PROVINCIAL REPORT
ON
ASSESSMENT OF STUDENTS’ LEARNING
2008

Prepared by
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In Collaboration
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PEAS Staff
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List of Abbreviations

AI OU Allama Iqbal Open University (Islamabad)
ACER Australian Council for Educational Research
AEAC Area Education Assessment Centre
ATC Assessment Training Centre
AJK Azad Jammu and Kashmir
B.Ed. Bachelor of Education
CT Certificate of Teaching
DfID Department for International Development
DoE Department of Education
ETS Educational Testing Service
FCE Federal College of Education (Islamabad)
FANA Federally Administered Northern Areas
FATA Federally Administered Tribal Areas
GCET Government College for Elementary Teachers
IAEA International Association for the Evaluation of Educational Achievement
ICT Islamabad Capital Territory
IER Institute of Education and Research (University of the Punjab)
IPI International Partnering Institution
IRT Item Response Theory
M.Ed. Master of Education
MoE Ministry of Education
MCQ Multiple Choice Question
NAT National Achievement Test
NAEP National Assessment for Educational Progress
NEAS National Education Assessment System
NIP National Institute of Psychology (Quaid-e-Azam University)
NPCC National Planning and Coordination Committee
NWFP North West Frontier Province
PITE Provincial Institute of Teacher Education
PISA Programme for International Student Assessment
PTA Parent Teacher Association
PTC Primary Teaching Certificate
PPS Probability Proportional to Size
PEACE Provincial Education Assessment Centers
SAT Scholastic Ability Test
SMC School Management Committee
SD Standard Deviation
TA Technical Assistance
TOEFL Test of English as Foreign Language
TIMSS Trends in International Mathematics and Science Study
Executive Summary

The Government of Pakistan as well as Government of the Punjab is committed to improve the quality of education along with its efforts to increase enrolment and access. This commitment is reflected in the government's policy documents (National Education Policy 1998-2010, Education Sector Reforms 2001-05) and in its reaffirmation at international forums to include quality outcomes such as student achievement scores as performance monitoring indicators in the education sector. A specific priority within the overall plan is to:

“Build assessment capacity at the school, provincial and federal levels to better measure learning outcomes and improve the quality and effectiveness of programme interventions.”

Most of the assessment activities in the past have been project driven in Pakistan. There is little institutional base either at the Federal or Provincial level to sustain assessment activities beyond the project timelines. Neither the traditional school examinations nor the external public examinations and selection tests for admission to institutions of higher education, sufficiently fulfill the criteria of standardization and comparability required for a monitoring indicator.

National Education Assessment System (NEAS), Ministry of Education at Federal level and its associated centers in the Provinces and Areas (AJK, FATA, FANA), have been established as a priority programme to institutionalize students assessment as a permanent feature of education system. Punjab Education Assessment System (PEAS), Education Department, Govt. of the Punjab is responsible to conduct assessment tests for national and provincial purposes. Central to these efforts is the development of institutional capacity of the Departments of Education at the provincial and area levels to monitor standards of education.

Within Pakistan, NEAS/PEAS have established a partnership with the Institute of Education and Research (IER), University of Punjab, Lahore and with the Federal College of Education (FCE) Islamabad as its Assessment Training Centers (ATCs). The International Partnering Institutions (IPIs) of NEAS are the Australian Council for Educational Research (ACER), the University of Melbourne, Australia and the Educational Testing Service (ETS) in the United States.

PEAS objectives:

The objectives of NEAS/PEAS are:

- **Informing Policy**: the extent to which geography and gender are linked to inequality in student performance.
- **Monitoring Standards**: how well the curricula are translated into knowledge and skills;
- **Identifying correlates of achievement**: the principle determinants of student performance and how resource allocation might be re-directed
- **Directing Teachers’ Efforts and Raising Students' Achievements**: Assisting teachers to use data to improve student performance.
NEAS/PEAS planned a sample-based national/provincial assessment, at Grade 8 in 2008 in the following two subjects:
- Science
- Social Studies

What PEAS Does—and Doesn't—Report

PEAS provides results on subject-matter achievement, instructional experiences, and school environment for populations of students (e.g., all fourth-graders and eighth graders) and groups within those populations (e.g., male/female students, rural/urban students). PEAS do not provide scores for individual students or schools. PEAS results are based on representative samples of students at grades 4 and 8 for the main assessments, or samples of students at ages 9 and 13 years for the long-term trend assessments. These grades and ages were chosen because they represent critical junctures in academic achievement.

