(AEPAM Research Study no. 167)

# FACTORS ASSOCIATED WITH LEARNING ACHIEVEMENT OF GRADE-V STUDENTS IN PUBLIC SCHOOLS

***SELECTED REGIONS OF PAKISTAN***

**Academy of Educational Planning and Management**
**Ministry of Education**
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# Preface

This is the second study conducted by Academy of Educational Planning and Management (AEPAM) on qualitative aspects of primary level education in Pakistan. The first study assessed learning achievement at primary level but lacked identifying factors affecting learning. It was with this intention that the current study was undertaken. Due to limited resources the study targeted seven out of 130 school districts of the country.

Quality of education at the primary level in Pakistan is dependent upon many factors including the teacher's qualifications (both formal and professional), availability of teaching-learning materials, physical facilities in the schools and the socio-economic background of the students. It needs to be emphasized that if the quality of education is improved, the enrolment in public schools would increase and it would lead to a greater return on investment. Since the study is confined to seven major districts of Pakistan, the findings therefore cannot be generalized to the entire country. There is a great deal of information on what factors affect quality of education in these selected regions and lessons can be learned from these findings. The main purpose of this study was to assess the learning achievements of the students at the primary level and to identify major factors associated with the students' performance at this level.

I would like to take this opportunity to express my heartfelt gratitude to the faculty members/official of AEPAM for their efforts in bringing about this study. The Joint Director Dawood Shah who worked as the Coordinator for the study and was given the responsibility of overall coordination and supervision of the field activities as well as writing the report; The Data Collection Team of AEPAM comprising of the Joint Director Mirza Tauhiduddin Ahmad, Deputy Directors Dr. Humala Khalid, Muhammad Aslam Bhatti and Islamuddin Baloch, System Analyst Muhammad Nasir Amin and Research Assistant Akhtar Tatla, Senior Programmer Amir Rashid for carrying out data analysis on the computer and Stenographer Mahmood Hussain Shah for typing this work.

I am also deeply thankful to all the others who were at any stage involved in the process of completing this study.

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# Executive Summary

1. In 1999 the Academy of Educational Planning and Management (AEPAM) Ministry of Education, Islamabad conducted a national study entitled " Measuring Learning Achievement at Primary Level in Pakistan." The study was based on a sample consisting of 2,794 grade V pupils from 145 (75 boy and 70 girl schools) public schools. Standardized tests were used for Science, Mathematics, and the national language Urdu that were based on the National Curriculum and the textbooks of class-IV. This study provided an insight into student achievement at the national level but it did not examine the factors affecting quality of learning in these schools.

2. The current study is an attempt to identify the factors affecting learning in seven districts of the country. Understanding these factors will be of great help to teachers, principles, managers as well as policy makers.

3. This study has assessed learning achievement of students at primary level and has identified the major factors associated with students' performance at this level. Sample for this study consists of seven districts (one from each province/region). Four schools (two boys and two girls) were selected from each of the sample districts. From each selected school, 20 students of class-V were randomly picked for testing. In all 504 children were selected. In this study, the achievements tests in Mathematics, Science and Urdu that were developed for the first study (Measuring Learning Achievement at Primary Level in Pakistan) were used. All 504 students had qualified grade IV and were currently studying in grade V. They can be useful in developing an insight into some of the crucial factors affecting learning in the government schools of Pakistan.

4. This study has examined students' scores and how various factors affect these. The findings of the study are briefly presented here. First, the achievement scores are summarized in the following table with brief interpretation followed by the independent variables that affect scores.

**Average Percentage Score by Region/Districts and Subject**

| District/Region | Math | | Urdu | | Science | | Comp. Score | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Lahore | 57 | 28 | 74 | 24 | 79 | 13 | 70 | 21 |
| Karachi Cent. | 72 | 12 | 89 | 8 | 82 | 10 | 81 | 8 |
| Peshawar | 35 | 16 | 34 | 20 | 53 | 15 | 40 | 15 |
| Quetta | 38 | 18 | 53 | 21 | 60 | 15 | 50 | 17 |
| Islamabad | 42 | 18 | 65 | 28 | 63 | 18 | 57 | 21 |
| Gilgit/Skardu | 44 | 18 | 65 | 19 | 71 | 15 | 60 | 12 |
| Khyber Agency | 48 | 15 | 36 | 19 | 50 | 19 | 43 | 16 |
| National | 48 | 22 | 60 | 28 | 65 | 19 | 58 | 21 |

5. National mean score is 48% in mathematics, 60% in Urdu, and 65% in Science. The performance of children in Urdu and Science is satisfactory whereas performance in mathematics is quite low.

6. Region wise, it appears that the students of Karachi are on top of the list in all subjects followed by the students of Lahore, whereas the students of Peshawar and Khyber Agency are low scorers in most of the subjects. From rural urban perspective, the urban students have performed significantly better than the rural students. The difference is particularly in sharp contrast when we look at urban and rural students in the capital territory, Islamabad. Gender wise, girls' performance is significantly better than boys in all subjects including mathematics where usually the boys perform better than the girls.

7. To determine relationship between scores and the independent variables, the study correlated teachers' attributes, parental attributes, and school attributes. This included looking in to factors such as the availability of school facilities and the socio-economic background of the students. A summary of factors that influence student achievement scores across the board, is given below:

8. Considering teachers attributes, the study shows that teacher's academic qualification has positive impact on students' achievements, particularly on urban (rather than rural) students. Students taught by teachers holding B.A./B.Sc. degree obtained the highest score. Like wise, professional qualifications of teachers also have had a positive effect on students' achievement particularly those students either taught by C.T. teachers or B.Ed. teachers. Similarly teacher's professional qualification has more influence on the performance of the urban

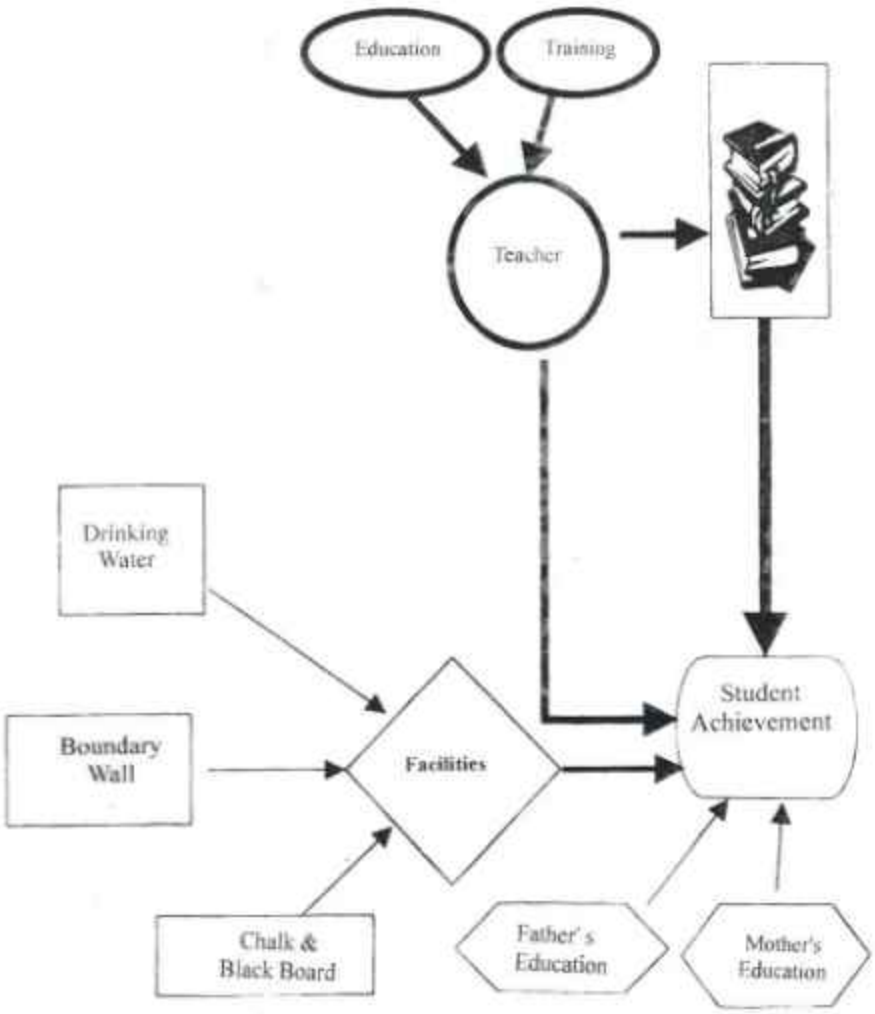
students than the rural students. The study suggests that teachers having 6-10 years of experience and 16 years or more experience have a strong impact on students' achievement.

9. As far as the parental education of the student is concerned, a consistent increase in the mean percentage score of students is observed with the increasing level of parental education up to BA/B.Sc. Looking at the individual parent, for example, in the case of father education, the scores are positively correlated up to first degree level. In the case of mother education, the scores are positively correlated with secondary school education. There is however, a decline in the score of children whose fathers have a master's degree. Student's score decreases as the level of mother education increases beyond secondary school education (from F.A./F.Sc. to M.A./M.Sc). It is also observed that the father's education has a strong impact on a boy's achievement whereas the level of mother education has strong impact on girl's achievement.

10 A positive influence on students' achievement is observed with regards to the school attributes such as the availability of chalk, board, boundary wall, drinking water as well as student's books.

11 The findings relating to independent variables can be emphasized as policy options for those concerned with improving the quality of learning in government schools. Pakistan is faced with the massive problem of gender gap between boys and girls. The study has found that children of educated mothers have better scores. Emphasis on female education will ensure more girls in schools with better scores and this in turn will have greater impact on reducing the gender gap. Education for girls up to secondary schools appears to be of fundamental importance. Although education of the teacher is an important factor, experience is more significant in this context. Apparently, teachers are more effective for the first 10 years of their service, and later become ineffective. This can very well be due to the fact that the primary school teachers reach the maximum of their scales in the first 10 years of their service after which there is very few opportunities for their promotion. The experience bracket of 16 years and above may be related to senior teachers in BPS 16, which has positive impact on students' performance. They, therefore, have interest in teaching and are more effective teachers. Policy makers should seriously consider enhancing the entry qualifications of teachers and opening up the ladder of promotion to primary school teachers.

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



# 1. Introduction

1.1 NEMIS is the National Educational Management Information Services that is responsible for monitoring several aspects of EFA and basic education in Pakistan. One of the objectives of NEMIS includes developing and maintaining quantitative as well as qualitative databases on basic education. The quantitative aspect of NEMIS is quite strong as it is based on a time series data that database has been established for the past eight years. Quantitative database comprises data on enrollments, teachers and facilities in schools, whereas qualitative aspect of NEMIS has been tackled for last two years. In the first attempt in 1999, a national achievement study was conducted based on a nation wide representative sample. A standardized test in Mathematics, Science, and the national language Urdu was given to about 2800 grade V children all over the country. The findings were incorporated in a qualitative database designed for this purpose and the findings were published. In the next stage an attempt was made to examine relationship between independent variables and the dependent variable or the student achievement. Under the NEMIS Project a research study named, "A Study on comparing school performance to understand which schools are doing better by assessing and comparing quality of education" was conducted by the Academy. The study has tried to identify those factors that affect the student's achievement in the public primary schools at the national level.

