academic and professional qualification, teaching experiences, as well as socio-economic background of students. This study aims at measuring the outcome of effective teaching learning process through students' achievement and exploring relationship between students' achievement and factors related to the quality of education.

1.3 Statement of the problem

Schools are social institutions, which are supposed to impart knowledge as well as to socialize members of society. The performance evaluation of the educational institutions is essential to determine quality of education. The study aimed at "assessing the quality of education at primary level by comparing school performance".

1.4 Objectives of the Study

The objectives of this study were as follow:

- i) To examine the impact of physical facilities on students' achievement
- ii) To find out the relationship between teachers' qualifications and students' achievement.
- iii) To explore the impact of parental education on students' achievement.
- iv) To compare the schools' performance through students' achievement by gender and location.

1.5 Significance of the study

This study has immense importance for the educational policy-makers and planners because it will identify the factors that affect the quality of education at primary level. It will also help the district managers to understand problems at primary level.

Moreover, the findings of this study may be helpful for head teachers and teachers who are having direct interaction with students. It will help them to get insight about the factors affecting learning.

The research findings and recommendations will provide strategic guidance to curriculum designers and developers in producing a balanced curriculum for the development of balanced personality of the children. This study may be useful for the parents of the students to understand the impact of socio-economic background on students' achievement.

1.6 Delimitations of the study

- i) Keeping in view the limited time and resources constraints, the study was delimited to only fourteen districts of Pakistan including FATA, FANA and AJK.
- ii) The study was further delimited to primary level; the achievement tests were administered to class-5 children only.
- (iii) 12 schools (8 governments and 4 private) and twenty students from each school were randomly selected.

1.7 Limitations of the study

There were some institutions, which had 18/19 students in class five. In such cases, total available students in class five were included. In some institutions, the enrolment was very low. In such cases, more institutions from the same area were included. Further more, F.R Kohat was totally rural area. So all the subjects included in the study were from rural area.

Chapter 2

Review of Literature

Various research studies have been conducted on students' learning/achievement in Pakistan at primary level by various organizations but very few studies have tried to identify the factors affecting the quality of education. These studies indicated low level of students' learning/achievement at primary level in Pakistan particularly in Mathematics.

Shah (1984 pp.211) reported an average percentage score of 38 in Mathematics of grade-V students and average percentage score of 38 in science of grade IV students. The Bridges study on "Teacher Characteristics and Students' Achievement in Mathematics and Science, reported as the average (mean) score of 11.7 for Mathematics IV, 12.4 average score for Mathematics V, average score of 13.8 for Science IV and average score of 16.3 for Science V (Warwick and Rimers, 1989, pp.3).

Rugh et al (1991) found the mean percentage score of 21 for Mathematics, and 30 for science. Rugh's study indicated a decline in achievement score for Mathematics from 35 percent in 1984 to 21 percent in 1989 (Rugh et al, 1991, pp.11).

The Harvard study (1992) on "Teacher Certification: Value Added or Money Wasted" reported that the teacher's formal education and experience had a positive effect on the achievement of students in science and Mathematics. While teachers' certification did not improve the classroom practices (Warwick and Rimers, 1992, pp.27-28).

Warwick and Rimers (1992), in another research, reported that teachers' qualification and subject knowledge had strong correlation with students' achievement. Teachers own subject knowledge and formal education had more impact on students' performance than did their pre-service training (Warwick and Rimers, 1992).

A national survey carried out by MSU (1995) to identify "Determinants of Primary Students Achievements reported students' achievement of an average percentage score of 46 in Mathematics, 74 in general knowledge and 69 in comprehension. This study reported an improvement of 25 percent points during 1989-1995 in Mathematics. In addition, boys' performance was better than the girls in Mathematics by scoring three percent higher points (MSU-SAP, 1995).

Action Aid Pakistan Survey (1999) reported achievement of average percent score of 60 in Mathematics, 67 in Urdu and 71 in the general knowledge of students of public schools. It also indicated better performance of boys over girls (Education For All-The Year 2000 Assessment, Pakistan Country Report, 2000, pp.44-45).

AEPAM (2000) study entitled "Measuring Learning Achievement at Primary level in Pakistan" reported that overall average scores of students for both Science and Urdu was 72 whereas for Mathematics, it was 58 of grade V students. (Khan et al. 2000, p.14).

AEPAM (2002) study entitled "Factors Associated with Learning Achievement of Grade V Students in Public Schools," reported that mean percentage score in Mathematics was 48, whereas for Urdu it was 60 and 65 for Science of grade V students. The same study reported that teachers' academic and professional qualification had a positive impact on students' achievement. (Khan & Shah., 2000, pp.38-44).

Farooq. (2003) Study on "The impact of teachers' characteristics on learning achievement of students at primary level in Rawalpindi district," reported that the total mean percentage score of students in Mathematics was 54 and in sciences it was 64. The study further indicated mean percentage score of 51 in Mathematics for boys and 58 for girls. The mean percentage score in science was 59 for boys and 66 for girls (Farooq, 2003, pp.3).

Haq (1998) quoted the findings of various studies on learning/achievements that indicated a very low level of students' learning/achievement. He particularly stated the low achievement of basic competencies of children in a nation wide sample of 11 to 12 year old primary school completers, such as, 34 percent could read with comprehension and 17 percent could write a letter. Another study reported by Haq, indicated that less than 10 percent of the representative sample were competent in basic reading and comprehension (Haq, M., & Haq, K., 1998,pp.77)

Education Ability Test grades 4,5 and 6 consisting of 50 items for Language, Mathematics, Science & General Information, and Reasoning was developed by National Institute of Psychology (NIP), Quad-I-Azam University, Islamabad. The aim was to evaluate students' cognitive educational outcomes. The test items were constructed keeping in view the curriculum and textbooks of grade 4, 5, 6 and 7. The test was developed for students of grades 4,5, and 6. The mean scores for complete test for students of grades 4,5, and 6 were 24.32,27.55 and 36.17 respectively. The overall increase in the mean scores between various grades was significant. (Ansari Z.A, P.N.Tariq & M.Iftikhar, 1990 pp.7-11).

Ayub (2001) conducted a study on "measuring students achievement in relation to parent involvement." This research indicated that parents' involvement in the educational activities of their children had a positive impact on their achievement. It also found that parents and family environment are important factors responsible for improving the achievement level of students in schools (Ayub 2001, pp.60).

Habib et.al (2004) conducted a study on Comparing School performance to understand which schools were doing better by Assessing and comparing quality of education. The conclusions of this study were as under:

1. The performance of most of students of both sectors in Mathematics was poor whereas most of the students performed well in Urdu and Science tests at national level.
2. The performance of Private school students in most subjects was better than that of Public school students. Similarly performance of urban students in all subjects was better than that of rural students.
3. Girl students' performance was significantly better than their boys counterparts in all subjects including Mathematics.
4. In private schools, 82% students scored A1, A and B grades in Urdu whereas 58% students of Public schools scored the same grades which indicated the outstanding performance of Private school students as compared to that of Public school students.
5. Students of FR Kohat, Bhakkar, D.I. Khan, Multan, Khairpur got the highest scores in most of the subjects whereas the students of Khyber Agency and Khuzdar achieved lowest in most subjects, which indicated the poor performance of students belonging to these districts.
6. Teachers' academic qualification had positive impact on the performance of students. It had more impact on urban than rural students. Students taught by matriculate teachers and holding M.A degree got the highest scores.
7. Teachers' professional qualification had significant effect on students' achievement. Students taught by teachers having certificate in teaching (C.T.) and M.Ed degree achieved highest scores.
8. Teachers' experience also had a positive influence on students' achievement. Students taught by teachers having 1-5 years of experience got the highest score followed by students taught by teachers having 16 years or more experience.
9. The availability of drinking water, electricity, boundary wall, toilets, furniture, playground, and dispensary had positive also impact on students' achievement.
10. The level of parental education particularly mother's education had a significant impact on the performance of their children.

National Education Policy (1992) stated that the quality aspects of education have been compromised because of rapid expansion of the primary education. This calls for an urgent review of the measures needed for raising the quality of education in Pakistan. The policy proposed various measures such as training of teachers, provision

of teaching kits to primary schools, special federal funds for improvement of the physical facilities and the gradual increase in the number of primary teachers. (National Education Policy, 1992, pp. 16-19).

National Education Policy (1998-2010) has emphasized on the quality of education. The policy proposes that a system of continuous evaluation should be adopted at the elementary level to ensure attainment of minimum learning competencies. It also proposes raising the minimum educational qualification of primary teachers from Matric to Intermediate level and revising contents and methodology of teachers' education curricula (p. 2-3). The policy further proposes the following steps to improve the quality of education.

- To ensure achievement of minimum level of learning up to 90 percent primary education by the year 2010.
- To meet the basic learning needs of the child in terms of essential learning tools as well as the basic learning contents.
- Teachers' competence shall be improved and the relevance of training programmes for teachers shall be ensured.
- A monitoring system shall be developed to obtain timely and reliable information on enrolment, retention, completion and achievement. The qualitative monitoring of achievement shall also be introduced. (p. 28-29).

Chapter 3

Methodology

This chapter describes methods and procedures adopted for conducting this study. The study was designed to compare school performance on the basis of students' achievement. By assessing and comparing quality of education it will help to understand which schools are doing better. The studies aimed at exploring the in-school and out-school factors affecting learning of students at primary level. The in-school factors include head teachers/teachers, teaching & learning materials and physical facilities in the schools. The out-school factors include socio-economic background of the children that has direct impact on the performance of the students.