The data was collected from sampled public and private schools and was entered and cleaned under NEAS supervision at Islamabad. In Punjab this report was generated from the data provided by the NEAS to respective provinces for doing analysis and report writing. This report includes the details of curriculum standards and content standard based test development in Science and Social Science for grade 8 level at NEAS and its associated centers, the basic issues and procedures for selection of national sample, particularly the problems of low enrolment in some rural areas and the application of sampling weights to rectify the imbalances of the population due to low enrolment especially in rural areas. Results of the fourth round of national assessment 2008, in terms of scaled achievement scores and the impact of background and context variables on students’ achievement are also presented.

The achievement scores of VIII Grade students in subject of Science and Social Studies reported on a scale of 1-1000, with a mean set at 500 and a standard deviation of 100. This scale is the same as in TIMSS, SAT, TOEFL etc used in international studies. The scaled mean scores obtained in 2008 can be used as baseline for reporting trends over time as well as for comparing the average and relative performance of different groups of students. The 2008 baseline scaled means scores can also be used to set targets for improvement of learning achievement to be reflected in future rounds of national/provincial assessment. On this scale, the Punjab Science scaled mean score is 496 and the Social Studies Scaled Mean Score is 538. The mean score of Science is below the set mean of 500 but mean score of Social Studies is above the set mean of 500. The national scaled mean scores in Science and Social Studies are 471 and 507 respectively.

Private sector schools were also included in this study for pilot purpose, the Science and Social Studies Scaled Mean Score of Private Schools was 519 and 564 respectively.

The 2008 results show that achievement test scores are also well below the international average Science score of 473 in TIMSS 2003 but there are four countries (Iran, Philippines, Morocco and Tunisia) whose Science scores are lower than the Pakistan/Punjab Science score. This comparison is only indicative and not entirely valid because of the differences in the NEAS/PEAS and TIMSS curriculum framework, sampling outcome, test administration conditions and students’ learning environment.

The analysis of background and context variables in relation to achievement scores revealed that several variables related to students’ home background, teaching-learning processes and teaching practices are associated with students’ achievement positively or negatively.
The scaled mean score of Punjab in Science is significantly higher than other Provinces/areas. Similarly, the scaled mean score of students in Social Studies in Punjab is significantly higher than the rest of the nation. Whereas the scaled mean score of Punjab in Science (496) and Social Studies (537) is more than the overall mean score of the nation (477) in Science and (516) in Social Studies.

Supporting inputs from family were also associated with higher mean scores. It appeared that most of the students about 23% get help from their elder brothers. The least help is sought from mother which is only 4%. Student’s achievement is higher for the group who gets help from other than their close relatives. This result does not give a clear picture about the home support of family members. Out of family members only father support is significantly affective in students learning especially in both subjects Science and Social Studies. The difference of group means may be seen in the table below. The students who got support from their mother showed low performance.

The representation of boys and girls students in sample data is about 6:4 ratio which provides a good comparison of both groups. Girls students learning achievement in Science (498) and Social Studies (538) is higher than boys students (494) and (536) respectively which shows that girls students are more hardworking and eager to learn. Generally it is considered that boys have better aptitude towards science and shows good performance in science but these findings shows girls are better achiever than boys.

It appeared that urban students’ gains (505) are higher than rural students (491) in Science, but on other hand urban students with (545) has shown better performance in Social Studies than rural students with (531) mean. The percentage of rural students in sample is 57% whereas the urban students are 43% of the total respondents.

Comparison of different grouped family strength showed that as the number of kids increases the performance of students in Science and Social Studies decreases. The group of students who have 2 or less number of brothers and sisters have high achievement than other groups.

In Science and Social Studies students who come school by their own car has shown the high achievement as compared to all other groups. Whereas the students who come school on Govt. Transport and On foot has shown low achievement in both subjects.
Assessment of Science subject indicated that Conceptual Understanding skills especially in the sub area “Continuity of Life” in Life Sciences and “Matter and its Properties” in Chemical Science and Scientific Investigation skills like “Energy” in Physical Sciences seem to be weak of Grade VIII students in Punjab. Conceptual Understanding Skills especially in the areas of “Electricity and Magnetism” in Physical Sciences and “Living Things” in Life Sciences appeared to be strong pf Grade VIII students in Punjab.