## 1.2 Rationale

1.2.1 Education plays a key role in the socio- economic development of a country. Various studies conducted by the World Bank reveal that returns to primary education are the highest among all the educational levels. Primary and elementary education can help in alleviating poverty by increasing income, improving health and nutrition and reducing fertility. Bacchus examined the quality of education that is so poor that it is not effective to contribute to the national growth of many developing countries. There are many factors responsible for this situation including a marked decline in the resources made available for education. The World Bank too noted that Primary school children in the low income countries learn less than what their national curricula expect and also learn very little in comparison to their counterparts in richer countries. They perform especially poorly when tasks require applying knowledge to new problems. Not only access to school is important but also the student's learning is very crucial. To address the concern of quality of

education, various national educational policies have emphasized the importance of quality of education.

1.2.2 Quality of education at the primary level is dependent upon many factors including teacher's qualifications (both formal and professional), availability of teaching learning materials and physical facilities in the schools, as well as the socio-economic background of the students. Because of the low quality of education particularly at the primary level, many parents feel that educating children in public primary schools is not worthwhile; therefore, the parents who can afford prefer to send their children to private schools for better quality of education. If the quality of education is improved, the enrolment would increase and it would give a greater return on investment.

1.2.3 Various inputs are required for educating primary school age children, therefore, quality of outcomes is dependent on these inputs. The student's achievement assessment can be used as an instrument through which valuable information can be obtained to assess the quality of education at the primary level. The information can help to rationalize inputs on quality especially with regard to the availability of physical facilities in schools, learning materials, and relevance of teacher's training and revision of curricula. This would also provide feedback information to the policy makers and planners about the performance of the primary education system. Like most developing countries, Pakistan is also confronted with the dual challenges of quantitative expansion and qualitative improvement. Quality education implies meaningful learning and better learning is the result of effective schooling. It also implies the effective and efficient use of resources because the budgetary figures and allocation to education suggest that the education system suffers a shortfall between optimum resources and the reality of budgets.

1.2.4 The purpose of this study is to identify those factors, which are considered effective in the teaching and learning process. These factors include the availability of physical facilities in schools, learning materials, teachers' academic and professional qualifications, teaching experiences, as well as the socio-economic background of the students. This study also tried to establish the relationship of these factors on students' achievement in order to identify major factors affecting the students' performance at the primary level.

## 1.3 Objectives of the Study

1.3.1 The study was conducted to measure the learning achievement of students at primary level and to identify major factors affecting the quality of education at the primary level. The main objectives of this study are as follows:

i. Assess students' learning achievement in Science, Mathematics, and Language (Urdu) of grade –IV at primary level in the context of curriculum and compare students' performance by gender and region;
ii. Examine the impact of teaching on students' performance by teacher traits i.e. academic and professional qualifications and experience;
iii. Investigate the impact of physical facilities on students performance; and
iv. Explore the impact of family background of students on their performance

# 2. Review of Literature

2.1 Review of literature indicates that about 19 studies have been conducted on the students learning achievement in Pakistan at the primary level by various organizations. Most of these studies are sponsored by the international donor agencies. Very few studies have tried to identify those factors affecting the quality of education at the primary level. The Harvard Institute for International Development (HIID) conducted a number of research studies on the achievement test at the primary level in Pakistan during 1988-89. These studies tried to identify various factors affecting the students' achievement at the primary level. A MSU study (1995) tried to measure the learning achievement at the primary level and to relate some of the factors with the students' achievement. The relevant findings of some of these are reported in the subsequent section

2.2 The Harvard study (1992) on "Teacher Certification: Value Added or Money Wasted" reported that the level of primary school teacher's formal education had a positive impact on the achievement of his or her students in Mathematics and Science. The student test score in both fields rose with each additional year the teacher spent in school. Whereas teacher certification did not improve the classroom practices used by teacher and had only a modest influence on the achievement of their students. (Warwick, D.P. and Riemers F., 1992. p. 27-28).

2.3 Another Harvard study (1989) entitled "Do Differences Between Schools and Between School Administrators in Pakistan Contribute to Differences in Student Achievement?" indicated no reliable relationships between the presence or absence of school facilities and scores on achievement tests (McGinn, N., Warwick, D.P. and Riemers, F., 1989. p. 9).

2.4 The Harvard research paper (1991) on "Good School and Poor School in Pakistan" identified the good schools as having higher achievers with the following characteristics:

- the school is located in an urban rather than a rural area;
- teachers have a higher level of formal education;
- student achievement increases with every additional year of the teacher's schooling;
- teachers are responsible for one class rather than several; and
- teachers make students translate their presentations for pupils who do not understand the teacher's language. (Warwick, D.P. and Riemers F. 1991. p. 25-26).

2.5 A national survey carried out by MSU to identify "Determinants of Primary Students Achievements" (MSU-SAP 1995) reported that the students' score improved with the higher academic qualifications of teachers. The report also identified that the literacy of both parents did have positive impact on their children's score. However, this impact was higher in the case of a literate father where the difference was nine percent points and in case of literate mother the difference was four percent point. The literacy of mother had a greater impact on the boys' achievement as compared to girls. The father literacy did also have a greater impact on the boys' achievements than the girls. The MSU study reported an average percentage score of 46 in Mathematics, 74 in General Knowledge and 69 in Comprehension. This study reported an improvement of 25 percent point during 1989-1995 in mathematics. Students of the Punjab province obtained the highest score in mathematics followed by the students of Balochistan whereas, the students from NWFP were the lowest scorers. In addition, the boys performed better than the girls in Mathematics by scoring three percent points higher. The study did not find any significant difference in the overall performance of the urban and rural students. The Rural students, however, did better in mathematics but the urban students performed better in General Knowledge and comprehension ((MSU-SAP 1995, p. 9,13, Table 2.1 & 3.1).

2.6 AEPAM (2000) study entitled "Measuring Learning Achievement at Primary Level in Pakistan" reported 58 mean percent score in mathematics, and 72 for both Science and Urdu of grade 5 students (Khan et al., 2000 pp.14). Action Aid Pakistan survey (1999) found average percent score 60 in Mathematic, 67 in Urdu and 71 in the General Knowledge of students of public schools. Action Aid study also indicated better performance of boys over girls in all the subjects (Pakistan, Education for All-the year 2000 Assessment, Pakistan Country Report, 2000 p.44-45).

2.7 The review of literature indicates the low level of achievement at the primary level in Pakistan particularly in Mathematics. Shah (1984) reported an average percentage score of 35 in Mathematics of grade-5 students and average percentage score 38 in Science of grade-4 students (1984, pp.211). Rugh et al. (1991) reported the mean percentage score as 21 for Mathematics, 30 for science and 34 for Urdu (1991 pp.11). Rugh's study indicated a decline in achievement score for mathematics from 35% in 1984 to 21% in 1989.

2.8 National Education Policy (1992) stated that the quality aspects of education have been compromised because of rapid expansion of the primary system. This calls for an urgent examination of the measures needed for raising the quality of education in Pakistan. The policy proposed various measures such as training of teachers, provision of primary kit to each school, special federal funds for improvement of the physical facility and the gradual increase in the number of primary teachers. (p. 16-19).

2.9 National Education Policy (1998-2010) places great emphasis 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 and revising contents and methodology of teacher 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 students 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).

# 3. Methodology

3.1 Academy of Educational Planning and Management conducted a study on "Measuring Learning Achievement at Primary Level in Pakistan" during 1999. Under the said study, 28 districts from all the provinces/regions were selected. The total number of primary schools was 145 (75 boys schools and 70 girls schools) and total numbers of 2794 class-V students (1411 boys and 1383 girls) included in the sample. The achievement tests in Science, Mathematics, and Urdu based on the curriculum and textbooks of class-IV were administered to 2794 students of class-V at the national level.

3.2 The above-mentioned study did not identify the crucial factors affecting the quality of education. Therefore, the current study has been designed to assess the learning achievement of the students at the primary level and to identify the major factors affecting students' performance at this level. For this study, seven districts (one from each province/region) have been chosen. Four schools have bean selected from each sample district. From each selected school, twenty students of class-V have been selected. The achievement tests of Mathematics, Science and Urdu developed by the Academy for the earlier study namely "Measuring Learning Achievement at Primary Level in Pakistan" have been used for measuring students' learning achievement. The test consisted of multiple-choice items in Mathematics (33 items), Urdu (35 items) and Science (35 items). The AEPAM data collection team administered the test to 504 students of grade-V. Relevant information had also been collected from 53 (29 male & 24 female) teachers of class-IV & V of selected primary schools and from 26 (15 male & 11 female) head teachers of selected primary schools. The distribution of sample is given below.

| District | Location | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Urban | | | Rural | | | |
| | Boys | Girls | Total | Boys | Girls | Total | |
| Islamabad | 20 | 20 | 40 | 20 | 20 | 40 | 80 |
| Lahore | 40 | 20 | 60 | - | - | - | 60 |
| Karachi | 14 | 65 | 79 | - | - | - | 79 |
| Peshawar | 20 | 20 | 40 | 19 | 21 | 40 | 80 |
| Quetta | 20 | 20 | 40 | 20 | 16 | 36 | 76 |
| Khyber Agency | - | - | - | 38 | 22 | 60 | 60 |
| Gilgit/Skardu | 18 | 11 | 29 | 20 | 20 | 40 | 69 |
| Total | 132 | 156 | 288 | 117 | 99 | 216 | 504 |

## 3.3. Data Analyses

3.3.1 The data has been subjected to statistical treatment to establish the relationship between the dependent variable (achievement score) and independent variables (availability of physical facilities in school, teacher's qualifications and training, parental education of students, location and gender) using various statistical techniques. In order to draw inference regarding the relationship between dependent and independent variables different statistical tests of significance such as "t" and "F at .05 level of significance have been used. The data has been analyzed by using statistical packages such as SPSS.

# 4. Results

4.1 Every effort has been made to present the results in a comprehensible and simple manner. The students' correctly answered average percentage score alongwith other measures such as frequency distribution, Mode, Median, Standard Deviation, Quartiles and Histogram are reported for each subjects in this section. Inter district/provincial, gender and area wise differences in each subjects are also reported. The results of analysis are reported in this section.

## 4.2 Performance of Students on Mathematics Test

4.2.1 It is observed that the mean percentage score in Mathematics is 48 (48% questions correctly answered). The distribution is positively skewed which indicates that the performance of most of the students is poor. Most of the students' score range from 26% to 50% and the mean percentage score of that group is 39, which is nine points below the overall percentage mean. Only 63 students got the highest score, ranging from 76% to 100%. The detailed results are reported in the following tables.

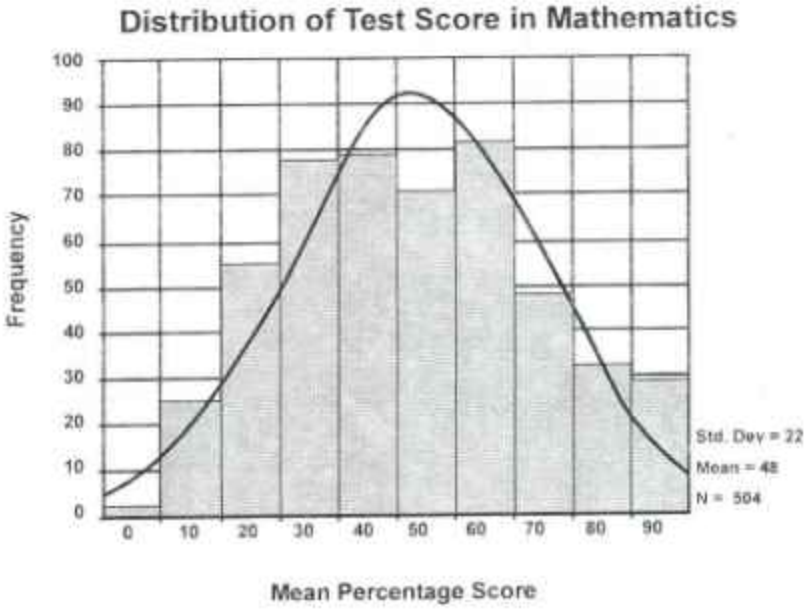
Table-1

Frequency Distribution of Score

| Score | Mathematics | |
|---|---|---|
| | Number | Mean |
| 1-25 | 82 | 16 |
| 26-50 | 210 | 39 |
| 51-75 | 149 | 61 |
| 76-100 | 63 | 85 |
| Total | 504 | 48 |

4.2.2 From table-1 it is observed that 58% of the students have scores ranging from 1% to 50% whereas 42% of the students have scores above 50%. Very few students (about 13%) can be classified as high achievers and their score range from 76% to 100% with mean score of 85%. As it can be seen the performance of the majority of students is quite low in mathematics.