3.1 Population

The focus of the study was to measure the learning achievement of students at primary level in Pakistan. All children studying in class/grade V in both government and private schools in Pakistan served as population for this study.

3.2 Procedure for Selection of Sample

The major task for conducting of this study was to select sample districts, which should be true representative at national level. For selection of the districts, criteria was developed on the basis of socio-economic indicators i.e. language, population, literacy rate, female literacy rate, availability of water, electricity, Radio, TV, medical facilities and other civic facilities. On the basis of these indicators the map of Pakistan was divided into various pockets. In order to get representative sample of districts from each province three districts and one district from each pocket were selected. On this basis, 14 districts from all over the country were selected as sample.

3.3 Sample Selection / Sample Size

According to Best and Kahn (1996) "the sample should represent the population. There is no fixed number or percentage of subjects that determines the size of an adequate sample". Serious efforts were made to select a sample of reasonable size representing students of grade-V by gender and location. From the fourteen sample districts, 172 schools were randomly selected. From each selected district, 12 primary schools (8 public and 4 private) were randomly selected. Twenty students were randomly selected from each school to administer the tests. The total number of students of class-5 at primary level was 3276 to whom the achievement tests in Mathematics, Science and Urdu were administered. Relevant information had also been collected from 160 head teachers and 160 teachers (160 male and 160 female) of class-5. The distribution of sample was as given below:

S. No	District	School	Students				Head Teacher	Teacher	
			Boys	Girls	Urban	Rural		Male	Female
1.	Islamabad	13	160	100	140	120	12	3	9
2.	Multan	12	121	119	160	80	12	4	8
3.	Attock	11	81	122	106	97	12	1	11
4.	Bhakkar	12	127	113	140	100	12	4	8
5.	Thatta	12	126	109	100	135	12	4	8
6.	Khairpur	12	107	133	140	100	12	4	8
7.	Khuzdar	12	139	101	160	80	11	3	8
8.	Zhob	12	160	80	140	100	11	8	3
9.	D.I. Khan	12	147	93	160	80	12	5	7
10.	Kohistan	12	159	65	56	168	10	6	4
11.	Khyber Agency	12	160	71	231	11	7	5
12.	F.R. Kohat	11	110	104		214	11	5	6
13.	Gilgit	12	123	110	119	114	12	4	8
14.	Rawalakot	12	119	117	118	118	10	2	7
Total		167	1839	1437	1539	1737	160	60	100

3.4 Development of Learning / Achievement Tests

The development of learning/achievement tests of Mathematics, Science and Urdu was the major task for conducting this study. Therefore, special efforts were made to develop substantially reliable and valid national tests in the said subjects in view of primary curriculum and the textbooks published by various provincial Text Book Boards. Item-banks based on the national primary curricula and textbooks published by various provincial Text Book Boards were developed. With the help of item-banks, test items were designed.

3.5 Research Instruments

The following research instruments were developed for data collection:

- i) Basic Information Sheet (questionnaire) about the students in order to get information in respect of socio-economic factors.
- ii) Achievement tests in Mathematics, Science (both in Urdu and English) and Urdu language were developed in consultation with provincial governments. The test for each subject consisted of 25 items.
- iii) Questionnaire for teachers/head teachers to get relevant information.

3.6 Pilot Testing of Research Instruments

Pilot testing of achievement tests was made in six government and private primary schools in Islamabad and Rawalpindi. Before pilot testing 35 multiple choice questions for each test were developed. The pilot tested questionnaires were coded and item analysis was carried out. These tests were re-tested by conducting item analysis for each item. The difficulty level and discrimination level of each item for all the three tests were calculated and finally the items with standard discrimination level were retained. Every possible effort was made to arrange the test items according to difficulty level. In this way only 25 multiple-choice questions for each subject were finalized.

Each and every question included in the research instruments was discussed in AEPAM faculty meeting under the guidance of Chief Investigator. Efforts were made to design comprehensive questionnaires to get relevant information from the subjects included in the sample.

3.7 Procedure of Data Collection

The data were collected by the AEPAM data collection team. The team visited each sample school for administering the achievement tests to the students of class-5. The team also conducted interviews with the teachers of class-5 and with head teachers of the sample school. Every effort was made by the research team to collect valid and reliable data for the study.

3.8 Data Coding and Entry

Key for data coding and data entry for each test was prepared. The test papers were coded and data were fed in the computer. MS Access data base package was used for data entry. After the data entry, it was cross checked and reviewed for further analysis.

3.9 Data Analysis

Data were subjected to various statistical treatments by using Statistical Package for Social Sciences (SPSS) to work out the overall average score in each subject at national and provincial levels by gender and location. The comparison in scores of students of private and public schools for each subject was also carried out. In order to establish relationship between dependent variable i.e achievement scores and independent variables i.e. physical facilities, teachers' academic and professional qualification, experience and socio-economic factors. Various statistical tests were used to establish relationship between dependent and independent variables.

3.10 Results, Conclusions and Recommendations

On the basis of data analysis, results were framed which have been presented in the next chapter. On the basis of the results of the study, conclusions were drawn and recommendations were formulated.

Chapter 4

Presentation of Achievement Scores

The score of the students' achievement have been arranged according to the objectives of the study. Every possible effort has been made to present the scores in comprehensive manner. The achievements of the students were graded i.e. A1, A, B, C and D. Those students, who obtained marks below 33%, were considered fail. Descriptive statistics such as mean and standard deviation were used for analysis. Moreover, inferential statistics such as t test was applied for significance of mean and correlation between students' achievement and teachers' qualification. Impact of parental education and physical facilities was also examined. The data have been reported by inter-district/province, gender wise and location wise pattern.

4.1 Performance of Students in Mathematics Test at National Level

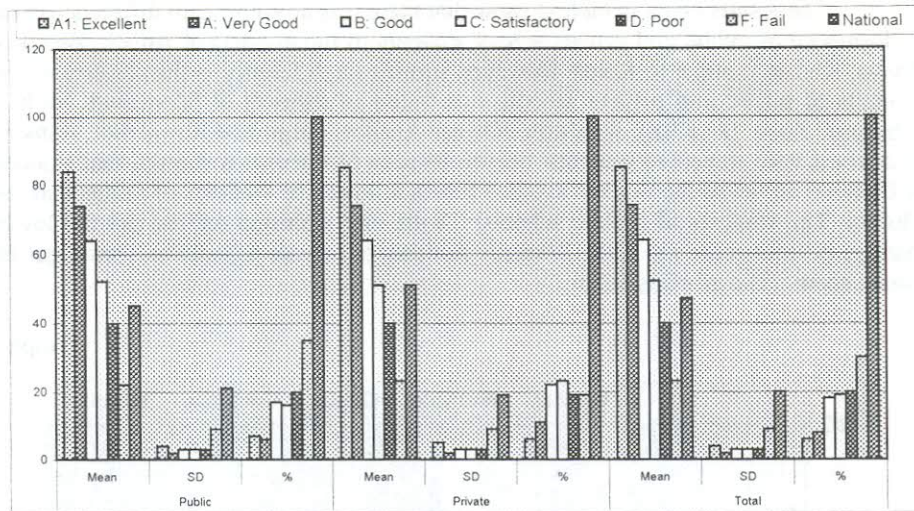
Table-1

Grade-wise Distribution of Mathematics Scores by School Type

Grade	Public			Private			Total		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
A1: Excellent	84	4	7	85	5	6	85	4	6
A: Very Good	74	2	6	74	2	11	74	2	8
B: Good	64	3	17	64	3	22	64	3	18
C: Satisfactory	52	3	16	51	3	23	52	3	19
D: Poor	40	3	20	40	3	19	40	3	20
F: Fail	22	9	35	23	9	19	23	9	30
National	45	21	100	51	19	100	47	20	100

It was observed that the mean percentage score in Mathematics at national was 47 (47% questions correctly answered). Data show that half of the students did not qualify the test and they got either grade D or failed. This indicates that majority of students lack the basic competency in Mathematics. Comparing the data of public and private sectors it was observed that the score of 39% of private sector fall in category A1, A and B, whereas 30% students of public sector achieved the same grades.

The above table also shows that mean percentage scores (51) of private schools' students was higher than that of students of public schools (45). A significant difference was observed between the performance of private and public schools' students. Further detail in presented in graph-1.