Analysis of Social Studies test revealed that Understanding and Application skills of students in the area of Economics and History are seemed to be weak at 8th grade of Punjab. Knowledge level skills in the area of Economics and Civics are seemed to be strong of students at grade 8 level in Punjab.

Comparison of groups based on language spoken at home shows that students who speak Siraiki at home has highest achievement in Science (514) and Social Studies (554). Students with Punjabi home language have lowest performance in Science and Social Studies.

The achievement of students in Science (500) and Social Studies (541) is higher for Science liking students. It means that the person who has scientific attitude they perform better in all subjects. Whereas on the other side it appears that students who like Social Studies didn’t show good achievement in Social Studies (532).

It appeared that about 59% students have quick access to school as they reach to school within 15 minutes. Policy makers should think about the 4% students who take more than an hour to reach the school. About 75% students reported that they get abusing at school whereas only 6.4% reported they get physical punishment.

It is explored that 47% students never take tuition, 27.5% take tuition from 1-3 months, 10% for 4-6 months, and 15.6% said that they take tuition for full year. Students who do not get tuition showed good performance with (503) gains in Science and (543) in Social Studies. Whereas those who took tuition for full year has shown poor performance.

Data indicates that either Science or Social Studies about 11% students reported that they never been given homework in both subjects. About 39% reported that they are given homework once a week in Social Science and Twice a week in Science. Nearly (86%) of students in Science and 82% in Social Studies stated that their homework is always checked. About 1 to 2% reported their homework in not checked. Students whose homework is regularly checked showed good performance in both Science and Social Studies subjects.

The effect of use of local language during teaching of Science and Social Studies is negative, as the level of speaking local language increases the level of student’s achievement decreases.

Most of the students do not participate in drama, debate, Scouting and Girls Guide. These three areas are most neglected. Whereas majority of students reported they participate in Games and Physical exercise.

There is tendency of low achievement of students who take frequent leave from school. Students who take leave due to single leave have highest achievement with 544 and 501 means score in Science and Social Studies respectively.
Students who were allowed to ask question in the classroom showed better performance in Science with mean score 500 which is greater than others. Overall there is good impact of allowing asking questions in classroom.

Student who are always taught by using blackboard in the class have good achievement i.e. 500 and 541 mean score in Science and Social Studies as compared to other groups.

Student who reads books sometime have high achievement in both subjects with 499 gains in Science and 541 in Social Studies.

Data shows that as the level of parent’s interaction with students’ increase the achievement level of students also increases. Students who have always have interaction with their parents got high scaled mean score (500) in Science and (540) in Social Studies.

About 46% students responded that they didn’t feel difficulty in availability of text books in market. Whereas 42% stated that sometime they feel difficulty and 12% always feel difficulty in getting text books.

It was explored that as the time allocation increases to watch T.V., the performance of students’ decreases in Science. In Social Studies the trend of line is different, the performance of students increases upto two hours and then decreases when students give time more than two hours.

In social studies there is positive relation in student’s attitude towards subject on their academic achievement but in Science it has negative impact on their achievement.

Students of rural teachers have significantly shown better performance in Science with (491) scaled mean score and Social Studies with (547), than students who are being taught by urban teachers. This indicates that Urban Science teachers are significantly less competent than rural teachers in Science teaching or rural students are good performer.

Female students who are taught by female teachers have shown significantly better performance in Science (492) and Social Studies (539) than male students with (485) and (536) scaled mean score in Science and social studies respectively.

Teachers’ general and professional education showed positive relation with students’ achievement. Students’ achievement has increased with the increase of teacher general education.

In this study it was explored that there is positive correlation between teachers’ content knowledge and students achievement level. With the increase of level of teacher command on subject content the level of students achievement also increased.

Science teachers have reported that areas of “chemical reaction” and “scientific experiments” are difficult to teach. Whereas most easy area to teach, for them is “solar system”. Social Studies teachers have reported that the areas of “Geography”, “Economy and Business” and “Solar system and our cultures” are the most hard areas to teach. Whereas “Historical Events and Personalities” and “Social Responsibilities” are most easy to teach.
PEAS
Finally, it would be pertinent to note that the development of a national/provincial assessment system is a complex and challenging task. The preparation and implementation of the 2008 assessment was carried out under tight deadlines. The grade 8 assessment instruments were piloted in March/April 2007. These instruments were marked and coded by the NEAS/PEAS team; data entry was outsourced and item analysis was carried by the PEAS team.