Figure 1




1 .2.3 Figure-1 shows that the distribution of the test score is positively skewed, which indicates that the performance of the majority of the students is quite low in the test. About one third of students on average correctly answered upto 30% of the questions. The distribution shows that 82 students on average correctly answered 60% of the questions, which is the highest number of students in distribution obtaining that score. Only 30 students managed to obtain the highest average percentage score of 90. Score of the most of the students fall below mean.

Table-2

Distribution of Test Score

| Statistics | Mathematics |
|---|---|
| Mean | 48 |
| Median | 47 |
| Mode | 45 |
| SD | 22 |
| 1st quartile | 32 |
| 3rd quartile | 63 |
| Skewness | 176 |

4.2.4 Table-2 indicates that the mean and median scores are 48% and 47% respectively. The model value of the distribution is 45%. Twenty-five percent of the students have scores below 32% and 75 percent of the students have scores below 65%. The Standard Deviation is 22%, which indicates the spread of scores in the distribution.

## 4.3 Inter-Districts Differences

Table-3

Average Percentage Score by Region/District

| District/Region | Mean Score | Rank |
|---|---|---|
| Karachi Cant. | 72 | 1 |
| Lahore | 57 | 2 |
| Khyber Agency | 48 | 3 |
| Gilgit/Skardu | 44 | 4 |
| Islamabad | 42 | 5 |
| Quetta | 38 | 6 |
| Peshawar | 35 | 7 |
| National | 48 | - |

Mean percentage score among the districts is significantly different at $p < .05$

4.3.1 The students of Karachi have the highest average percentage scores in mathematics followed by Lahore whereas, the low average percentage scores are obtained by the students of Peshawar and Quetta. The students of Karachi and Lahore have higher average percent score than the national average whereas students of the rest of the districts have scores below the national average. A significant difference is observed among the districts in the mean percentage score

Figure-2

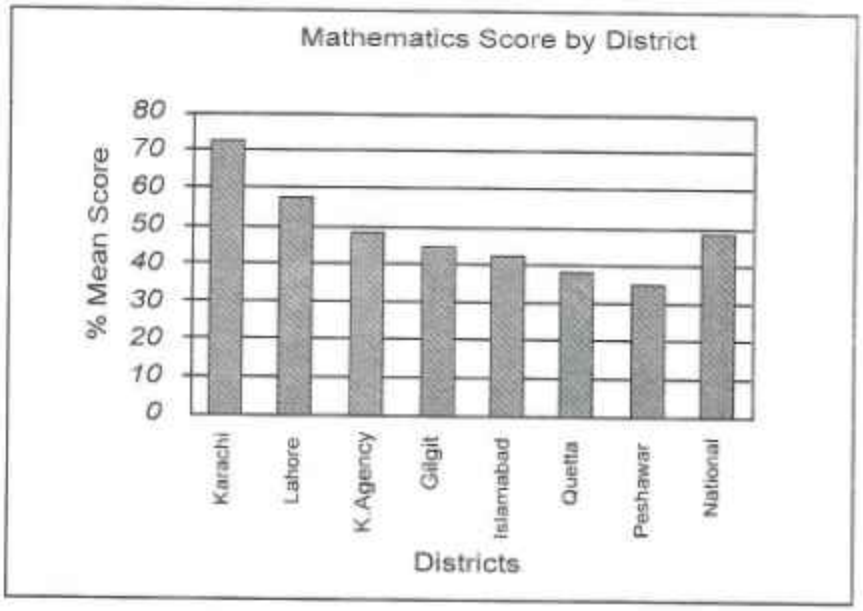



Table-4

Significant Difference among Districts in Mathematics

| | Karachi | Lahore | Khyber | Gilgit | Islamabad | Quetta | Peshawar |
|---|---|---|---|---|---|---|---|
| Karachi | - | * | * | * | * | * | * |
| Lahore | * | - | - | * | * | * | * |
| Khyber | * | - | - | - | - | - | * |
| Gilgit | * | * | - | - | - | - | - |
| Islamabad | * | * | - | - | - | - | - |
| Quetta | * | * | - | - | - | - | - |
| Peshawar | * | * | - | - | - | - | - |

*The mean difference is significant at p< .05.

4.3.2 A significant difference is observed in the average percentage scores of Karachi with all the other districts. A significant difference is also observed in the average percentage scores of Lahore with four low scoring districts. The four low scoring districts, Gilgit, Islamabad, Quetta

and Peshawar, do not differ significantly from each other. The three high scoring districts Karachi, Lahore and Khyber Agency, on the other hand, significantly differ from each other.

## 4.4 Students' Achievement by Area

4.4.1 It is observed that the urban students have significantly out performed their rural counterparts in mathematics at the national level. In most districts, the urban students performed better as compared to the rural students. In Quetta and Islamabad, the rural students have obtained 21and 20 percent points respectively lower than the urban students. The performance of the urban students is better than the rural students in mathematics. District-wise Average Percentage Score in Mathematics by Area is given in table-5.

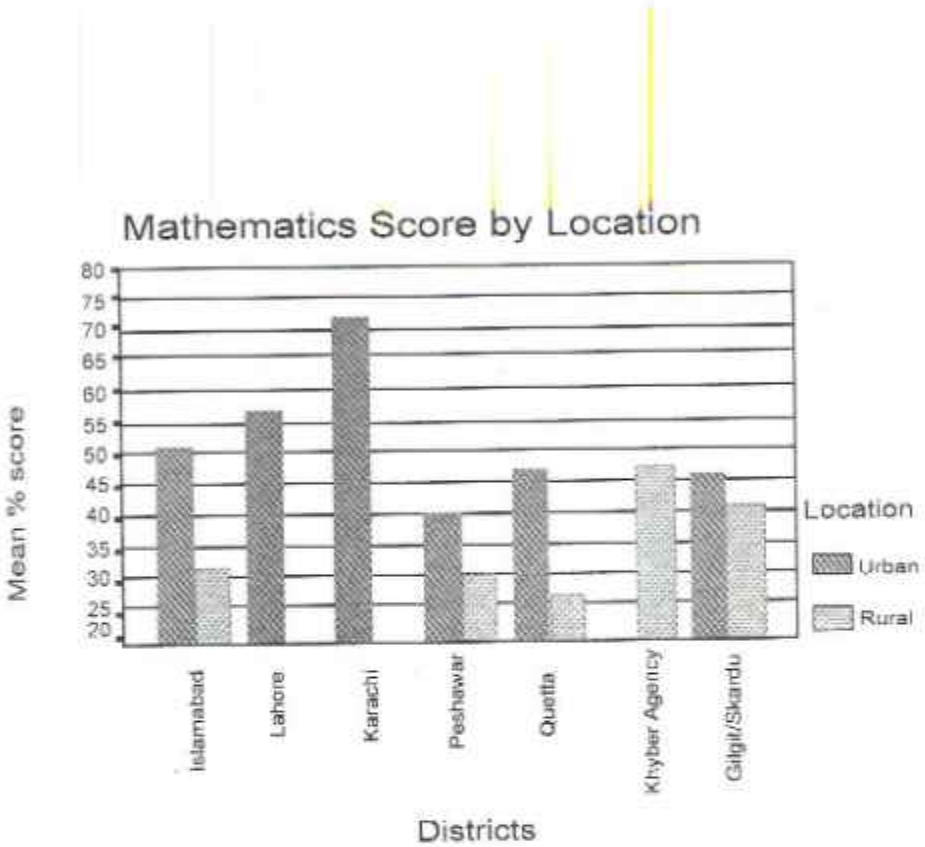
Table-5

District-Wise Average Percentage Score by Area

| District/Region | Urban | Rural | Total |
|---|---|---|---|
| Karachi Cant. | 72 | - | 72 |
| Lahore | 57 | - | 57 |
| Khyber Agency | - | 48 | 48 |
| Gilgit/Skardu | 47 | 42 | 44 |
| Islamabad | 52 | 32 | 42 |
| Quetta | 48 | 27 | 38 |
| Peshawar | 40 | 30 | 35 |
| National | 56 | 37 | 48 |

The mean difference by location is significant at $p < .05$.

Figure 3 Figure 3




## 4.5 Gender Differences in Students' Performance

4.5.1 The table 6 indicates that the girls' performance has been better than the boys in mathematics at the notational level. The mean percentage score by gender differs significantly. It is important to note that except for Islamabad and Quetta in all the other districts, boys have out scored the girls. The following table and figure indicate the district-wise mean percent score in mathematics by gender.

Table-6

Average Percentage Score by Gender

| District/Region | Boys | Girls | Total |
|---|---|---|---|
| Karachi Cant. | 77 | 71 | 72 |
| Lahore | 63 | 46 | 57 |
| Khyber Agency | 49 | 47 | 48 |
| Gilgit/Skardu | 47 | 41 | 44 |
| Islamabad | 37 | 47 | 42 |
| Quetta | 33 | 45 | 38 |
| Peshawar | 35 | 34 | 35 |
| National | 46 | 50 | 48 |

The mean difference by gender is significant at $p < .05$.

Figure 4

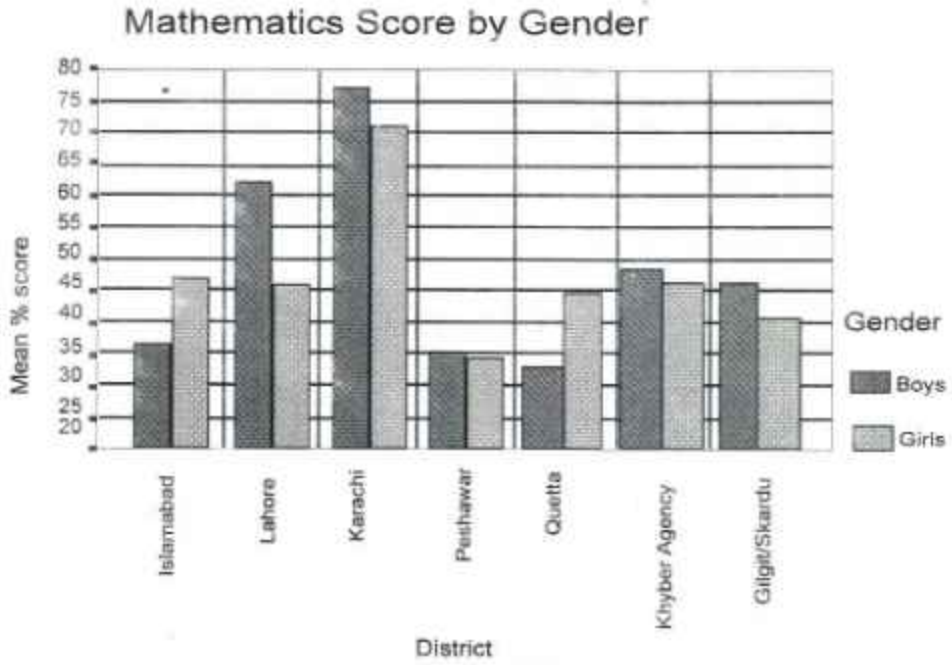


Table-7

Students' Performance by Gender and Area

| Location | Gender | % Mean | SD | 1st Quartile | 3rd Quartile |
|---|---|---|---|---|---|
| Urban | Male | 53 | 25 | 32 | 71 |
| | Female | 58 | 17 | 45 | 71 |
| | MF | 56 | 21 | 42 | 71 |
| Rural | Male | 37 | 16 | 26 | 47 |
| | Female | 37 | 20 | 18 | 55 |
| | MF | 37 | 18 | 24 | 50 |

4.5.2 It is observed from table-7 that the urban students of both sexes have performed better than their rural counterparts in mathematics. Urban girls have got the highest scores whereas no gender gap is observed in the performance of the rural students. A difference is observed on 25$^{th}$ percentile between the urban girls and boys whereas no gender gap is observed on 75$^{th}$ percentile among the students. The performance of the rural boys is better than the rural girls on 25$^{th}$ percentile but on 75$^{th}$ percentile the performance of the rural girls is better than their rural counterparts.