4.2 Inter-District Differences in Mathematics Test

Table- 2

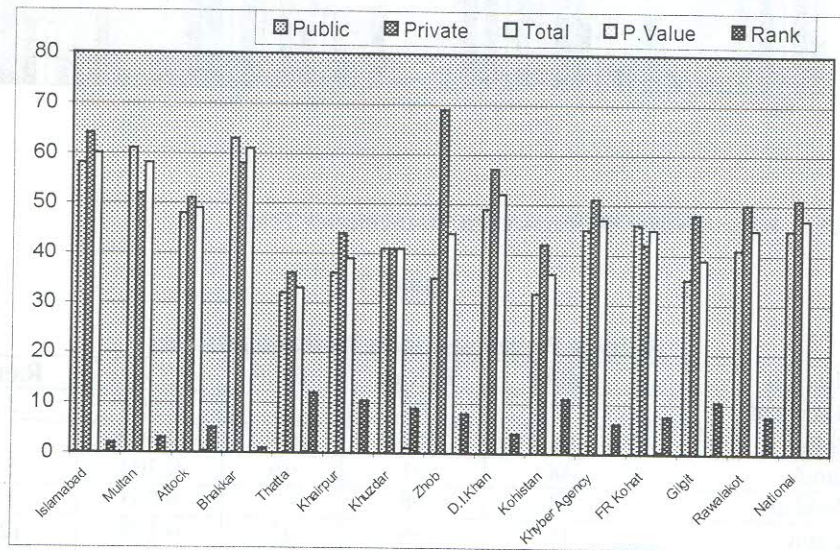
Average Percentage Score by Region/District

Districts	Public	Private	Total	P.Value	Rank
Islamabad	58	64	60	0.006	2
Multan	61	52	58	0.000	3
Attock	48	51	49	0.304	5
Bhakkar	63	58	61	0.063	1
Thatta	32	36	33	0.177	12
Khairpur	36	44	39	0.001	10.5
Khuzdar	41	41	41	0.954	9
Zhob	35	69	44	0.000	8
D.I.Khan	49	57	52	0.002	4
Kohistan	32	42	36	0.000	11
Khyber Agency	45	51	47	0.040	6
FR Kohat	46	42	45	0.457	7.5
Gilgit	35	48	39	0.000	10.5
Rawalakot	41	50	45	0.000	7.5
National	45	51	47	0.000

- The district where $P < 0.05$ is declared having significant difference between private and public schools.
- Ranking of district has been given according to total mean percentage score.

The results given in table-2 show that there was no significant difference in the performance of public and private school students in the districts of Attock, Bhakkar, Thatta, Khuzdar, and F.R. Kohat. However, significant difference in the performance of students of public and private schools was found in districts of Islamabad, Multan, Khairpur, Zhob, D.I.Khan, Kohistan, Khyber Agency, Gilgit and Rawalakot. Ranking of districts with respect to students' achievement in Mathematics showed that students of Bhakkar achieved the highest average scores followed by students of Islamabad and Multan. The students of (public schools) Thatta and Kohistan district got the lowest average percent score i.e. 32%. Whereas students of private schools in Thatta got the lowest score. The graph is below:

Graph-2



4.3 Students' Achievement by Area in Public and Private Sector

The rural and urban differences show the level of quality of education by location and type of schools. The achievements have also been treated separately for public and private sector schools, which are given in table-3.

Table-3

Students' Achievements			
Location	Public	Private	P-Value
Urban	45	51	0.000
Rural	44	51	0.000
P.Value	0.435	0.966	--

The table-3 mentions that performance of students in private schools was same in rural and urban areas, whereas performance of urban students was better than that of rural students in public schools, but difference of mean score was not significant. In urban as well as rural areas the students of private schools out performed their counterparts in public schools. Further, details of the data of each district are given in table-4.

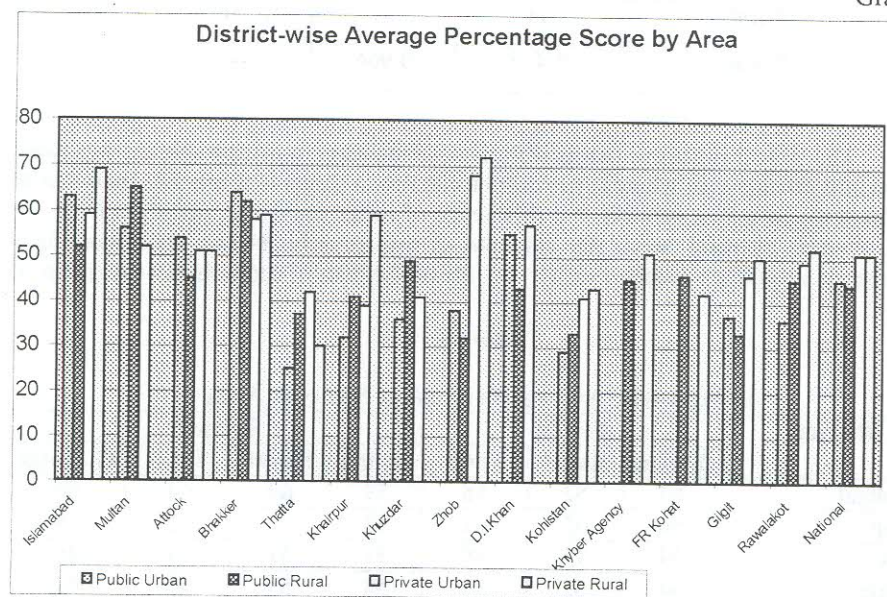
Table-4

District-wise Average Percentage Score by Area

Districts	Public			Private			
	Urban	Rural	Total	Urban	Rural	Total	G. Total
Islamabad	63	52	58	59	69	64	60
Multan	56	65	61	52	.	52	58
Attock	54	45	48	51	51	51	49
Bhakker	64	62	63	58	59	58	61
Thatta	25	37	32	42	30	36	33
Khairpur	32	41	36	39	59	44	39
Khuzdar	36	49	41	41	.	41	41
Zhob	38	32	35	68	72	69	44
D.I.Khan	55	43	49	57	.	57	52
Kohistan	29	33	32	41	43	42	36
Khyber Agency	.	45	45	.	51	51	47
FR Kohat	.	46	46	.	42	42	45
Gilgit	37	33	35	46	50	48	39
Rawalakot	36	45	41	49	52	50	45
National	45	44	45	51	51	51	47

Inter-district differences with respect to location and type of school are presented in table-4. District wise differences of public schools by location indicate that students of public schools in rural areas of Bhakkar, Multan., Thatta, Khairpur and Khuzdar scored higher than their counterparts in urban schools. On the contrary, students of private schools in Rural areas of Islamabad, Bhakkar, Zhob, Gilgit and Rawalakot outperformed their counterparts in urban schools.

Graph-3



4.4 Gender Differences in Students' Performance in Mathematics Test

The gender-wise differences in private and public sector and by school location have been presented in table-5.

Table-5

Gender	Public		Private	
	Urban	Rural	Urban	Rural
	Mean	Mean	Mean	Mean
Boys	45	47	51	54
Girls	45	42	49	43
P.Value	0.798	0.000	0.127	0.000

The performance of urban boys students of private schools was better than their girls counterparts. But difference of mean score was not significant. In urban areas the performance of boys and girls of public schools was same. On the other hand the rural boys students of private schools outperformed their rural girls counterparts and result was significant. District wise detail is presented in table-6.

Table-6

District-wise Average Percentage Score by Gender

Districts	Public						Private						G. Total
	Urban			Rural			Urban			Rural			
	B	G	T	B	G	T	B	G	T	B	G	T	
Islamabad	67	60	63	54	49	52	59	59	59	71	12	69	60
Multan	55	58	56	58	72	65	52	52	52	.	.	.	58
Attock	64	47	54	54	41	45	52	50	51	48	53	51	49
Bhakkar	69	58	64	65	60	62	54	64	58	67	50	59	61
Thatta	19	39	25	40	31	37	34	45	42	41	24	30	33
Khairpur	31	33	32	44	40	41	41	37	39	62	56	59	39
Khuzdar	36	35	36	36	63	49	41	41	41	.	.	.	41
Zhob	45	27	38	30	33	32	68	72	68	72	.	72	44
D.I.Khan	54	57	55	34	52	43	58	49	57	.	.	.	52
Kohistan	29	.	29	38	28	33	41	.	41	43	.	43	36
Khyber Agency	.	.	.	54	34	45	.	.	.	51	.	51	47
FR Kohat	.	.	.	55	35	46	.	.	.	35	47	42	45
Gilgit	33	41	37	33	33	33	55	37	46	48	53	50	39
Rawalakot	47	31	36	46	45	45	43	58	49	57	43	52	45
National	45	45	45	47	42	44	51	49	51	54	43	51	47

B = Boys, G = Girls, T = Total

Table-6 depicts that urban boys students of public sector performed better than girls students in districts of Islamabad, Attock, Bhakkar, Khuzdar and Rawalakot. Whereas in rural area of public schools, girls students out scored their counterpart in district Multan and D.I.Khan. The rural students of public schools of Zhob district got the lowest score i.e. 32.

As far as private sector was concerned, girls students of urban areas showed better performance in districts of Bhakkar, Thatta, Zhob, and Rawalakot. In rural areas the performance of boys students was better than girls students, except in Gilgit, Attock and F.R.Kohat.

The above table also shows that there were no schools functioning in urban area of Khyber Agency and FR Kohat in both private and public sectors. Whereas in D.I. Khan, Zhob and Rawalakot, no school was functioning in rural areas in private sector, at the time of data collection. Therefore no comparison has been made.

4.5 Performance of Students in Urdu Test

The performances in Urdu test are presented in the following table.