These activities were performed with insufficient staff in the NEAS/PEAS. To ensure that the assessment was conducted in an efficient and timely manner most of the staff was assigned multiple tasks. The capacity building of staff was carried out through hands on work and training with support from Technical Assistance(TA) of World Bank consultants and NEAS/PEAS partnering institutions. Lack of staff works against sustainability and institutionalization of the NEAS/PEAS network. Furthermore, NEAS/PEAS sample design in 2008 has posed some logistics problems. Some problems in private schools were also observed with regard to actual existing of schools and non-cooperation of some schools in data collection.

Purpose of National Assessment

The purpose of the national assessment is to gather information that will aid educators, legislators, and others in improving the education experience of youth in our country. Its primary goals are to measure the current status of the educational attainments of young Pakistanis and to report changes and long-term trends in those attainments. Other goals include disseminating assessment methods and materials and assisting those who wish to apply them at the local, state and national levels. Although the primary purpose of the assessment is to document patterns and trends in student achievement. This institution is also able to inform education policy by collecting descriptive background information from students, teachers and school administrators. NEAS/PEAS have generated a large amount of data which can be used for research to identify specific variables that are associated with high student achievement. Teacher training institutions and University departments of Education, Psychology and other Social Sciences in Pakistan can also use this database for research.

Usage of PEAS Findings

PEAS findings will be helpful in providing fair and valid assessment which will help:-

- **Policy makers** base on ground realities in making realistic decisions.
- **Teacher Educators** in the professional development of teachers.
- **Teachers** improve their classroom practices through assessment and professional development.
- **Educational institutions** facilitate teaching and learning environment and provide useful information to public about students’ performance.
- **Assessment specialists** develop fair, valid and innovative assessment and teaching learning material for learning improvements.
- **Parents** understand and use assessments findings to help their children reach their potentials.
### National Assessment Activities Done So Far

PEAS as a partner institute of National Education Assessment System has conducted following assessment activities.

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade &amp; Subject</th>
<th>Test Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Grade 4 (Math, Languages)</td>
<td>Pilot Testing</td>
</tr>
<tr>
<td>2005</td>
<td>Grade 4 (Math, Languages)</td>
<td>Large Scale Testing</td>
</tr>
<tr>
<td></td>
<td>Grade 4 (Social Studies, Science)</td>
<td>Pilot Testing</td>
</tr>
<tr>
<td>2006</td>
<td>Grade 4 (Math, Languages, Social Studies, General Science)</td>
<td>Large Scale Testing</td>
</tr>
<tr>
<td></td>
<td>Grade 8 (Math, Languages)</td>
<td>Pilot Testing</td>
</tr>
<tr>
<td>2007</td>
<td>Grade 8 (Math, Languages)</td>
<td>Large Scale Testing</td>
</tr>
<tr>
<td></td>
<td>Grade 8 (Social Studies, Science)</td>
<td>Pilot Testing</td>
</tr>
<tr>
<td>2008</td>
<td>Grade 4 (Math, Languages, Social Studies, Science)</td>
<td>Large Scale Testing</td>
</tr>
<tr>
<td></td>
<td>Grade 8 (Science and Social Studies)</td>
<td>Large Scale Testing</td>
</tr>
</tbody>
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Chapter-1

Introduction

Educational Progress and National Assessment:

Either developed or under developed country, quality education is the main concern of all the nations in the world. Pakistan like other developing nations is facing many challenges to improve its education system. These challenges include access, equity and equality of education facilities throughout the country. In spite of all these challenges relating to expansion of educational facilities, quality education is the top priority. Quality of education in any country cannot be improved without knowing its strengths and weakness. An effective mechanism is needed to monitor the system effectively and identify the factors affecting the quality positively or negatively. Assessment of students learning achievement and identification of factors affecting students’ learning has been recognized as an effective tool to know the strength and weaknesses in the existing practices.