## 4.6 Performance of Students on Urdu Test

4.6.1 The results of the Urdu test are presented in the following tables. It is evident that the mean percentage score in Urdu is 60 (60% questions correctly answered). The distribution is negatively skewed which shows that the performance of most of the students is quite satisfactory. About 37% of the students have scores above 75% whereas 40% of the students have scores below 50%. The frequency distribution can be seen in the following table and figure.

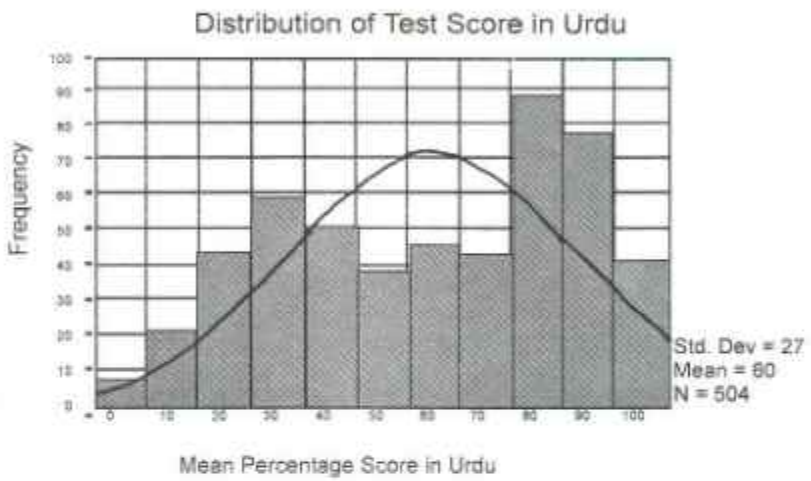
Table-8

Frequency Distribution of Score

| Score | Urdu | |
|---|---|---|
| | Number | Mean |
| 1-25 | 79 | 17 |
| 26-50 | 122 | 38 |
| 51-75 | 117 | 65 |
| 76-100 | 186 | 89 |
| Total | 504 | 60 |

4.6.2 Table-8 indicates that 40% of the students' score ranges from 1% to 50% whereas 60% of the students' score is above 50%. About 16% of the students score is below 25%. The high scorers are 37% of the students whose score ranges from 76% to 100% with mean score of 89%. The performance of the majority of students is quite satisfactory.

Figure 5




4.6.3 Figure (5) shows that the distribution of the test score is negatively skewed, which indicates that the performance of the majority of the students is quite satisfactory on the test. About one third of the students, on average, correctly answered upto 40% of the questions. The distribution reveals that 88 students correctly answered 80% of the questions, which are the highest number of students in distribution for obtaining that score. The distribution also indicates that 39 students managed to obtain hundred percentage score.

Table-9

Distribution of Test Score

| Statistics | Mathematics |
|---|---|
| Mean | 60 |
| Median | 63 |
| Mode | 98 |
| SD | 28 |
| 1st quartile | 35 |
| 3rd quartile | 85 |
| Skew ness | -.279 |

4.6.4 The results presented in table-9 indicate that the mean and median scores are 60% and 63% respectively. The model value of the

distribution is 98%. Twenty-five percent of the students have scores below 35% and 75 percent of the students have scores below 85%.

## 4.7 Inter Districts Differences

Table-10

Average Percentage Score by Region/District

| District/Region | Mean Score | Rank |
|---|---|---|
| Karachi Cant | 89 | 1 |
| Lahore | 74 | 2 |
| Islamabad | 65 | 3.5 |
| Gilgit/Skardu | 65 | 3.5 |
| Quetta | 53 | 5 |
| Khyber Agency. | 36 | 6 |
| Peshawar | 34 | 7 |
| National | 60 | - |

Mean percentage score among the districts is significantly different at $p < .05$

4.7.1 It is observed from table-10 that the students of Karachi have got the highest score followed by the students of Lahore whereas the students of Peshawar and Khyber Agency have got the lowest score. Students of four districts have scores that are higher than the national percentage mean score whereas three districts scores below the national average. A significant difference is observed among the districts in the mean percentage score.

Figure 6

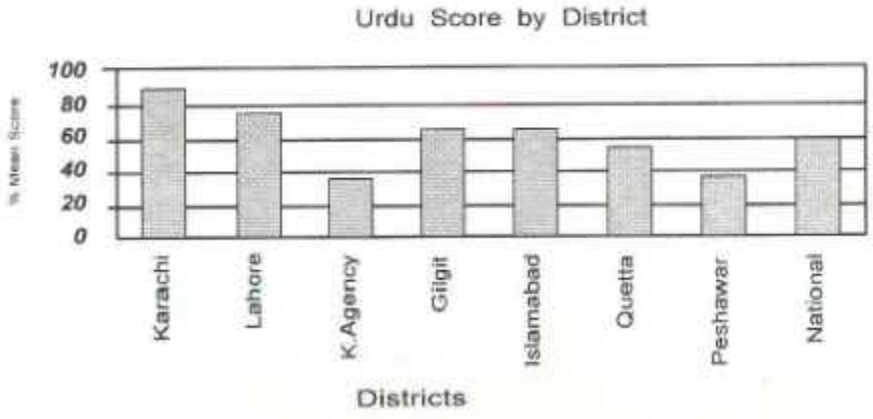


Table-11

Table of Significant Difference among Districts

| | Karachi | Lahore | Khyber | Gilgit | Islamabad | Quetta | Peshawar |
|---|---|---|---|---|---|---|---|
| Karachi | - | * | * | * | * | * | * |
| Lahore | * | - | * | - | - | * | * |
| Khyber | * | * | - | * | * | * | - |
| Gilgit | * | - | * | - | - | * | * |
| Islamabad | * | - | * | - | - | - | * |
| Quetta | * | * | * | * | - | - | * |
| Peshawar | * | * | - | * | * | * | - |

*The mean difference is significant at p< .05.

4.7.2 From table-11 it is noticed that the performance of the students of Karachi is significantly different from the rest of the districts. A significant difference is observed in the average percentage scores of Lahore with Karachi and three low scoring districts. The two low scoring districts Peshawar and Khyber Agency do not differ significantly from each other whereas the two high scoring districts Karachi and Lahore significantly differ from each other.

## 4.8 Students' Achievement by Area

4.8.1 The urban students have significantly outscored their rural counterparts in Urdu at the national level. In most districts the urban Students have performed better than the rural students. The striking difference in the average percentage score between the urban and rural students is found in Islamabad where the rural students scored 32 percent points lower than their urban counterparts. It is concluded that the performance of the urban students is better than the rural students. The results of the students in Urdu by are presented in table-12 and figure-7

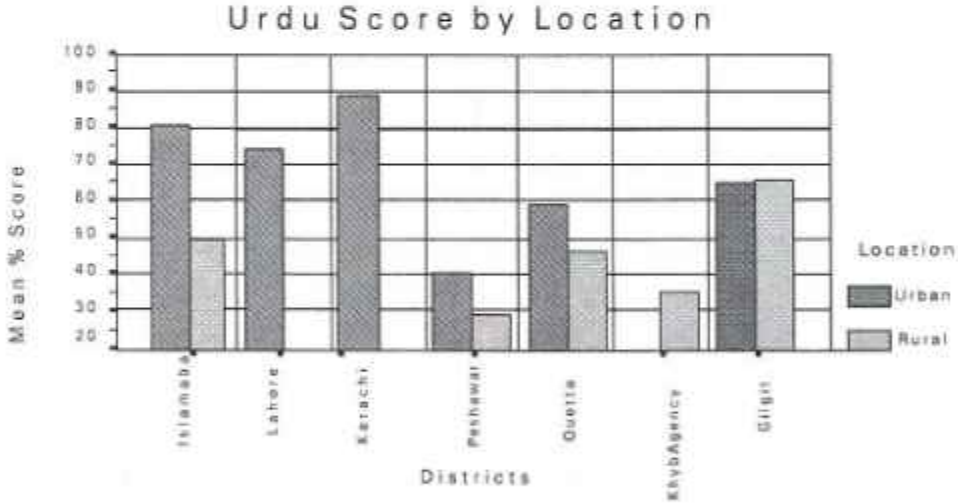
Table-12

Average Percentage Score by Location

| District/Region | Urban | Rural | Total |
|---|---|---|---|
| Karachi Cant. | 89 | - | 89 |
| Lahore | 74 | - | 74 |
| Islamabad | 81 | 49 | 65 |
| Gilgit/Skardu | 65 | 66 | 65 |
| Quetta | 59 | 46 | 53 |
| Khyber Agency | - | 36 | 36 |
| Peshawar | 40 | 29 | 34 |
| National | 71 | 44 | 60 |

Mean percentage score by area is significantly different at p< .05.

**Figure 7**



## 4.9 Gender Differences in Students' Performance

4.9.1 Table-13 indicates that the girl students have out performed the boy students by significant margin in Urdu at the notational level. It is noted that the girls performed better than the boys in all the districts except for Karachi and Lahore. The largest difference by gender is observed in Islamabad and Gilgit where the girls outscored the boys by 24 and 21 percent points respectively. The lowest difference of four percent points is observed in Khyber Agency where the girls performed better than the boys. The following table and figure indicate district-wise mean percent score in Urdu by gender.

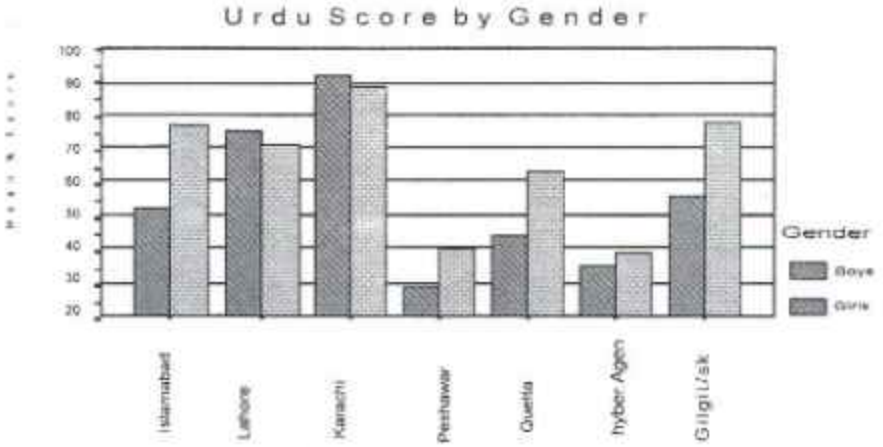
Table-13

Average Percentage Score in Urdu by Gender

| District/Region | Boys | Girls | Total |
|---|---|---|---|
| Karachi Cant. | 92 | 88 | 89 |
| Lahore | 75 | 71 | 74 |
| Islamabad | 53 | 77 | 65 |
| Gilgit/Skardu | 56 | 77 | 65 |
| Quetta | 44 | 63 | 53 |
| Khyber Agency | 34 | 38 | 36 |
| Peshawar | 28 | 41 | 34 |
| National | 51 | 68 | 60 |

Mean percentage score by gender is significantly different at $p < .05$

Figure 8



## 4.10 Students' Performance in Urdu by Gender and Area

4.10.1 It is observed from the table-14 that the urban students of both sexes have outperformed their rural counterparts. The urban girls have the highest scores in Urdu. The rural girls have performed better than the rural boys by 18 percent points. On 25th percentile the urban girls outscored their rural counterparts by 29 percent points and on 75th percentile by six percent points. The rural girls have performed better than the rural boys on both 25th percentile and 75th percentile. It is noted that the performance of the rural boys is very poor as compared to the performance of the rural girls.