Table-7

Grade-wise Distribution of Urdu Score by School Type

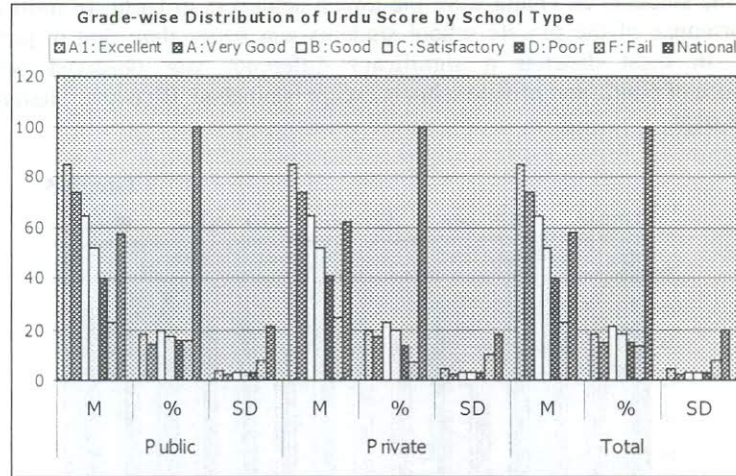
Grade	Public			Private			Total		
	M	%	SD	M	%	SD	M	%	SD
A1: Excellent	85	18	4	85	20	5	85	18	5
A: Very Good	74	14	2	74	17	2	74	15	2
B: Good	64	20	3	64	23	3	64	21	3
C: Satisfactory	52	17	3	52	20	3	52	18	3
D: Poor	40	16	3	41	13	3	40	15	3
F: Fail	23	16	8	24	7	10	23	13	8
National	57	100	21	62	100	18	58	100	20

M= Mean. %=Percentage. SD=Standard Deviation

The table-7 indicates that the mean percentage score in Urdu at National level was 58 (58% questions correctly answered). The data show that 54% students of both public and private schools obtained A1, A and B grades, and 33% students got C and D grades whereas 13% were unable to pass the test. Comparing the data of public and private sectors it was observed that the score of 60% of private sector fall in category A1, A and B, whereas 52% students of public sector achieved the same grades.

The average percentage score of private school students was 62 and 57 for the students of public schools. A significant difference was observed in the performance of public and private school students.

Graph-4



4.6 Inter-District Differences in Urdu Test

Table-8

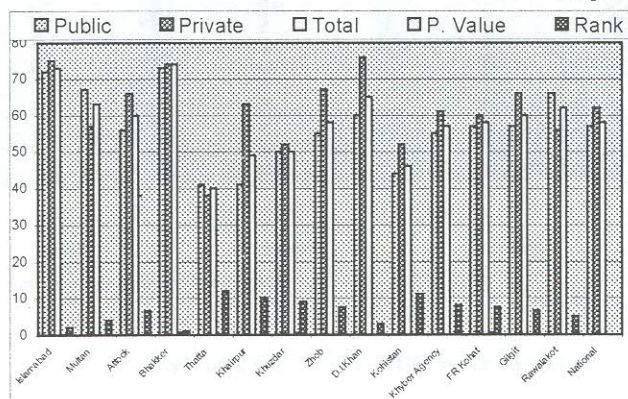
Average Percentage Score by Region/Districts

Score	Urdu			P. Value	Rank
	Public	Private	Total		
Islamabad	72	75	73	0.137	02
Multan	67	57	63	0.000	04
Attock	56	66	60	0.000	6.5
Bhakker	73	74	74	0.653	01
Thatta	41	38	40	0.168	12
Khairpur	41	63	49	0.000	10
Khuzdar	50	52	50	0.495	09
Zhob	55	67	58	0.000	7.5
D.I.Khan	60	76	65	0.000	03
Kohistan	44	52	46	0.003	11
Khyber Agency	55	61	57	0.017	08
FR Kohat	57	60	58	0.499	7.5
Gilgit	57	66	60	0.000	6.5
Rawalakot	66	56	62	0.000	05
National	57	62	58	0.000

→ Ranking of district has been given according to total mean percentage score.

It was observed that students of Bhakkar got the highest average percent score i.e. 74% (both public and private schools) followed by the students of Islamabad whereas the students of Thatta were the lowest achievers in Urdu. In most of districts the performance of the private school students was better than that of public school students. In most districts a significant difference was observed between the performance of public and private schools except Islamabad, Bhakkar, Thatta, Khuzdar, and F.R.Kohat.

Graph-5



4.7 Students' Achievement by Area in Public and Private schools in Urdu Test

The rural and urban differences showed disparity at regional level and in level of quality of education. Students' achievement has been calculated area-wise. The scores are presented in table-9.

Table-9

Location	Public	Private	P. Value
Urban	59	63	0.000
Rural	55	59	0.001
P. Value	0.000	0.001	

Table-9 indicates that urban students of private schools performed better than the urban students of public schools and the scores differed significantly. Similarly the rural students of private schools outscored their rural counterparts of public schools and the difference was significant. The performance of urban students was slightly better than that of rural counterparts and the difference was significant. Similarly urban

students of private schools outscored their rural counterparts and difference was significant. District-wise details are given in table-10.

Table-10
District-wise Average Percentage Score by Area

District	Public			Private			
	Urban	Rural	Total	Urban	Rural	Total	G.Total
Islamabad	76	68	72	79	71	75	73
Multan	73	61	67	57	.	57	63
Attock	65	51	56	64	71	66	60
Bhakker	76	71	73	76	68	74	74
Thatta	33	47	41	46	30	38	40
Khairpur	38	45	41	57	80	63	49
Khuzdar	45	56	50	52	.	52	50
Zhob	62	46	55	69	63	67	58
D.I.Khan	65	54	60	76	.	76	65
Kohistan	32	45	44	54	49	52	46
Khyber Agency	.	55	55	.	61	61	57
FR Kohat	.	57	57	.	60	60	58
Gilgit	59	56	57	64	69	66	60
Rawalakot	60	70	66	58	52	56	62
National	59	55	57	63	59	62	58

Table-10 mentions inter-district differences with respect to location and type of the schools. The data show that students of public schools in urban areas of Islamabad, Multan, Attock, Bhakkar, Zhob, D.I.Khan, and Gilgit performed better than their rural counterparts. Similarly, students of private schools in rural areas of only three districts of Attock, Khairpur and Gilgit scored higher than their urban counterparts. In all other districts, students of urban areas of private sector outscored their rural counterparts.

4.8 Students' Performance in Urdu by Gender

The students' scores of both sectors by gender and location are reported in table-11.

Table-11

Gender	Public		Private	
	Urban	Rural	Urban	Rural
	Mean	Mean	Mean	Mean
Boys	57	54	64	60
Girls	61	56	62	58
P. Value	0.001	0.070	0.000	0.000

It was observed that boys students of private sector in both urban and rural areas performed better than their girl counterparts and the difference was significant. Whereas girls of public sector outscored their boys counterparts in both rural and urban area, and the difference was significant. The performance of urban boys students of private school was better than their rural counterpart. Similarly urban girls students outscored their rural counterparts. District wise data are shown in table-12.

Table-12
District-wise Average Score by Gender

Districts	Public						Private						G. Total
	Urban			Rural			Urban			Rural			
	B	G	T	B	G	T	B	G	T	B	G	T	
Islamabad	77	74	76	66	73	68	78	81	79	71	60	71	73
Multan	69	77	73	58	63	61	60	53	57	.	.	.	63
Attock	74	57	65	63	46	51	65	63	64	67	74	71	60
Bhakker	79	74	76	74	67	71	74	80	76	68	69	68	74
Thatta	31	39	33	56	31	47	42	47	46	41	23	30	40
Khairpur	35	42	38	39	47	45	57	58	57	82	78	80	49
Khuzdar	43	48	45	40	71	56	54	47	52	.	.	.	50
Zhob	68	54	62	40	51	46	68	80	69	63	.	63	58
D.I.Khan	63	67	65	35	73	54	75	78	76	.	.	.	65
Kohistan	32	.	32	38	52	45	54	.	54	49	.	49	46
Khyber Agency	.	.	.	56	53	55	.	.	.	61	.	61	57
FR Kohat	.	.	.	60	54	57	.	.	.	42	73	60	58
Gilgit	52	66	59	48	63	56	62	67	64	69	67	69	60
Rawalakot	68	57	60	79	62	70	54	66	58	50	55	52	62
National	57	61	59	54	56	55	64	62	63	60	58	59	58

B = Boys, G = Girls, T = Total

Table-12 illustrates that urban girl students of public schools performed better than their boys counterparts in districts of Multan, Thatta, Khairpur, Khuzdar, D.I.Khan and Gilgit. Similarly rural girls of public sector in districts of Islamabad, Multan, Khairpur, Khuzdar, Zhob, D.I.Khan, Kohistan, and Gilgit outsourced their boys counterparts.

It is also evident from the above table that urban girls students of private schools performed better than boys students in districts of Islamabad, Bhakker, Thatta, Khairpur, Zhob, D. I. Khan and Gilgit. Similarly rural girls students of private sector outperformed their boys counterparts in district Bhakker, F.R.Kohat and Rawalakot.

4.9 Performance of Students in Science Test

The scores of Science test are presented in the following tables.