The Government of Pakistan is committed to improving the quality of education along with its efforts to increase enrolment and access. This commitment is reflected in the government's policy documents (National Education Policy 1998-2010, Education Sector Reforms 2001-05) and in its reaffirmation at international forums (Jomtien Declaration 1990 and EFA Assessment 2000, Dakar) to include quality outcomes such as student achievement scores, as performance monitoring indicators in the education sector. Government of Pakistan realized the benefits of national assessment of students’ learning and launched National Education Assessment System (NEAS) project at federal level along with Provincial/Area Education Assessment Centers/Systems. Previously Curriculum Wing (CW) in the Ministry of Education (MoE) was given the legal mandate for 'maintenance of standards of education' (Act X of 1976) and NEAS was expected to share to achieve this goal. NEAS is one of the key programs of the Education Sector Reforms (ESR). Later on it was put under the control of Policy and Planning Wing of Ministry of Education.

Stepping forward towards national assessment is the evidence of federal and provincial governments’ concern for quality of education. Punjab Education Assessment System (PEAS) is the institutionalized form of Provincial Education Assessment Centers
(PEACE) project in Punjab. NEAS has been mandated to conduct national assessment with the help of provincial education assessment centers/systems at Grade IV and VIII levels.

National Education Assessment System (NEAS) seeks consultancy of international experts on various components of assessment to conduct national assessment as well as to build the capacity of its personnel. Consultants build the capacity of NEAS and PEACE/PEAS staff on various aspects like assessment framework development, test item development, assembling the tests, test administration, marking and scoring of the instrument, data analysis and report writing.

This report presents the findings of the grade VIII students’ learning achievement assessment in Punjab in the year 2008. Achievement tests in the subjects of Science and Social Studies were developed on the basis of assessment frameworks aligned with the objectives of the national curriculum.

Assessment Instruments
To measure students’ learning achievement and to obtain information on factors that have been found to affect the quality of student learning, two different kinds of instruments were used for the assessment of grade 8 students. These were:

- Achievement tests in Science and Social Studies
- Student, Teacher and Head teacher Background Questionnaires

Achievement tests were developed on the basis of the National Curriculum, 2001 for Science and 2002 for Social Studies. The following processes were adopted to develop the achievement tests:

- Competencies based on the first three levels of the cognitive domain of Bloom’s Taxonomy (Knowledge, Understanding and Application) were developed for two subjects, keeping in view the content areas and objectives of the national curriculum;
- A table of specifications was designed for the tests which included content, learning outcomes, number of items and type of item;
- Multiple Choice and Constructed Response, Completion and Matching items were developed. However it was decided to focus the tests on multiple choice and constructed response items to provide better standardization of test setting and marking;

Separate background questionnaires were developed for Head Teachers, Teachers and Students. These questionnaires contained questions to identify the association of various personal, home, school, teaching and community variables with student achievement. For example, the basic dimensions of this dataset included parental education and occupation;
supporting inputs from home and community; students attitude towards school and teachers; the teachers’ qualification and teaching practices, and multi-grade teaching etc.

Achievement Tests

Achievement tests in the subjects of Science and Social Studies at Grade-VIII level were developed to assess students' learning. Test items were developed according to the assessment frameworks and expected learning outcome given in the curriculum document. Instruments developed to assess the learning achievement of the students were pilot tested and analyzed on software based on item response theory (IRT). A brief detail of the achievement tests and background questionnaires is given in the proceeding section.

a. Science Achievement Test

Science achievement test for Grade-VIII was based on two dimensional assessment framework aligned with the national curriculum objectives. One dimension of the framework was named as knowing and doing science abilities comprising conceptual understanding, scientific investigation and practical reasoning skills. The other dimension was content of Science comprising life sciences, physical sciences, chemical sciences and earth sciences. Some common items were also developed as per requirement of the national curriculum objectives. Two versions of Science achievement test were developed according to the table of specification. Assessment frameworks and table of specifications were developed with the consensus of subject experts from all the provinces and areas under consultation with international consultants hired by NEAS. Two forms were developed for Science test comprising 37 items each. Each form was comprised of 37 multiple choice questions (MCQs). These questions were selected from a pool of pilot tested items.

b. Social Studies Achievement Test

Learning Achievement level in Social Studies was assessed on a test developed according to the two dimensional assessment framework aligned with national curriculum. One dimension of the framework was termed as cognitive domain comprising knowing, understanding and applying abilities. The other dimension was content domain categorized as geography, economics and history. Some common items were also developed as per requirement of the National curriculum objectives. Two forms of Social Studies achievement test were developed according to the table of specification, each form was comprised of total 48 items including 48 MCQs, regarding based on objectives of cognitive
domain including Knowledge, Understanding and Application with items 15, 20 and 13 respectively. All the items included in the Social Studies achievement test were taken from a collection of pilot tested items.