Table-14

Percentage Mean Score and Percentile at National Level by Location and Gender

| Location | Gender | % Mean | SD | 1st Quartile | 3rd Quartile |
|---|---|---|---|---|---|
| Urban | Male | 64 | 29 | 38 | 92 |
| | Female | 77 | 17 | 67 | 90 |
| | MF | 71 | 24 | 58 | 90 |
| Rural | Male | 36 | 18 | 21 | 46 |
| | Female | 54 | 27 | 29 | 81 |
| | MF | 44 | 24 | 25 | 63 |

## 4.11 Performance of Students on Science Test

4.11.1 The results of the Science test are reported in the following tables of this section. It is observed that the mean percentage score in Science is 65 (65% questions correctly answered). The distribution is negatively skewed which indicates satisfactory performance of the majority of the students. About one forth of the students are high achievers. Their score is above 75% although only eight percent of the students have scores below 25%. The score of the majority of the students (i e. 70%) lies in the limit of 26% -75%. The frequency distribution can be seen in the following table and figure.

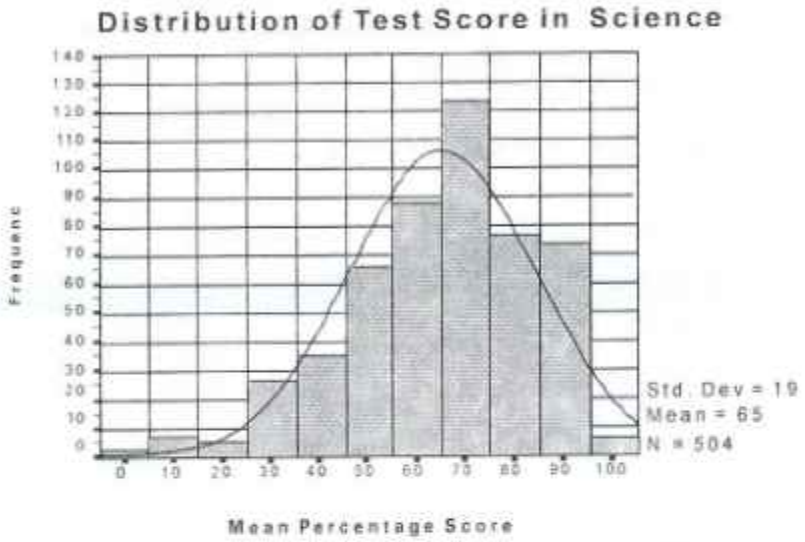
Table-15

Frequency Distribution of Score

| Score | Science | |
|---|---|---|
| | Number | Mean |
| 1-25 | 42 | 30 |
| 26-50 | 146 | 53 |
| 51-75 | 203 | 70 |
| 76-100 | 113 | 85 |
| Total | 504 | 65 |

4.11.2 It is observed from table-15 that the score of 37% of the students lies in the range of 1% - 50% whereas about two-thirds of the students score is above 50%. The score of eight percent of the students is below 25% whereas 22% of the students are high achievers and their score is above 75%. The performance of the majority of the students is quit satisfactory.

**Figure 9**




4.11.3 Figure-9 indicates that the distribution of the test score is negatively skewed, which shows that the performance of the majority of the students is quite satisfactory on the test. About 12% of the students on average have correctly answered upto 40% of the questions. The distribution indicates that 123 students have obtained the mean percentage score of 70, which is the highest number of students in distribution for obtaining that score. The highest achievers are the 73 students who got 90 mean percentage score in the distribution.

Table-16

Distribution of Test Score

| Statistics | Mathematics |
|---|---|
| Mean | 65 |
| Median | 66 |
| Mode | 63 |
| SD | 19 |
| 1st quartile | 54 |
| 3rd quartile | 77 |
| Skew ness | -.570 |

4.11.4 Table-16 indicates that the mean and median scores are 65% and 66% [illegible] respectively. The model value of the distribution is 68%. One-fourth of the students have scores below 54% and three-fourths of students have scores below 77, which indicates that the performance of the students in the Science test is quite satisfactory.

## 4.12 Inter Districts Differences

Table-17

Average Percentage Score by Region/District

| District/Region | Mean Score | Rank |
|---|---|---|
| Karachi Cant. | 82 | 1 |
| Lahore | 79 | 2 |
| Gilgit/Skardu | 71 | 3 |
| Islamabad | 63 | 4 |
| Quetta | 60 | 5 |
| Peshawar | 53 | 6 |
| Khyber Agency | 50 | 7 |
| National | 65 | |

Mean percentage score among the districts is significantly different at $p < .05$

4.12.1 The students of Karachi have obtained the highest score in Science followed by the students of Lahore and Gilgit. The students of Peshawar and Khyber Agency are at the two-bottom most positions in the ranking order. The score of the students from Islamabad and Quetta lies in the middle positions of the ranking order. The students of the three districts in the upper most positions of the ranking order, obtained higher score than the national average, whereas, the students from the rest of the districts have scores that are lower than the national average. A significant difference is observed among the districts in the mean percentage score.

**Figure 10**

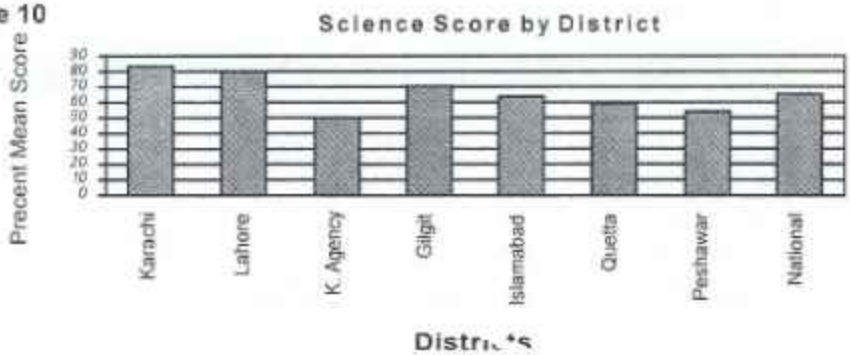


Table-18

Significant Difference among Districts

| | Karachi | Lahore | Khyber | Gilgit | Islamabad | Quetta | Peshawar |
|---|---|---|---|---|---|---|---|
| Karachi | - | - | * | * | * | * | * |
| Lahore | - | - | * | - | * | * | * |
| Khyber | * | * | - | * | * | * | - |
| Gilgit | * | - | * | - | - | * | * |
| Islamabad | * | * | * | - | - | - | * |
| Quetta | * | * | * | * | - | - | - |
| Peshawar | * | * | - | * | * | - | - |

*The mean difference is significant at p <.05.

4.12.2 From table-18 it is noted that there is no significant difference between the mean percentage scores of the students from Karachi and Lahore whereas significant difference is observed in the mean percentage scores of the students of Karachi with the remaining districts. A significant difference is observed in the average percentage score of the students of Lahore with the students of Khyber Agency, Islamabad, Quetta and Peshawar. The two low scoring districts Peshawar and Khyber Agency do not differ significantly from each other.

## 4.13 Students' Achievement by Area

4.13.1 The urban students have performed better than their rural counterparts in Science at the national level and the difference is significant. In most districts, except for Gilgit, the performance of the urban students is better than the performance of the rural students. A considerable difference is observed in the performance of the urban and rural students of Islamabad where rural students scored 24 percent points lower than the urban students. It is concluded that the performance of the urban students is better than the rural students in Science. The following table and figure show district-wise Average Percentage Score in Science by Area

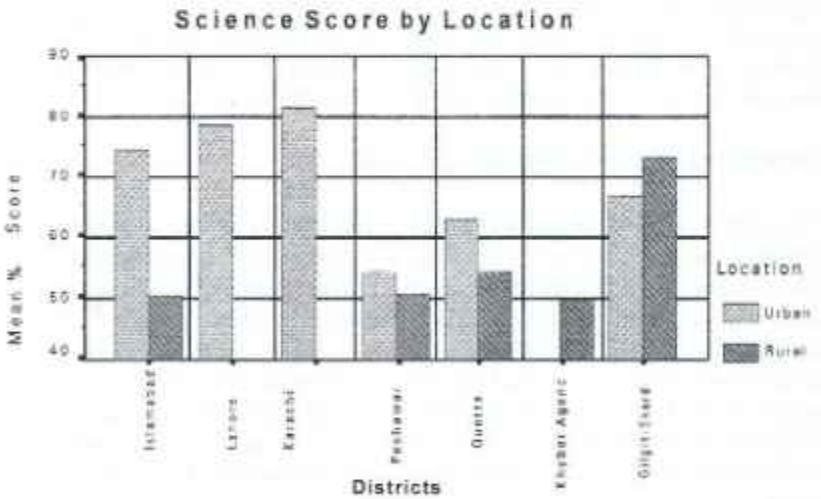
Table-19

Average Percentage Score by Location

| District/Region | Urban | Rural | Total |
|---|---|---|---|
| Karachi Cant. | 82 | - | 82 |
| Lahore | 79 | - | 79 |
| Gilgit/Skardu | 68 | 74 | 71 |
| Islamabad | 75 | 51 | 63 |
| Quetta | 64 | 55 | 60 |
| Peshawar | 55 | 51 | 53 |
| Khyber Agency | - | 50 | 50 |
| National | 72 | 56 | 65 |

Mean percentage score by area is significantly different at $p < .05$

Figure 11




## 4.14 Gender Differences in Students' Performance

4.14.1 It is observed from table-20 that the girl students have performed better than the boy students in Science at the national level. The performance of students by gender is significantly different. It is noted that the girls have outscored in all the districts except for Lahore. The largest gender gap is observed in Gilgit and Islamabad where the girls have

outperformed the boys by 18 and 14 percent points respectively. The marginal difference of two percent points is observed in Khyber Agency where girls have performed better than the boys. The following table and figure indicate district-wise mean percent score in Science by gender.