Table-13

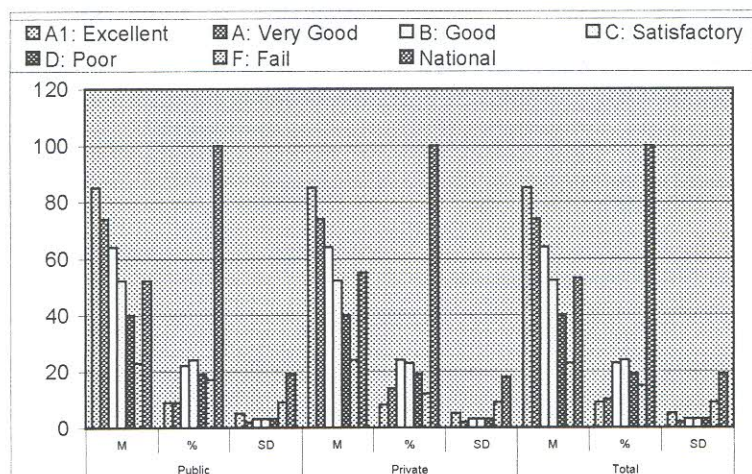
Grade-wise Distribution of Science Scores by School Type Percentage

Grade	Public			Private			Total		
	M	%	SD	M	%	SD	M	%	SD
A1: Excellent	85	9	5	85	8	5	85	9	5
A: Very Good	74	9	2	74	14	2	74	10	2
B: Good	64	22	3	64	24	3	64	23	3
C: Satisfactory	52	24	3	52	23	3	52	24	3
D: Poor	40	19	3	40	19	3	40	19	3
F: Fail	23	17	9	24	12	9	23	15	9
National	52	100	19	55	100	18	53	100	19

M= Mean, %=Percentage, SD=Standard Deviation

Table-13 reveals that the mean percentage score in Science at national level was 53 (53% questions correctly answered). The data show that 42% students of both public and private schools obtained AI, A and B grades. Only 43% students got C & D grades whereas 15% were unable to pass the test. Comparing the data of public and private sectors it was observed that the score of 46% of private sector fall in category A1, A and B, whereas 40% students of public sector achieved the same grades. The average percentage score of private school students was 55 whereas it was 52 for the students of public schools. A significant difference was observed in the performance of public and private school students.

Graph-6



4.10 Inter-District Differences in Science Test

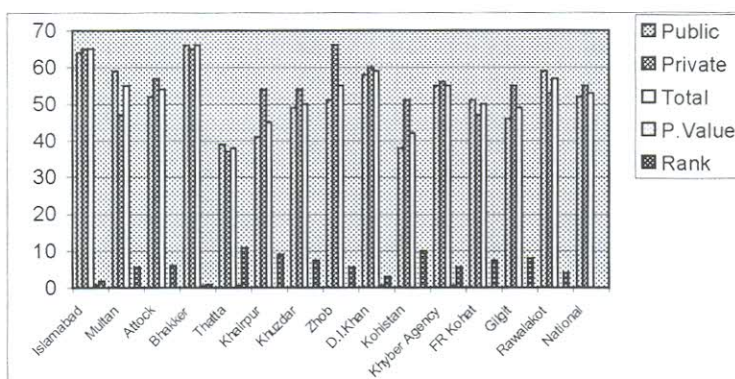
Table-14

Average Percentage Score by Region / Districts

Districts	Public	Private	Total	P.Value	Rank
Islamabad	64	65	65	0.779	2
Multan	59	47	55	0.000	5.5
Attock	52	57	54	0.022	6
Bhakker	66	65	66	0.571	1
Thatta	39	37	38	0.612	11
Khairpur	41	54	45	0.000	9
Khuzdar	49	54	50	0.057	7.5
Zhob	51	66	55	0.000	5.5
D.I.Khan	58	60	59	0.514	3
Kohistan	38	51	42	0.000	10
Khyber Agency	55	56	55	0.640	5.5
FR Kohat	51	47	50	0.238	7.5
Gilgit	46	55	49	0.000	8
Rawalakot	59	53	57	0.016	4
National	52	55	53	0.000

Table-14 depicts that the students of Bhakkar and Islamabad obtained the highest score i.e. (both public and private schools) followed by the students of D.I.Khan and Rawalakot whereas the students of Thatta were the lowest scorers. In all districts, the performance of the private school students was better than that of public school students. In 8 districts a significant difference was observed between the performance of public and private school students.

Graph-7



4.11 Students' Achievement in Science Test by Area in Public and Private Schools

The rural and urban differences show disparity in level of quality of education. Students' achievement has been analyzed area-wise. Data are reported in table-15.

Table-15

Location	Public	Private	P. Value
Urban	53	55	0.136
Rural	51	55	0.000
P. Value	0.008	0.665	-

Table-15 describes that urban students performed better than rural students of public sector and scores differ significantly. The mean score of the urban, rural students of private schools was same. The performance of private students was better than that of their public counterparts and the difference was not significant. District-wise details are presented in table-16.

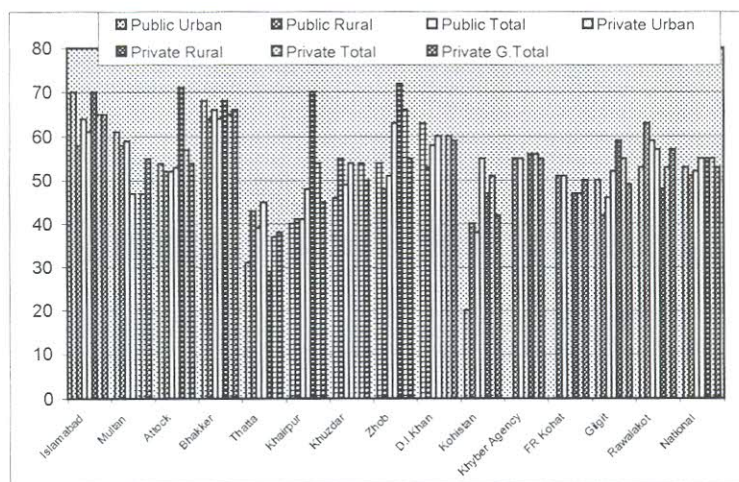
Table-16

District wise Average Percentage Score by Area

Districts	Public			Private			G.Total
	Urban	Rural	Total	Urban	Rural	Total	
Islamabad	70	58	64	61	70	65	65
Multan	61	58	59	47	.	47	55
Attock	54	52	52	53	71	57	54
Bhakker	68	64	66	64	68	65	66
Thatta	31	43	39	45	29	37	38
Khairpur	40	41	41	48	70	54	45
Khuzdar	46	55	49	54	.	54	50
Zhob	54	48	51	63	72	66	55
D.I.Khan	63	53	58	60	.	60	59
Kohistan	20	40	38	55	47	51	42
Khyber Agency	.	55	55	.	56	56	55
FR Kohat	.	51	51	.	47	47	50
Gilgit	50	42	46	52	59	55	49
Rawalakot	53	63	59	57	48	53	57
National	53	51	52	55	55	55	53

The above table-16 reveals inter-district differences with respect to location and type of schools. The data show that students of public schools in rural areas of Thatta, khairpur, khuzdar, Kohistan and Rawalakot out-scored their urban counterparts whereas students of urban areas of the public sector performed better than their rural counterparts in districts of Islamabad, Multan, Attock, Bhakkar, D.I.Khan and Gilgit. The students of private schools of urban areas of Thatta and Rawalakot scored higher than their rural counterparts whereas the students of private sector of rural area of Islamabad, Attock, Bhakkar, Zhob and Gilgit scored higher than their urban counterparts.

Graph-8



4.12 Gender Differences in Students' Performance in Science

The students' scores of both sectors by gender and location are reported in table-17.

Table-17

Gender	Public		Private	
	Urban	Rural	Urban	Rural
	Mean	Mean	Mean	Mean
Boys	51	52	55	57
Girls	56	51	54	51
P. Value	0.000	0.463	0.357	0.003

The performance of girls students of public schools was better than that of boys in urban area and result was significant. On the contrary in the private schools, the performance of rural boys was better than that of rural girls and difference of mean score was significant. District-wise data are explained in table 18.

Table-18

District-wise Average Score by Gender

Districts	Public						Private						G. Total
	Urban			Rural			Urban			Rural			
	B	G	T	B	G	T	B	G	T	B	G	T	
Islamabad	73	68	70	58	58	58	60	62	61	70	40	70	65
Multan	60	61	61	63	53	58	44	50	47	.	.	.	55
Attock	55	53	54	60	48	52	52	54	53	72	70	71	54
Bhakker	71	66	68	62	66	64	61	69	64	69	66	68	66
Thatta	28	39	31	52	29	43	44	46	45	41	23	29	38
Khairpur	39	41	40	38	42	41	48	48	48	72	69	70	45
Khuzdar	44	49	46	45	65	55	56	52	54	.	.	.	50
Zhob	49	60	54	40	55	48	63	68	63	72	.	72	55
D.I.Khan	64	62	63	39	68	53	59	61	60	.	.	.	59
Kohistan	20	.	20	40	40	40	55	.	55	47	.	47	42
Khyber Agency	.	.	.	57	52	55	.	.	.	56	.	56	55
FR Kohat	.	.	.	53	49	51	.	.	.	36	54	47	50
Gilgit	49	52	50	42	42	42	57	47	52	57	63	59	49
Rawalakot	63	48	53	70	57	63	53	63	57	49	47	48	57
National	51	56	53	52	51	51	55	54	55	57	51	55	53

B = Boys. G = Girls. T = Total

Table-18 illustrates that urban boys students of public schools showed better performance in districts of Islamabad, D.I. Khan, Bhakkar and Rawalakot. Whereas the girls students of public sector outperformed their counterparts in districts of Multan, Thatta, Khairpur, Khuzdar, Zhob and Gilgit in urban area. On the contrary rural girls students of public sector almost showed better performance than boys' students in district Bhakkar, Khairpur, Khuzdar, Zhob and D.I. Khan.

The girls students of private sector in urban areas of district Multan, Attock, Thatta, Zhob, Bhakkar, D.I. Khan and Rawalakot scored higher than boys students. In the remaining districts the performance of boys students was better than girls students in urban schools. There were not private schools functioning in rural areas of few districts that is why any comparison among these districts was not possible.