**Background Questionnaires**

Three background questionnaires were developed to explore the factors in home and school environment affecting the learning of students. One questionnaire was for students and parents to collect information regarding home and family, other was for teachers to explore the teacher related factors affecting students’ learning and the third was for head teachers to explore the school environment. Many questions were also there in the field report of the test administrators which provided a lot of data about physical facilities available in schools.

**Understanding PEAS Results**

Students’ ability/proficiency in certain subject is reflected by their true response on the achievement test. Students’s responses on achievement tests are analyzed through items response theory (IRT) based software. One parameter IRT model i.e Rach Model is employed for calibration of test items and students responses. The Rach analysis gives the students proficiency/ability in terms of standardized scores ranging from -5 to +5. A person securing zero score means that he has an average ability in the subject.

The standardized scores ranging from -5 to +5 are converted into scaled scores ranging from 0 to 1000 so that the score become more understandable for a common man. Mean scaled scores are computed to report the learning achievement level of the students in all the three subjects assessed in 2007 assessment. Scaled mean scores are also reported for sub groups of the sampled students e.g. Rural, Urban, Male and Female etc. The comparison of mean scaled scores is shown in bar charts as well as in the tables. The PEAS uses widely accepted statistical procedure in analyzing the data. Microsoft Excel is used for data entry, after completion of data entry files are converted into Statistical Package for Social Sciences (SPSS) file format. IRT based one parameter model software Conquest is used to analyze the data. This software gives the ability measures of the students in terms of standardized scores and item difficulty measures. SPSS is used for basic descriptive/summary statistics and comparing the means of different groups of students.
**Sampling Design for PEAS Assessment Study**

Sample selection is very crucial aspect of any research study, true representative sample is essential for the findings to be generalized. Punjab sample was a part of national sample for national assessment of students’ learning. The list of Government schools prepared by National Education Management Information System (NEMIS) was used in the sampling frame. Stratified random sampling procedure was employed to select the schools for assessment. There were three agreed strata i.e. province/area, gender (girls/boys), location (rural/urban) for the national sample. Sampling frame for the provinces was divided into four parts with respect to gender and location of the school. Sample was selected proportionate to number and size of schools in each stratum. Sampling unit in the sampling frame was school, therefore sample comprised of schools selected from each stratum. It was decided that twenty students will be selected from each school for administering the achievement test. If there was only one section with more than twenty students, twenty students were selected randomly by the test administrators. If there were more than one sections of class VIII in a school the one section was selected randomly and then twenty students were selected randomly from that section. If there were less than twenty students in a school all the students were taken to administer the test. To rectify the sampling imbalances due to stratification sampling weights were also computed and applied while analyzing the data.

The Punjab Public schools sample covered almost entire province. The sample was comprised of 222 schools from 33 districts of Punjab including 108 schools from urban area and 114 from rural area and gender wise distribution of sample consists of male 111 and 111 female. The following map of Punjab and table shows the coverage of 2008 assessment sample.

Map Showing the Geographical Representation of Punjab Sample.
<table>
<thead>
<tr>
<th>Sr.#</th>
<th>Districts</th>
<th>Urban Male</th>
<th>Urban Female</th>
<th>Rural Male</th>
<th>Rural Female</th>
<th>Total Schools</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>BhawalNagar</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Bahawalpur</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Bhakkar</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
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<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>D.G Khan</td>
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<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Faisalabad</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>8</td>
<td>Gujranwala</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>Gujrat</td>
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<td>0</td>
<td>2</td>
<td>4</td>
<td>8</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
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<td>Jhang</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
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<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>Kasur</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Khanewal</td>
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<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>Lahore</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>16</td>
<td>Layyah</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>17</td>
<td>Lodhran</td>
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<td>1</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
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<td>18</td>
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<td>3</td>
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<td>5</td>
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<td>0</td>
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<td>2</td>
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<td>23</td>
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<td>1</td>
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<td>6</td>
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<td>0</td>
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<td>1</td>
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<td>4</td>
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<td>7</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>55</strong></td>
<td><strong>53</strong></td>
<td><strong>56</strong></td>
<td><strong>58</strong></td>
<td><strong>222</strong></td>
</tr>
</tbody>
</table>
The Punjab private schools sample covered almost entire province. This study included private schools as pilot, so this data may not be taken authentic for any decision making. This shows just an indication of trend of private schools. No comprehensive data analysis has been done on private schools as this data was pilot data. The sample was comprised of 73 schools from 34 districts of Punjab including 59 schools from urban area and 14 from rural area.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>District</th>
<th>Urban Male</th>
<th>Urban Female</th>
<th>Urban Mix</th>
<th>Rural Male</th>
<th>Rural Female</th>
<th>Rural Mix</th>
<th>Total</th>
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<td>0</td>
<td>0</td>
<td>3</td>
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<td>1</td>
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<tr>
<td>18.</td>
<td>Lodhran</td>
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<td>0</td>
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</tr>
<tr>
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<td>1</td>
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<tr>
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<tr>
<td>24.</td>
<td>Okara</td>
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<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>25.</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
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<td>R.Y Khan</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
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<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>28.</td>
<td>Rawalpindi</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>30.</td>
<td>Sargodha</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
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</tr>
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<td>32.</td>
<td>Sialkot</td>
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<td>0</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>20</td>
<td>17</td>
<td>22</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>73</td>
</tr>
</tbody>
</table>
Chapter-2