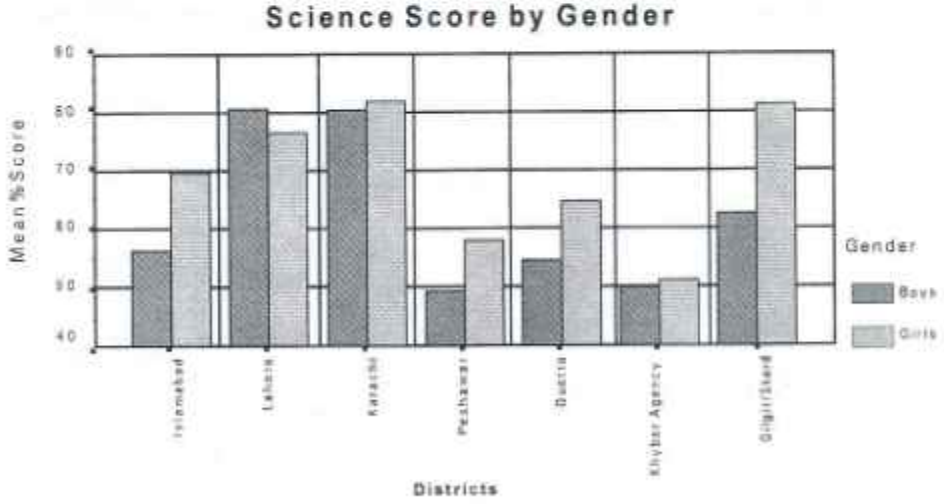
Table-20

Average Percentage Scores by Gender

| District/Region | Boys | Girls | Total |
|---|---|---|---|
| Karachi Cant. | 80 | 82 | 82 |
| Lahore | 80 | 76 | 79 |
| Gilgit/Skardu | 63 | 81 | 71 |
| Islamabad | 56 | 70 | 63 |
| Quetta | 55 | 65 | 60 |
| Peshawar | 49 | 57 | 53 |
| Khyber Agency | 49 | 51 | 50 |
| National | 60 | 70 | 65 |

Mean percentage score by gender is significantly different at $p < .05$

**Figure 12**



## 4.15 Students' Performance by Gender and Area

4.15.1 It is observed that the urban students of both sexes have outperformed their rural counterparts. The urban girls have the highest scores in Science. The girls have outscored the boys in both locations in Science. The urban girls outscored their rural counterparts on 25th percentile by 20 percent points and on 75th percentile by 11 percent points. The urban boys have also outperformed rural boys on both 25th percentile and 75th percentile. The rural boys have performed poorly as compared to the performance of the rural girls.

Table-21

Location and Gender-Wise Distribution of Percentage Mean Score at National Level

| Location | Gender | % Mean | SD | 1st Quartile | 3rd Quartile |
|---|---|---|---|---|---|
| Urban | Male | 68 | 18 | 57 | 80 |
| | Female | 76 | 12 | 69 | 85 |
| | MF | 72 | 16 | 63 | 83 |
| Rural | Male | 51 | 16 | 40 | 63 |
| | Female | 61 | 20 | 49 | 74 |
| | MF | 56 | 19 | 43 | 69 |

## 4.16 Composite Score

4.16.1 The raw scores of each student in three subject tests are summed up in order to get the composite score. The results in section are based on composite scores.

## 4.17 Composite Performance of Students on Test

4.17.1 It is observed that the mean of the composite percentage score is 58. The distribution is slightly negatively skewed. About one forth of the students obtained a score above 75% and eight percent students got a score below 25%. The score of the majority of the students (i.e. 40%) is in the range of 51% -75% with the mean percent score of 63. The frequency distribution can be seen in the following table and figure.

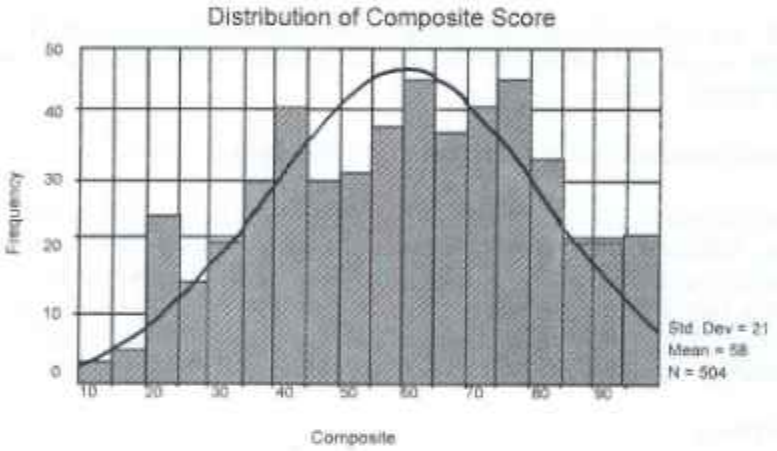
Table-22

Frequency Distribution of Composite Score

| Score | Number | Mean |
|---|---|---|
| 1-25 | 42 | 20 |
| 26-50 | 146 | 39 |
| 51-75 | 203 | 63 |
| 76-100 | 113 | 85 |
| Total | 504 | 58 |

4.17.2 It is observed from table-22 that the score of 37% of the students falls in the range of 1% - 50% whereas about two-thirds of the students score is above 50% which indicates that the majority of the students performed quite satisfactorily. The score of eight percent of the students is below 25% whereas the score of 22% of the students is above 75%, which shows that the number of high achievers is greater than the low achievers in the composite score.

Figure 13




4.17.3 Figure-13 shows that the distribution of the test score is slightly negatively skewed, which indicates that the performance of the majority of the students is satisfactory. About 28% of the students, on average, correctly answered upto 40% of the questions. The distribution indicates that the score of one-third of the students lies in the range of 60-75 mean percentage score. Only three students obtained the lowest score (i.e. on average correctly answered 10% questions) although 22 students got 95 mean percentage score that is the highest in the distribution.

Table-23

Distribution of Composite Score

| Statistics | Composite Score |
|---|---|
| Mean | 58 |
| Median | 58 |
| Mode | 73 |
| SD | 21 |
| 1st quartile | 40 |
| 3rd quartile | 74 |
| Skew ness | -.131 |

4.17.4 It is observed from table-23 that the distribution is having the same value of mean and median although the model value of the distribution is 73, which is 15 percent higher than the mean and median value. The data is

on interval scale; therefore the best measurement indicator is mean and median. One-fourth of the students score is below 40% and three-fourths of the students score is below 74%, which indicates that the performance of the most of the students in composite score is satisfactory.

## 4.18 Inter Districts Differences

Table-24

Average Percentage Composite Score by Regions/District

| District/Region | Composite score | Rank |
|---|---|---|
| Karachi Cant. | 81 | 1 |
| Lahore | 70 | 2 |
| Gilgit/Skardu | 60 | 3 |
| Islamabad | 57 | 4 |
| Quetta | 50 | 5 |
| Khyber Agency | 43 | 6 |
| Peshawar | 40 | 7 |
| National | 58 | - |

Mean percentage score by gender is significantly different at $p < .05$

4.18.1 The results reported in table-24 indicate that the students of Karachi are the highest scorers in composite score followed by the students of Lahore and Gilgit and the scores of the students of these districts fall in the upper most positions of the ranking order. The students of Peshawar and Khyber Agency are at the two-bottom most positions in the ranking order. The scores of the students from Islamabad and Quetta are in the middle positions of the ranking order. A significant difference is observed among the districts in the mean percentage score.

Figure 14

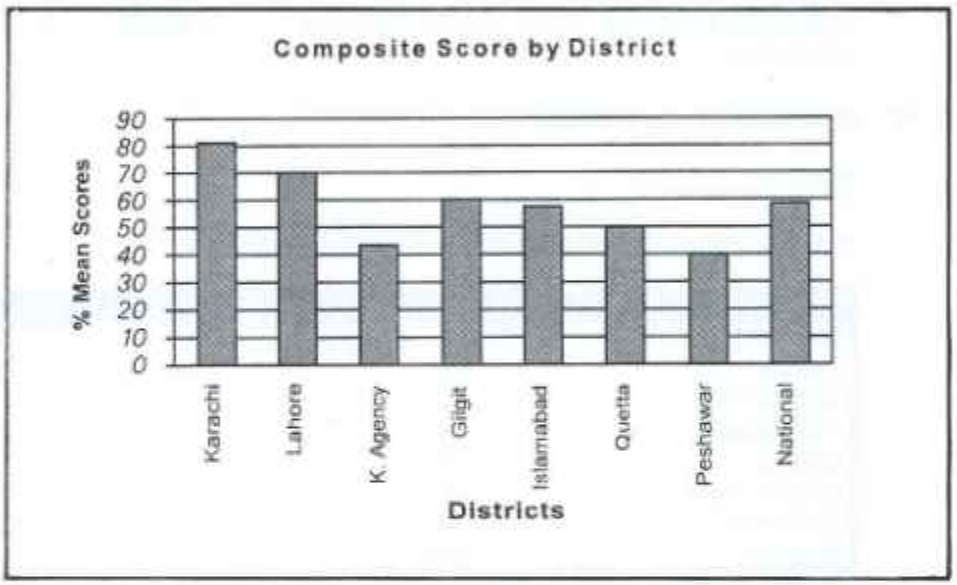



Table-25

Significant Difference in Composite Score among Districts

| | Karachi | Lahore | Khyber | Gilgit | Islamabad | Quetta | Peshawar |
|---|---|---|---|---|---|---|---|
| Karachi | - | * | * | * | * | * | * |
| Lahore | * | - | * | - | * | * | * |
| Khyber | * | * | - | * | * | - | - |
| Gilgit | * | - | * | - | - | * | * |
| Islamabad | * | * | * | - | - | - | * |
| Quetta | * | * | - | * | - | - | * |
| Peshawar | * | * | - | * | * | * | - |

*The mean difference is significant at the .05 level ($p<.05$).

4.18.2 It is noted that the performance of the students of Karachi is significantly different from the performance of the students of the rest of the districts. A significant difference is observed in the average percentage score of the students of Lahore with the students of all the other districts except for Gilgit. No significant difference is observed between the performance of the students of Islamabad and Quetta where the score falls in the middle of the ranking order. The two low scoring districts, Peshawar and Khyber Agency do not differ significantly from each other.

## 4.19 Students' Achievement by Area

4.19.1 Table-26 reveals that the performance of the urban students is better than the rural students. The performance by area is significantly different. In most districts the urban students outscored their rural counterparts. A large difference in the performance by area is observed in Islamabad where the urban students scored 26 percent points higher than the rural students. The following table and figure show district-wise Composite Mean Percent Score by Area

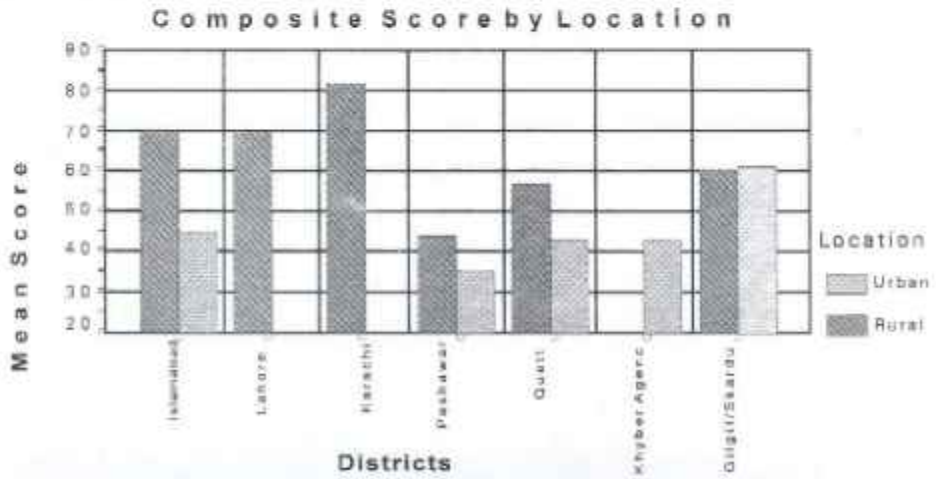
Table-26

Composite Scores by Location

| District | Urban | Rural | Total |
|---|---|---|---|
| Karachi | 81 | . | 81 |
| Lahore | 70 | . | 70 |
| Gilgit/Skardu | 60 | 61 | 60 |
| Islamabad | 70 | 44 | 57 |
| Quetta | 57 | 43 | 50 |
| Khyber Agency | | 43 | 43 |
| Peshawar | 44 | 35 | 40 |
| National | 67 | 45 | 58 |

Mean percentage score by area is significantly different at $p < .05$

Figure 15



## 4.20 Gender Differences in Students' Performance

4.20.1 It is observed that the girl students performed significantly better than the boy students .It is noted that the girls outscored the boys in all the districts except for Karachi and Lahore. In Karachi, the boys performed slightly better than the girls by only three percent points. The largest gender gap is observed in Islamabad where the girls outscored the boys by 18 percent points. The following table and figure indicate district-wise composite mean percent score by gender.