4.13 Composite Score

The raw scores of each student in three subject tests were summed up in order to get the composite score. The grade wise distribution of composite score by sector is reported in table-19.

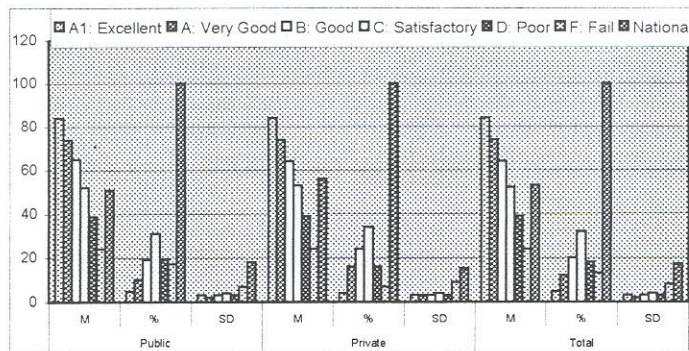
Table-19
Grade-wise Distribution of Composite Scores by School Type

Grade	Public			Private			Total		
	M	%	SD	M	%	SD	M	%	SD
A1: Excellent	84	5	3	84	4	3	84	5	3
A: Very Good	74	10	2	74	16	3	74	12	2
B: Good	65	19	3	64	24	3	64	20	3
C: Satisfactory	52	31	4	53	34	4	52	32	4
D: Poor	39	19	3	39	16	3	39	18	3
F: Fail	24	17	7	24	7	9	24	13	8
National	51	100	18	56	100	15	53	100	17

M= Mean, %=Percentage, SD=Standard Deviation

The data in table-19 show that the mean percentage composite score was 53 (53% questions correctly answered). The data show that 37% students of both sectors got A1, A and B grades, 50% students of both sectors scored grade C and D grades, whereas 13% were unable to pass the tests. Comparing the data of the public and private sectors it was observed that the scores of 44% students of private sector fall in category A1, A and B, whereas 34% students of public sector achieved the same grades.

Graph-9



4.14 Inter-District Differences of Composite Scores

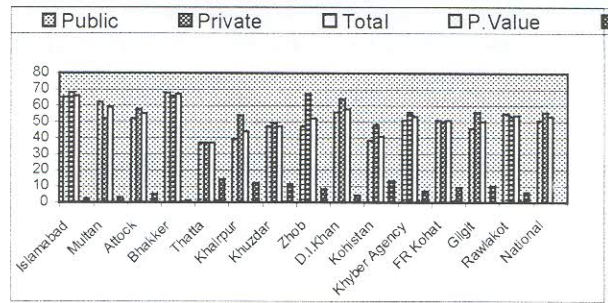
Composite scores of the selected districts were compared. The comparison is presented in table-

Table-20
Average Percentage Composites Score by School Type

District	Public	Private	Total	P.Value	Rank
Islamabad	65	68	66	0.075	2
Multan	62	52	59	0.000	3
Attock	52	58	55	0.001	5
Bhakker	68	66	67	0.336	1
Thatta	37	37	37	0.794	14
Khairpur	39	54	44	0.000	12
Khuzdar	47	49	47	0.341	11
Zhob	47	67	52	0.000	8
D.I.Khan	56	64	58	0.000	4
Kohistan	38	48	41	0.000	13
Khyber Agency	51	56	53	0.061	7
FR Kohat	51	50	51	0.637	9
Gilgit	46	56	50	0.000	10
Rawlakot	55	53	54	0.228	6
National	51	56	53	0.000

The scores reported in table-20 indicate that there was no significant difference of mean in public and private schools in districts of Islamabad, Bhakkar, Thatta, Khuzdar, khybar agency, F.R. Kohat and Rawalakot. However, significant difference was observed in districts of Multan, Attock, Khairpur, Zhob, D. I. Khan, Kohistan, and Gilgit. The students of Bhakkar achieved the highest average scores followed by students of Islamabad and Multan. The students of the Thatta remained the lowest scorers in the composite scores. A significant difference was found in the performance of public and private sector at national level.

Graph-10



4.15 Students' Achievement by Area on Composite Test

Table-21

Location	Public	Private	P. Value
Urban	52	56	0.000
Rural	50	55	0.000
P. Value	0.005	0.260	-

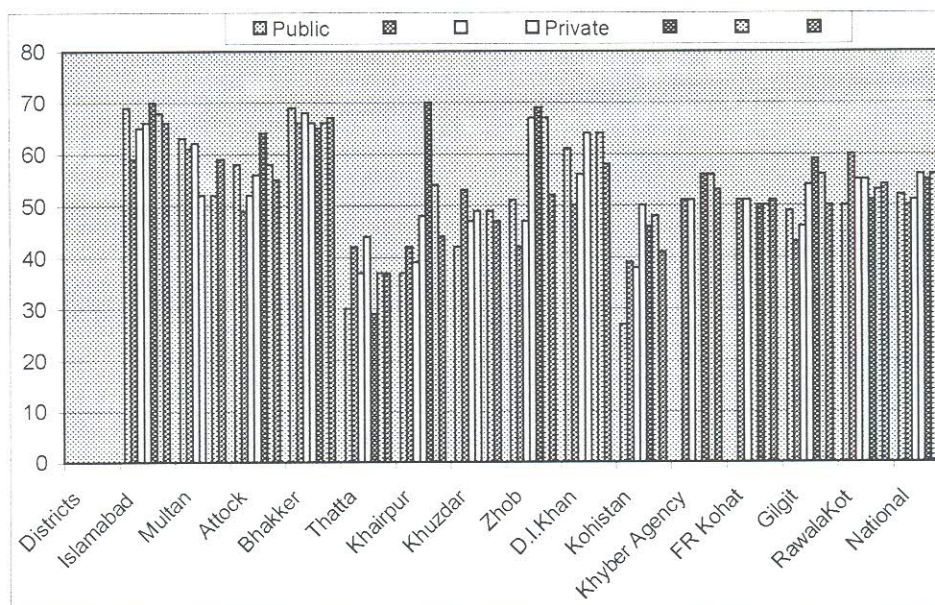
The mean percentage score of urban students of public sector was 52 and of rural students was 50, which was significant. Whereas there was no major difference in the performance of private sector students by location and they got the same score. District wise scores by location is reported in table-22.

Table-22

Districts	Public			Private			G. Total
	Urban	Rural	Total	Urban	Rural	Total	
Islamabad	69	59	65	66	70	68	66
Multan	63	61	62	52	.	52	59
Attock	58	49	52	56	64	58	55
Bhakker	69	66	68	66	65	66	67
Thatta	30	42	37	44	29	37	37
Khairpur	37	42	39	48	70	54	44
Khuzdar	42	53	47	49	.	49	47
Zhob	51	42	47	67	69	67	52
D.I.Khan	61	50	56	64	.	64	58
Kohistan	27	39	38	50	46	48	41
Khyber Agency	.	51	51	.	56	56	53
FR Kohat	.	51	51	.	50	50	51
Gilgit	49	43	46	54	59	56	50
RawalaKot	50	60	55	55	51	53	54
National	52	50	51	56	55	56	53

It was observed from the above table that urban students of public sector in Islamabad, Multan, Attock, Bhakkar, Zhob, D.I.Khan and Gilgit performed better than their rural counterparts. The urban students of private sector of Bhakkar, Thatta and Rawalakot outperformed their rural counterparts. At national level there was no significant difference in the performance of students of private sector by location, whereas a significant difference was found in the performance of students of public sector by location.

Graph-11



4.16 Gender differences in Students' Performance

The composite student scores of both sectors by gender is reported in the following table:

Table-23

Gender	Public		Private	
	Urban	Rural	Urban	Rural
	Mean	Mean	Mean	Mean
Boys	51	51	57	57
Girls	54	50	55	50
P. Value	0.006	0.304	0.88	0.001

It was observed that the performance of urban girls students of public sector was better than their boys counterparts and difference of mean score was significant. Whereas rural boys students of private sector outperformed their girls counterparts. The result was found significant for both private and public sector by gender.

District wise data are presented in table-24.