Students Learning Achievement Level in the Subjects of Science and Social Studies at Grade 8 Level.

Comparison of Punjab Govt. Schools with Rest of the Nation

<table>
<thead>
<tr>
<th>Comparison of Punjab With Rest of the Nation</th>
<th>Science</th>
<th>Level of Significance at .05 Alpha</th>
<th>S.Studies</th>
<th>Level of Significance at .05 Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>496</td>
<td>Sig.</td>
<td>537</td>
<td>Sig.</td>
</tr>
<tr>
<td>Rest of the Nation</td>
<td>453</td>
<td></td>
<td>489</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>477</td>
<td></td>
<td>516</td>
<td></td>
</tr>
</tbody>
</table>

The scaled mean score of Punjab in Science is significantly higher than other Provinces/areas. Similarly the scaled mean score of students in Social Studies in Punjab is significantly higher than rest of the nation. Whereas the scaled mean score of Punjab in Science (496) and Social Studies (537) is more than overall mean score of nation (477) in Science and (516) in Social Studies.

Comparison of Punjab Private Schools with Rest of the Nation

<table>
<thead>
<tr>
<th>Comparison of Punjab With Rest of the Nation</th>
<th>Science</th>
<th>Level of Significance at .05 Alpha</th>
<th>S.Studies</th>
<th>Level of Significance at .05 Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>519</td>
<td>Sig.</td>
<td>564</td>
<td>Sig.</td>
</tr>
<tr>
<td>Rest of the Nation</td>
<td>480</td>
<td></td>
<td>549</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>512</td>
<td></td>
<td>561</td>
<td></td>
</tr>
</tbody>
</table>

The scaled mean score of Punjab in Science is significantly higher than other Provinces/areas. Similarly the scaled mean score of students in Social Studies in Punjab is significantly higher than rest of the nation. Whereas the scaled mean score of Punjab in Science (519) and Social Studies (564) is more than overall mean score of nation (512) in Science and (561) in Social Studies.
School Location: and Students Achievement:

The above graph shows that performance of rural students is better in Science and Social Studies. In PEAS 2007 assessment study the gains of rural students were higher than urban students in Mathematics at 8th grade. The difference in scaled mean score is statistically significant at Alpha .05 level.

School Gender(Admn.): Comparison of Male and Female Schools Learning Achievement

The achievement level of girls is significantly higher in Science and Social Studies subjects. The achievement of girls is also higher in Urdu at Grade 8 as indicated in PEAS 2007.
assessment study. Boys gains in mathematics were higher than girls. This shows that girls seems to be strong in language than boys. On the other hand boys seems to be strong in Mathematics than girls. But overall the performance of girls is better than boys in three subjects i.e Urdu, Science and Social Studies. The difference in scaled mean score is statistically significant at Alpha .05 level. The percentage shown against the groups shows their N.