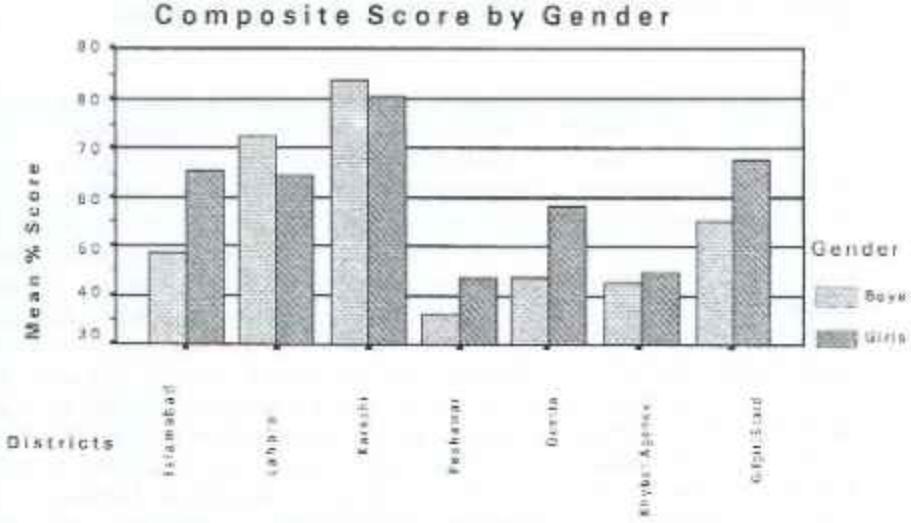
Table-27

Composite Scores by Gender

| District | Boys | Girls | Total |
|---|---|---|---|
| Karachi | 84 | 81 | 81 |
| Lahore | 73 | 65 | 70 |
| Gilgit/Skardu | 55 | 67 | 60 |
| Islamabad | 49 | 66 | 57 |
| Quetta | 43 | 58 | 50 |
| Khyber Agency | 43 | 44 | 43 |
| Peshawar | 36 | 43 | 40 |
| National | 52 | 63 | 58 |

Mean percentage score by gender is significantly different at $p < .05$

Figure 16




## 4.21 Students' Performance by Gender and Area

4.21.1 It is observed that the urban students of both sexes have performed better than their rural counterparts on mean percent score. The urban girls obtained the highest mean percentage composite score. They also got the highest score on 25th and 75th percentiles. The urban boys performed better than their rural counterparts on both 25th percentile and 75th percentile. The highest variation is observed in the score of urban boys. The rural boys have shown the poorest performance and less variation are observed in their score.

Table-28

Location and Gender Wise Distribution of Composite Mean Scores

| Location | Gender | % Mean | SD | 1st Quartile | 3rd Quartile |
|---|---|---|---|---|---|
| Urban | Male | 62 | 23 | 46 | 81 |
| | Female | 71 | 13 | 62 | 82 |
| | MF | 67 | 19 | 55 | 82 |
| Rural | Male | 40 | 14 | 30 | 49 |
| | Female | 51 | 19 | 34 | 67 |
| | MF | 45 | 17 | 34 | 58 |

## 4.22 Teacher's Characteristics and Students' Performance

### 4.22.1 Impact of Teacher's Academic Qualifications on Students' Performance

The results given in table 29 indicate that the level of teacher's academic qualification has a positive impact on the students' achievement. In the urban areas, the teachers' academic qualifications seem to have more impact on the students' achievement than the rural areas. Students who have been taught by teachers holding BA/B.Sc degree are the highest scorers followed by the students who have been taught by matriculate teachers. The urban students who have been taught by teachers having Bachelor degree have the highest score followed by those students taught by matriculates whereas in the rural areas the students who have been taught by FA/F.Sc teachers are the highest scorers followed by those taught by matriculates. It seems that the academic qualification of teachers has a stronger influence on the performance of girls than the boys. The girl students who have been taught by teachers having B.A./B.Sc. degree got the highest scores. A significant difference is observed between the academic qualification of teachers and the composite scores of the students.

Table-29

Impact of Teacher's Academic Qualifications on Students' Performance

| Academic Qualifications | Location | | | Gender | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Boys | Girls | Total |
| Matric | 63 | 46 | 58 | 54 | 59 | 58 |
| FA/F.Sc | 55 | 50 | 52 | 44 | 55 | 52 |
| BA/B.Sc or Above | 72 | 41 | 60 | 53 | 78 | 60 |

Significant relationship observed at $p < .05$.

### 4.22.2 Impact of Teacher's Professional Qualifications on Students' Performance

From table-30 it is observed that the professional qualification of teachers has an influence on the students' achievement. The students who have been taught by teachers having Certificate in Teaching (C.T.) have the highest score. It appears that the professional qualification of teachers has more impact on the urban students than the rural students particularly on those urban students who have been taught by either C.T.

or B.Ed. teachers obtained the same score. But in the case of the rural students the performance of the students who have been taught by C.T. teachers is better than the PTC or B.Ed teachers. Professional qualification of teachers has an impact on both genders but the girl students taught by B.Ed. teachers have the highest score whereas the boy students taught by C.T. teachers have the highest score. A significant difference is observed between the professional qualifications of teachers and the students' achievement.

Table-30

Impact of Teacher's Professional Qualifications on Students' Performance

| Professional Qualifications | Location | | | Gender | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Boys | Girls | Total |
| PTC | 61 | 41 | 53 | 48 | 60 | 53 |
| CT | 74 | 50 | 65 | 68 | 63 | 65 |
| B.Ed. | 74 | 39 | 60 | 49 | 84 | 60 |

Significant relationship observed at .01 level of significance.

### 4.22.3 Teacher's Experience and Students' Performance

The students who have been taught by teachers having 16 years or more experience have the highest score followed by the students taught by teachers having 6-10 years experience. Teachers having 6-10 years of experience have a strong impact on the performance of both the urban and the rural students. Teacher experience between 1-5 and 11-15 years has only a modest influence on the students' achievement. Students of both genders taught by teachers having 16 years or more experience as well as 6-10 years experience have better score as compared to those students taught by teachers having experience of 1-5 years and 11-15 years. A significant difference is observed between the performance of students and the experience of teachers.

Table-31

Impact of Teacher 's Teaching Experience on Students' Performance

| Experience in years | Student composite percentage mean score | | | | | |
|---|---|---|---|---|---|---|
| | Location | | | Gender | | |
| | Urban | Rural | Total | Boys | Girls | Total |
| 1-5 | 33 | 44 | 40 | 40 | | 40 |
| 6-10 | 76 | 51 | 63 | 59 | 66 | 63 |
| 11-15 | 59 | 42 | 50 | 46 | 56 | 50 |
| 16+ | 70 | 32 | 64 | 64 | 64 | 64 |

Significant relationship observed at .05 level of significance.

### 4.22.4 Impact of Father's Education on Students' Performance

The father's education level is a significant factor on a child's performance. A consistence increase in the mean percentage score of students is observed with the increasing level of education of their fathers. However a decline in the score is observed of those children whose fathers are M.A./M.Sc. The level of father's education has more impact on the urban students than on the rural students. The level of father's education has more influence on a boy's performance than a girl's. A significant difference is observed in the mean achievement scores of students with fathers having different levels of education.

Table-32

Impact of Father's Education on Students' Performance

| Level of Education | Location | | | Gender | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Boys | Girls | Total |
| Illiterate | 64 | 41 | 53 | 59 | 47 | 53 |
| Primary | 68 | 46 | 56 | 66 | 48 | 56 |
| Middle | 64 | 50 | 58 | 64 | 50 | 58 |
| Matric | 67 | 48 | 62 | 66 | 54 | 62 |
| FA/F.Sc | 67 | 60 | 65 | 67 | 60 | 65 |
| BA/B.Sc | 82 | 47 | 76 | 81 | 57 | 76 |
| MA/M.Sc or above | 68 | 45 | 59 | 68 | 45 | 59 |

Significant relationship observed at .01 level of significance.

### 4.22.5 Impact of Mother's Education on Students' Performance

The level of mother's education is a crucial factor on a child's performance. A consistence increase in the mean percentage score of students is observed with increasing education level of their mothers. However, a declining trend is observed in the mean percent score of children as the level of the mother's education increases upto B.A./B.Sc. and M.A./M.Sc. As in the case of the father's education, the same trend has been observed that the level of mother education has had more impact on the urban rather than the rural students. The impact of the level of the mother's education has had more impact on the girls' performance than the boys' performance. A significant difference is observed in the mean achievement scores of students with mothers having different levels of education.

Table-33

Impact of Mother's Education on Students' Performance

| Level of Education | Location | | | Gender | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Boys | Girls | Total |
| Illiterate | 64 | 45 | 55 | 52 | 60 | 55 |
| Primary | 65 | 44 | 58 | 47 | 64 | 58 |
| Middle | 68 | 60 | 66 | 58 | 70 | 66 |
| Matric | 77 | | 77 | 64 | 80 | 77 |
| FA/F.Sc | 76 | 66 | 75 | 79 | 72 | 75 |
| BA/B.Sc | 77 | 29 | 69 | | 69 | 69 |
| MA/M.Sc or above | 82 | 42 | 62 | 62 | | 62 |

Significant relationship observed .01 level of significance.

### 4.22.6 Impact of Father's Occupation on Students' Performance

The father's occupation is a significant factor on a student's performance. It is observed that the children of businessmen and technicians are the highest scorers, whereas the children of government servants, Labourers and farmers are the lowest achievers. It is surprising to note that the children of government servants and the children of Labourers have the same score. The father's occupation has more of an impact on the performance of the urban students as compare to the rural students. The father's occupation also has more of an impact on the performance of girls than the boys. A significant relationship is observed between the father's occupation and the student's performance.

Table-34

Impact of Father's Occupation on Students' Performance

| | Location | | | Gender | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Boys | Girls | Total |
| Govt. Servant | 63 | 45 | 55 | 50 | 59 | 55 |
| Business | 73 | 44 | 66 | 59 | 73 | 66 |
| Laborer | 65 | 45 | 55 | 52 | 63 | 55 |
| Farmer | 72 | 47 | 55 | 51 | 62 | 55 |
| Technician | 66 | | 66 | 58 | 67 | 66 |
| Private Job | 80 | 44 | 62 | 59 | 65 | 62 |

Significant relationship observed at .o5 level of significance.

### 4.22.7 Impact of Physical Facility on Students' Performance

The table No.35 indicates that black board; books for students, drinking water and boundary wall are significant determinants on students' performance. These facilities have a modest impact on the students' achievement.