Table-24

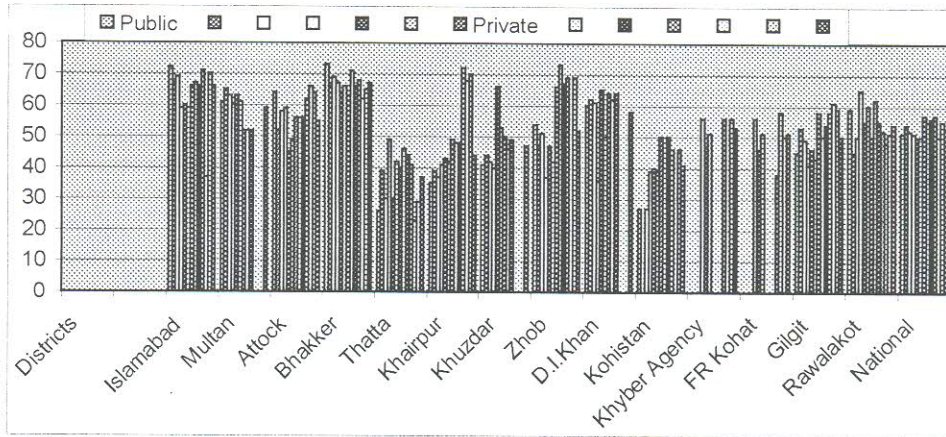
Districts	Public						Private						G. Total
	Urban			Rural			Urban			Rural			
	B	G	T	B	G	T	B	G	T	B	G	T	
Islamabad	72	67	69	59	60	59	66	67	66	71	37	70	66
Multan	61	65	63	60	63	61	52	52	52	.	.	.	59
Attock	64	52	58	59	45	49	56	56	56	62	66	64	55
Bhakker	73	66	69	67	64	66	63	71	66	68	62	65	67
Thatta	26	39	30	49	30	42	40	46	44	41	23	29	37
Khairpur	35	39	37	41	43	42	49	48	48	72	68	70	44
Khuzdar	41	44	42	40	66	53	50	46	49	.	.	.	47
Zhob	54	47	51	37	47	42	66	73	67	69	.	69	52
D.I.Khan	60	62	61	36	65	50	64	62	64	.	.	.	58
Kohistan	27	.	27	39	40	39	50	.	50	46	.	46	41
Khyber Agency	.	.	.	56	47	51	.	.	.	56	.	56	53
FR Kohat	.	.	.	56	46	51	.	.	.	38	58	50	51
Gilgit	45	53	49	41	46	43	58	50	54	58	61	59	50
Rawalakot	59	45	50	65	55	60	50	62	55	52	48	51	54
National	51	54	52	51	50	50	57	55	56	57	50	55	53

B = Boys, G = Girls, T = Total

Table-24 mentions that urban girls students of public sector performed better in districts of Multan, Thatta, Khairpur, Khuzdar, D.I.Khan and Gilgit. On the contrary, rural boys students of public sector outperformed their girls counterparts in districts of Bhakkar, and Rawalakot.

It was revealed from the scores that urban girls of private sector scored the highest in districts of Bhakkar, Thatta, Zhob and Rawalakot as compared to boys students. Whereas, rural girls students of private schools in districts of Attock, F.R.Kohat and Gilgit, outscored their boys counterparts. At national level urban girls of private sector outperformed their rural counterparts.

Graph-12



4.17 Impact of Teachers' Academic Qualification on Students' Achievement

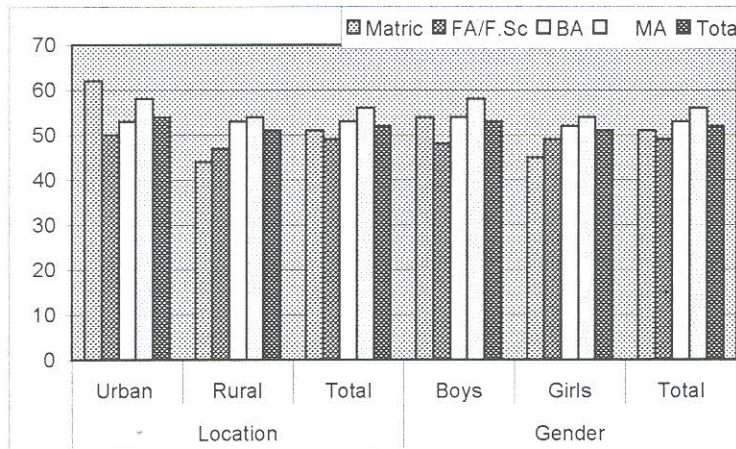
Table-25

Academic Qualification	Location			Gender		
	Urban	Rural	Total	Boys	Girls	Total
Matric	62	44	51	54	45	51
FA/F.Sc	50	47	49	48	49	49
BA	53	53	53	54	52	53
MA	58	54	56	58	54	56
Total	54	51	52	53	51	52

* Significant relationship observed in urban area at 0.05 level of significance

It was observed that higher level of teachers' academic qualification had positive impact on students' performance. Matriculate teachers and teachers with intermediate qualification had almost same impact on students' achievement. In urban areas teachers' academic qualification had more impact than in rural area. Significant relationship in students' scores was observed in urban areas. It was astonishing to note that teachers with matric qualification maintained impact (62%) on students' performance in urban areas.

Graph-13



4.18 Impact of Teachers' Professional Qualification on Students' Achievement

Table-26

Professional Qualification	Location			Gender		
	Urban	Rural	Total	Boys	Girls	Total
PTC	58	49	52	54	51	52
CT	52	48	50	46	53	50
B.Ed	53	53	53	55	51	53
M.Ed	50	54	51	52	49	51
Total	54	51	52	53	51	59

* Significant relationship observed in urban area at 0.05 level of significance

It was observed that professional qualification of teachers had a significant effect on students' achievement. The students taught by B.Ed teachers got the highest scores followed by the students taught by PTC teachers. The students taught by CT teachers got the lowest score. It seemed that the professional qualification of teachers had positive effect on students' achievement.

4.19 Impact of Teachers' Experience on Students' Achievement

Teaching learning is a complex process that demands proper interaction among students and teachers. Teaching profession demands to learn methods and techniques for imparting knowledge to the students. It is usually expected that teachers through experience get command of subjects and learn teaching skills with the passage of time. In addition, in-service training of teachers also play a crucial role for enhancing professional skills of teachers. The impact of teachers experience on students' achievement was explored and the data are presented in table-27.

Table-27

Experience	Location			Gender		
	Urban	Rural	Total	Boys	Girls	Total
1-5	54	56	55	57	52	55
6-10	56	50	53	54	52	53
11-15	46	47	46	48	45	46
16+	56	47	51	48	54	51
Total	54	51	52	53	51	52

The data in above table-27 show that students taught by teachers having 1-5 years experience were the highest scorers followed by students taught by teachers with 6-10 years experience. It is interesting to note that the students taught by teachers having 11-15 years of experience got the lowest scores. As far as gender was

concerned, teachers' experience had more impact on the performance of boys than on girls and it had almost same impact on the performance of urban and rural students.

4.20 Impact of Physical Facilities in the School on Students' Performance

Physical facilities are the essential elements to facilitate teaching-learning process. The impact of physical facilities on students' achievement can be seen in table-28.

Table-28

S. No	Basic Facility	Mean % Score
1.	Water and Electricity, Toilet	48
2.	Water, Electricity Toilet, Boundary wall	52
3.	Water, electricity, boundary wall, toilets, furniture, playground, and dispensary	58

It was observed from the above table that availability of physical facilities in a school had a significant impact on students' performance. The availability of drinking water, electricity, and boundary wall, toilets furniture, playground, and dispensary were determining factors and had positive impact on students' achievement.

4.21 Impact of Fathers' Education on Students' Performance

The father's education level is very crucial determining factor on a child's performance. Many educationists believe that educated fathers are usually more conscious about educating their children as compared to uneducated fathers. Impact of fathers' education on their children is shown in table-29.

Table-29

Father's Education	Urban	Rural	Total	Boys	Girls	Total
Illiterate	51	48	49	49	49	49
Literate	50	50	50	53	45	50
Primary	50	52	51	51	51	51
Middle	53	50	51	53	50	51
High	54	53	53	54	53	53
FA/B.Sc	60	54	58	58	58	58
BA/B.Sc	55	56	56	56	55	56
MA/M.Sc	61	60	60	63	57	60
National	54	51	53	53	52	53

It is observed that children of illiterate and literate fathers showed same performance. As the fathers' education increased from middle to BA/B.Sc. a consistent increase in average percentage score of children was noted. The level of father's education had even more impact on urban students than rural students. The level of father's education had more influence on the boys' performance than on girls. A significant difference was noted in average percentage scores of children whose fathers had higher level of education.

4.22 Impact of Mothers' Education on Students' Performance

Mother plays vital role in character building and personality development of her children. The impact of level of mothers' education on the performance of their children was explored and scores are presented in table-30.

Table-30

Mother's Education	Boys	Girls	Total	Urban	Rural	Total
Illiterate	51	51	51	50	52	51
Literate	52	47	50	54	45	50
Primary	56	51	54	58	50	54
Middle	56	53	55	58	51	55
High	58	55	57	58	55	57
FA/F.Sc	59	54	58	58	59	58
BA/B.Sc	60	52	59	59	58	59
MA/M.Sc	60	66	62	66	56	62
National	54	51	53	53	52	53

A consistent increase in the mean percentage score of students was observed with increasing level of their mother's education. The level of mother's education had more impact on the urban students rather than on rural students. It was also observed that level of mother's education had more impact on the performance of boys than that of girls. A significant difference was found in average percentage scores of children with mothers education level.

4.23 Impact of Fathers' Occupation on Students' Performance

The father's occupation is a symbol of social status. This study examined the impact of father's occupation on the achievement of students. The data are reported in table-31.

Table-31

Fathers' Occupation	Urban	Rural	Total	Boys	Girls	Total
Government Servant	54	51	53	55	51	53
Private Job	55	53	54	55	53	54
Agriculturist	50	48	49	57	45	49
Trader/Shop Keeper	53	54	54	53	54	54
Laborers	52	51	51	52	51	51
National	53	52	53	54	51	53

It was observed that children of private jobholders and traders were the highest scorers, whereas the children of farmers were the lowest scorers. The father's occupation had more impact on the performance of urban students as compared to rural students. Similarly father's occupation had more impact on the performance of boys than that of girls.

4.24 Impact of Mothers' Occupation on Students' Performance

It is usually observed that occupation of mother is also considered as social status symbol. Mother contributes in socio-economic uplift of the family in general and particularly of her children. The data regarding impact of mothers' occupation on students' performance are presented in the following table-32.