Table-35

Impact of Availability of Physical Facility in the School on Students' Performance

| Availability of Physical Facilities | Mean % Score | |
|---|---|---|
| Black Board | 58 | |
| Chalk | 49 | |
| Tats for students | 52 | |
| Drinking water | 60 | |
| Boundary wall | 60 | |
| Building Condition | Kacha | 52 |
| | Pakka | 58 |
| Books for students | 59 | |

4.22.8 The availability of chalk, black board, boundary wall and drinking water in a school has a significant impact on the students' performance. It is also important to note that having chalk, black board and boundary wall also affect the students' performance. It is also observed that the availability of tats in a school is not a very significant factor on the students' performance, whereas the remaining factors such as chalk, black board, boundary wall and drinking water are the main determinant factors on the student performance.

Table-36

Availability of Physical Facilities in School

| Chalk | Black Board | Boundary Wall | Drinking water | Tats | Mean % Score |
|---|---|---|---|---|---|
| ✔ | | ✔ | | | 60 |
| ✔ | ✔ | | | | 58 |
| ✔ | ✔ | ✔ | | | 61 |
| ✔ | ✔ | ✔ | ✔ | | 62 |
| ✔ | ✔ | ✔ | | ✔ | 56 |
| ✔ | ✔ | | | ✔ | 52 |
| ✔ | ✔ | | ✔ | ✔ | 49 |
| ✔ | ✔ | ✔ | ✔ | ✔ | 53 |

# 5. Discussions and Conclusions

## 5.1 Students' Performance in Mathematics, Urdu and Science

5.1.1 Mean percentage score in Mathematics, Urdu, and Science is 48, 60, and 65 respectively. Performance of most of the students in mathematics is poor whereas it is quite satisfactory in Urdu and Science. The urban students have performed significantly better than the rural students in all subjects. Girls' performance is significantly better than the boys in all the subjects including mathematics in which boys usually have performed better than girls. Students of Karachi and Lahore are the high achievers in all subjects whereas the students of Peshawar and Khyber Agency are the low achievers.

5.1.2 Since 1995, an improving trend has been observed in the students' performance in Mathematics, Urdu and Science. However, findings of the current study show a decline of 10 percent points in the students' score in Mathematics as compared to the score reported by AEPAM's previous study (2000). A decline of 12 percent points has also been observed in the average percent score in Urdu and 7 percent points in Science as compared to the score reported by the earlier study (2000). The decline in the students' performance may be attributed to sample size and other factors. However, the results reported by this study are consistent with the results (mean percent score) reported by MSU study (1995). AEPAM study (2000) indicated that the boys performed better than the girls in Mathematics whereas the girls performed better in Science and Urdu. The current achievement study supports the results regarding better performance of the girls over the boys in Urdu and Science but does not support the results that the girls did better than the boys in Mathematics. AEPAM study (2000) shows that the urban students performed better then the rural students in all the subjects including mathematics and their findings are consistent with this study.

5.1.3 On the whole, we do not have enough evidence to claim that significant deviation has taken place in overall student performance over the past ten years. Although urban students performed better than their rural counterparts and girls appear to have performed better than boys. The study has some challenging implications for future investigations regarding the disparity in performance of the urban and rural students as well as boy and girl students. Factors, which appear to have influence on the lifestyles of the urban and rural students in terms of having, access to basic facilities in school and at home need further exploration. These

findings will provide viable policy options to decision makers for narrowing down such disparities. These two parameters need to be further looked into so that an understanding about the dynamics of this phenomenon can be developed.

## 5.2 Composite Score

5.2.1 The raw scores of each student in three subject tests were summed up to in order get the composite score. The following results in section are based on composite scores.

5.2.2 **Composite Performance of Students**

5.2.3 The mean composite percentage score is 58 and the distribution is slightly negatively skewed which indicates that the performance of the students in composite score is satisfactory. The students of Karachi are the highest scorer followed by the students of Lahore and Gilgit whereas the students of Peshawar and Khyber Agency are the lowest scorers. A significant difference is observed among the districts in the mean percentage score. The performance of the urban students is significantly better than the rural students. In most districts except for Gilgit, the urban students outscored their rural counterparts. The girl students performed significantly better than boy students. The girls outscored boys in all the districts except for Karachi and Lahore where the boys slightly performed better than the girls by only three percent points. It is observed that the students' performance on composite score follow the same trend as for the other subjects and no major deviation is observed.

## 5.3 Teacher's Characteristics and Students' Performance

5.3.1 Teacher's academic qualification has a positive impact on the students' achievement and it has had more influence on the performance of the urban than the rural students. The students taught by teachers holding BA/B.Sc degree have the highest scores followed by the students taught by matriculate teachers. The urban students taught by teachers having Bachelor degree have the highest scores followed by those students taught by matriculates. Whereas in the rural areas, the students taught by FA/F.Sc teachers have highest score followed by those taught by matriculates. Girl students taught by teachers having B.A./B.Sc. degree have the highest score. A significant difference is observed between the academic qualification and composite score of the students. The findings of this study are consistent with the findings reported by the Harvard study on "Teacher Training in Pakistan: Value Added or Money Wasted"

that the level of primary school teacher's formal education has a positive impact on the achievement of the students. The difference in scores of the urban students and rural students taught by teachers having BA/B.Sc and FA/FSC qualifications, needs further investigations to establish causality of this happening, that is why BA/B.Sc teachers are not as effective as FA/F.Sc teachers in rural areas.

5.3.2 It seems that the professional qualification of teachers positively affects students' achievement. For example, students taught by teachers having Certificate in Teaching (C.T.) obtained the highest score. The professional qualification of teachers has more impact on the urban than the rural students. Professional qualifications of teachers do have a positive impact on both genders but the girl students taught by B.Ed. teachers secured the highest score. In case of the boys, those taught by C.T. teachers got the highest score. Thus a significant difference is observed between the professional qualifications of teachers and the students' performance. This study however does not support the findings of Harvard study (1989), which showed that teacher certification did not improve the classroom practices used by teacher and it has only a modest influence on the achievement of their students. This may be explained by the time lag between the two studies i.e. ten years. In addition reforms introduced in teacher education since 1990, may be responsible for improvement in teacher education – this yet another aspect that may be of interest for further exploration.

5.3.3 As for the relationship between teacher's experience and students' performance is concerned, the students taught by teachers having 16 years or more experience have the highest score followed by the students taught by teachers having 6-10 years experience. Teachers having 6-10 years of experience have a strong impact on the performance of both urban and rural students whereas teachers having 1-5 and 11-15 years experience have modest influence on students' achievement. A significant difference is observed between the performance of the students and the experience of teachers. Apparently, teachers are more effective for the first 10 years of their service, and later become ineffective. This may be due to the fact that the primary school teachers reach the maximum of their scales in the first 10 years of their service after which there is no opportunities for their promotion. The experience bracket of 16 years and above may be related to senior teachers in BPS 16 with more job satisfaction, which has positive impact on students' performance. They, therefore, have interest in teaching and seem to be more effective teachers. Policy makers should seriously

consider enhancing the entry qualifications of teachers and opening up the ladder of promotion to primary school teachers.

## 5.4 Impact of Father's and Mother's Education on Students' Performance

5.4.1 With regard to the impact of the father's education on the student's performance, it has been found there is a consistence increase in the mean percentage score of students with the increasing levels of education of their fathers. However, a decline in the score is observed regarding those children whose fathers are M.A./M.Sc. qualified. The levels of father education seem to have more impact on the urban students than the rural students. Level of the father education has more influence on the performance of the boys than the girls. A significant difference is observed in the mean achievement score of students with fathers having different levels of education. The main reason for decline in the score of those students whose fathers are MA/M.Sc may be their fathers have no time to coach their children at home. The high score of boys suggests father's preference towards the boy's education.

5.4.2 A consistent increase in the students' achievement is observed with the increase of the level of mother's education up to Matric but the students' score decreases as the level of the mother's education increases (i.e. FA/F.Sc upto MA/M.Sc.). The level of the mother's education seems to have more impact on the urban than the rural students because a constant increase in the students' achievement score with the increase of the level of mother's education is observed in the urban areas. The level of the mother's education has more impact on the performance of girls than the boys, which indicates that perhaps the mothers are giving preference to girls' education. A significant difference is observed in the mean achievement score of the students with the level of mother's education. The findings of this study are consistent with the findings reported by MSU, which indicates that literacy of both parents do have a positive impact on their children score. The current study has found that children of educated mothers have better scores. Emphasis on female education will ensure more girls in schools with better scores and this in turn will have greater impact on reducing the gender gap. Education for girls up to secondary schools appears to be of fundamental importance.

## 5.5 Impact of Father's Occupation on Students' Performance

5.5.1 A significant relationship is observed between the students' achievement and the fathers' occupation. The children of businessmen and technicians have scored higher than the children of government servants, laborers and farmers. It is surprising to note that the children of government servants and the children of laborers have more or less the same scores. Apparently, father's occupation in urban areas has more impact on students' performance. While considering performance of boys and girls in relation to the father's occupation, it has more impact on the girls. To understand this occurrence, further studies are needed.

## 5.6 Impact of Physical Facility on Students' Performance

5.6.1 The availability of chalk, black board, boundary wall, and drinking water in school as well as the availability of books has a positive impact on the students' achievement. The availability of tats in the school has a modest impact on the students' achievement whereas the remaining factors such as chalk, black board, boundary wall and drinking water have a positive impact on the achievement. The findings of this study do not support the findings reported by Harvard study entitled "Do Differences Between Schools and Between School Administrators in Pakistan Contribute to Differences in Student Achievement?" which reported that no reliable relationships exist between the presence or absence of school facilities and scores on achievement tests.

## 5.7 Main Conclusions

- It is concluded that the mean national score in mathematics is 48%, for Urdu it is 60%, and for Science it is 65%. The performance of children in Urdu and Science is satisfactory whereas their performance in mathematics is quite low.

- Students of Karachi and Lahore are the high achievers in all subjects whereas the students of Peshawar and Khyber Agency are the low achievers in most of the subjects.

- In all the subjects the urban students have performed significantly better than the rural students. In Islamabad a striking difference in the performance of the urban and the rural students is observed.

- Girls' performance is significantly better than the boys in all the subjects including mathematics where traditionally the boys performed better than the girls.

- The mean composite score is 58%, which indicates that the performance is satisfactory.

- Students from Karachi have the highest composite percent score followed by the students from Lahore whereas students from Peshawar and Khyber Agency have the lowest score.

- The performance of the urban students is significantly better than the rural students in the composite percent score.

- The girl students' performance is significantly better than the boy students' in the composite percent score.

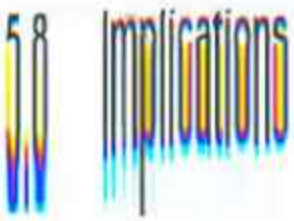
- Teacher's academic qualification has a positive impact on the students' achievements. It has more influence on the performance of the urban than rural students. Students taught by teachers holding B.A./B.Sc. degree have the highest score.

- The professional qualifications of teachers also have a positive impact on the students' achievement particularly on those students who have been taught either by C.T. teachers or B.Ed. teachers.

- The students taught by teacher having 6-10 years of experience and 16 years or more experience has a strong impact on the student's achievement.

- A consistent increase in the main percentage score of the students is observed with the increasing level of parental education upto BA. /B.Sc. in the case of the father's education and upto Matric in the case of the mother's education. A decline in the score of those children, whose fathers are MA/M.Sc, is observed. Student's score decrease as the level of mother's education increases after Matric from F.A./F.Sc. to M.A./M.Sc. Level of father's education has a strong impact on the boy's achievement whereas the level of the mother education has a strong impact on the girl's achievement.

- The availability of chalk, black board, boundary wall and drinking water in school as well as students having books has a great influence on the student's achievement.




- Findings of the study cannot be generalized because of the small sample size.
- The study has identified some crucial factors affecting the quality of education, which need further exploration through research studies.
- Further study needs to be undertaken with an adequate sample size on regular basis.

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