Table-32

Mother Occupation	Urban	Rural	Total	Boys	Girls	Total
House Wife	54	51	52	53	51	52
Make things at home	54	53	53	53	54	53
Government Servant	59	51	57	60	55	57
National	54	51	53	53	52	53

It was observed that children of the mothers of government service got the highest scores. However, mother's occupation had more impact on the performance of urban children as compared to rural children. It was also noted that mother's occupation had more impact on the performance of boys than on girls.

4.25 Views of the Students about Homework

Students were asked about homework whether their parents helped them in doing homework. Their responses are reported in the following table-33.

Table-33

Homework	Frequency	Percentage
No Response	106	3
Yes	2206	67
No	964	29
Total	3276	100

The table-33 illustrates that 67% students got help from their parents at home and they achieve slightly better scores than those children who did not get help from their parents. However, no significant difference was found.

4.26 Impact of Homework Taught by Family Members

Students were also asked about their family members who helped them in doing their homework. Their responses are shown in table-34.

Table-34

Homework	Frequency	Percentage	Mean
No Response	766	23	49
Father	723	22	54
Mother	473	14	54
Brother	681	21	53
Sister	446	14	54
Any other person	187	6	54
Total	3276	100	53

The data show that students taught by their parents and sisters got highest scores followed by those students who were helped by their brothers. However, there was no significant difference in the students' scores either helped by family members or helped by other than family member.

4.27 Impact of Tuition on Students' Performance

Tuition has become tradition in our society. The impact of tuition was worked out and data are presented in following table:

Table-35

Tuition	Frequency	Percentage	Mean	S.D.
Yes	1058	32	52	17
No	2218	68	53	17
Total	3276	100	53	17

It was observed that tuition had no positive impact on the students' performance and no significant difference was found in performance of students.

4.28 Impact of Breakfast on Students' Performance

Table-36

Breakfast	Frequency	Percentage	Mean	SD
No Response	99	3	44	17
Yes	3083	94	53	17
No	94	3	47	15
Total	3276	100	53	17

The data in the above table show that breakfast had positive effect on students' performance.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings:

5.1 Students' performance in Mathematics, Urdu and Science

- i) The mean percentage score in Mathematics, Urdu, and Science was 47, 58 and 53 respectively at national level. Performance of most of the students in Mathematics was very poor, whereas most of the students performed slightly better in Urdu and Science. The performance of private school students in most subjects was better than the public school students. Similarly the performance of urban students in all subjects was better than rural students. It was interesting to note that the performance of rural and urban students of private sector was same in Mathematics. Whereas performance of urban student was better than that of rural students in public schools in mathematics. Performance of urban boys of both sectors was better than their girls counterparts in Mathematics. The findings of this study indicate that the performance of boys students in Mathematics was better than that of girls students, whereas performance of girls student was better than that of boys in subjects of Urdu and science.
- ii) The findings of the study indicated that scores of 39% students of private school in Mathematics fall in A1, A and B category whereas the scores of 30% students of public schools fall in the same category. In Urdu, the scores of 60% students of private schools fall in A1, A and B category whereas the scores of 52% students of public schools fall in the same category. This indicated the outstanding performance of private school students as compared to that of public schools. In Science, the scores of 46% students of private school fall in A1, A and B category whereas the scores of 40% students of public schools fall in the same category. It is a matter of grave concern for the policy makers and planners dealing with the public sector education.
- iii) Inter-District difference shows that students of Bhakker, Islamabad and Multan, were the highest achievers in Mathematics whereas the students of Thatta, Khairpur and Gilgit were the lowest scorers. The students of Bhakkar, Islamabad and D.I.Khan got highest scores in Urdu whereas the students of Thatta and kohistan got lowest scores. The students of Bhakkar, Islamabad and D.I. Khan got highest scores in Science whereas the students of Thatta and kohistan got lowest scores.

5.2 Composite Score of Students' Performance in Three Subjects

The total mean percentage composite scores for both sectors was 53. It was 51% for public schools and 56% for private schools. The difference was significant. The scores of 55% students of private schools fall in A1, A and B category whereas the scores of 41% students of public schools fall in the same category. Majority of the students of districts of Bhakkar, Islamabad and Multan got the highest average composite percentage scores whereas most of the students of districts of Thatta and Kohistan got the lowest scores. The urban students of public school performed better than their rural counterparts. Boys students of both sectors performed better than their girls counterparts.

5.3 Impact of Teachers' Qualification and Experience on Students' Performance

- i) It was found that Teacher's academic and professional qualification had positive impact on the students' achievement. It had more impact on the performance of boys students than on the performance of girl students. Similarly teachers' qualification had more influence on the performance of urban than on the rural students.
- ii) It was also found that students taught by teachers holding Master degree got the highest score followed by students taught by teachers holding B.A. degree. The urban students taught by Matriculate teachers got the highest score followed by teachers with M.A. degree. Similarly rural students taught by teachers with M.A degree got the highest score followed by teachers having B.A degrees. It was evident that teachers academic qualification had more impact on urban students than on rural students. Boys students taught by teachers holding master degree got the highest scores followed by teachers having B.A degree. Similarly girls students taught by teachers having M.A. degree scored better.
- iii) Teacher's professional qualification had significant effect on students' achievement. The students taught by teachers having PTC or having B.Ed qualification got the highest scores. The rural students either taught by B.Ed teachers or M.Ed. were the highest achievers. Similarly urban students taught by PTC teachers or by B.Ed. teachers, got the highest scores. Girls students taught by M.Ed. or PTC teachers got the highest score whereas in case of boys they got highest score when they were taught by B.Ed teachers.
- iv) It was found that teachers' experience had a positive influence on the students' achievement. Students taught by teachers having 1-5 years experience were the highest scorers followed by the students taught by teachers either with 6-10 year or with 16 years or more experience.

It was interesting to note that teachers either in the first 10 years of their service were effective or after 16 years. Teachers experience had more influence on boys than on girls and it had more impact on the urban than on rural students.

5.4 Impact of Physical Facilities on Students' Performance

It was observed from the data that availability of physical facilities in a school had a significant impact on students' performance. The availability of drinking water, electricity, boundary wall, toilets, furniture, playground, and dispensary were determining factors and had positive impact on students' achievement.

5.5 Impact of Parental Education on Students' Performance

i) The data showed that children of illiterate and literate fathers performed equally. As fathers' education increased from middle level to graduation, a consistent increase in average percentage score of children was noted. The level of father's education had more impact on urban students than on rural students. The level of father's education had more influence on the boys' performance than that of girls. A significant difference was found in average percentage scores of children with fathers.

ii) A consistence increase in the mean percentage score of students was observed with increasing level of their mother's education. It was found that impact of mother's education was more on boys than girls. Moreover, mother's education had more influence on urban students than rural students.

5.6 Impact of Parental Occupation on Students' Performance

It was observed that children of private job holder/traders were highest scorers, whereas the children of Farmers were the lowest scorers. The father's occupation had more impact on the performance of urban students as compared to rural students. Similarly father's occupation had more impact on the performance of boys than on girls.

Conclusions

- 1) It was concluded that the performance of most of students of both sectors in all subjects was poor in general and particularly in mathematics at national level.
- 2) The performance of Private school students in most subjects was better than Public school students. Similarly performance of urban students in all subjects was better than that of rural students.
- 3) Boys students' performance was significantly better than their girls counter-parts in all subjects. In private schools 39% student got A1, A and B grades in mathematics. Whereas only 30% students of public schools scored the same grades.
- 4) In private schools, 60% students scored A1, A and B grades in Urdu whereas 52% students of Public schools scored the same grades. Similarly in science the performance of private school students' was better than that of public schools
- 5) Students of Bhakkar, Islamabad, Multan, got the highest scores in most of the subjects whereas the students of Thatta and Kohistan achieved lowest in most subjects which indicated the poor performance of students belonging to these districts.
- 6) Teacher's academic qualification had positive impact on the performance of students. It had more impact on urban than on rural students. Students taught by teachers holding Matric or M.A degree got the highest scores.
- 7) Teacher's experience also had a positive influence on students' achievements. Students taught by teachers having 1-5 years of experience got the highest score followed by students taught by teachers having 16 years or more experience.
- 8) The availability of drinking water, electricity, boundary wall, toilets, furniture, playground, and dispensary were determining factors and have positive impact on students' achievement.
- 9) The level of parental education had a significant impact on the performance of their children.

Recommendations

On the basis of findings and conclusions, the following recommendations are made for the policy makers, decision makers and educational planners.

1. Refresher courses for Mathematics teachers may be arranged at district level to enhance the skills and knowledge in teaching of Mathematics;
2. Private sector is providing comparatively better education than public sector. It is recommended that incentives may be provided to private sector for further improvement but a monitoring mechanism for schools and classroom supervision may be established at district level.
3. Urban public students significantly performed better than their rural counterparts as well as boys students performed better than girls. It is recommended that appropriate measures may be taken to decrease gender disparity and the disparity between the urban and rural students.
4. Availability of physical facilities at school level has significant impact on the performance of the students. It is recommended that proper arrangements should be made at district level to provide adequate physical facilities in each school.

Implications

- The study has identified some crucial factors i.e. (for example) affecting the quality of education, which need further exploration through research studies.
- Further study needs to be undertaken with on regular basis, so that pragmatic policy measures can be taken for providing quality of education in the country.

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