**Achievement in Science**

Learning Achievement level in Science was assessed on a test developed according to the two dimensional assessment framework aligned with national curriculum. One dimension of the frame work was named as “Knowing and Doing Science” abilities comprising Conceptual Understanding, Scientific Investigation and Practical Reasoning skills. The other dimension was “Content of Science” comprising Life Sciences, Physical Sciences, Chemical Sciences and Earth Sciences. Performance of students on various components of test can be seen on person item map. This map shows the range from +5 to -5 for items to be felled. But generally items are placed from +2 to -2. The items which fall towards positive direction of the map are taken as difficult items. It means that students are weak in the areas or content from which these items are developed. The items which fall within ±1 standard deviation are taken as average items and most of the students attempt these items. On left side of the map number of students are given who have attempted these item with notation “X”. Each ‘X’ represents 24.6 cases.
Conceptual Understanding skills especially in the sub area “Continuity of Life” in Life Sciences and “Matter and its Properties” in Chemical Science and Scientific Investigation skills like “Energy” in Physical Sciences seem to be weak of Grade VIII students in Punjab.

Conceptual Understanding Skills especially in the areas of “Electricity and Magnetism” in Physical Sciences and “Living Things” in Life Sciences appeared to be strong pf Grade VIII students in Punjab.
Achievement in Social Studies

Social Studies achievement test aimed at assessing knowledge, understanding and application level skills of the students. Performance of students on various components of test can be seen on person item map.

### Item Person Map of Social Studies at Grade 8

<table>
<thead>
<tr>
<th>CV= Civics</th>
<th>GE = Geography</th>
<th>EC = Economics</th>
<th>HI = History</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP = Application</td>
<td>UN = Understanding</td>
<td>KN = Knowledge</td>
<td></td>
</tr>
</tbody>
</table>

Understanding and Application skills of students in the area of Economics and History are seemed to be weak at 8th grade of Punjab. Knowledge level skills in the area of Economics and Civics are seemed to be strong of students at grade 8 level in Punjab.

Each 'X' represents 24.8 cases.
Chapter-3

Students Background and Their Learning Achievement

Student Location:
The following diagram presents the comparison of Grade-VIII Rural and Urban students’ achievement in 2008 assessment in the subjects of Science and Social Studies.

The above graph shows that urban students’ gains (505) are higher than rural students (491) in Science, but on other hand urban students with (545) has shown better performance in Social Studies than rural students with (531) mean. The percentage of rural students in sample is 57% whereas the urban students are 43% of the total respondents. The difference between the scaled mean score of both groups is statistically significant at .05 alpha levels.

Students Gender:
Diagram given below shows the comparison of male and female students learning achievement in 2008 assessment in the subjects of Science and Social Studies. Gender information of students is reported by students themselves.
<table>
<thead>
<tr>
<th>Students Gender</th>
<th>Percentage</th>
<th>Science Scaled Mean Score</th>
<th>Level of Significance .05 Alpha level</th>
<th>S.Studies Scaled Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>59</td>
<td>494</td>
<td>Girls Achievement is significantly better than boys</td>
<td>536</td>
</tr>
<tr>
<td>Girls</td>
<td>41</td>
<td><strong>498</strong></td>
<td></td>
<td><strong>538</strong></td>
</tr>
</tbody>
</table>

The representation of boys and girls students in sample data is about 6:4 ratio which provides a good comparison of both groups. Girls students learning achievement in Science and Social Studies higher than boys students which shows that girls students are more hardworking and eager to learn. Generally it is considered that boys have better aptitude towards science and shows good performance in science but these findings show girls are better achiever than boys.

The above graph gives us a good depiction of this significant difference of boys and girls in both subjects.

**Family Size:**

<table>
<thead>
<tr>
<th>Total Sibling of students</th>
<th>Percentage</th>
<th>Science Scaled Mean Score</th>
<th>Social Studies Scaled Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys (59%)</td>
<td>494</td>
<td>536</td>
<td></td>
</tr>
<tr>
<td>Girls (41%)</td>
<td>498</td>
<td>538</td>
<td></td>
</tr>
</tbody>
</table>
From the above table it can be viewed that most of the students fall in first and second category. In first and second category about 67% and 27% students fall and 6% fall in third category. This is very interesting finding especially in our society where we expect that average siblings in a family are three. Most of the students have siblings about 2 or less. The students achievement of can better be viewed in the following graphs.

Co mp aris on of diff ere nt gro upe d fam ily strength shows that as the number of kids increases the performance of students in Science and Social Studies decreases. The most common reason may be that parents do not find enough time to give their kids for tutoring them in their educational tasks. Mother plays major role in education of children. But if mother is unable to give sufficient time to each kid it may affect the students achievement. ANOVA test was applied with post hoc comparison by applying Scheffe test. All the groups are significantly different from each other by performance. The group of students who have 2 or less number of brothers and sisters have high achievement than other groups.
This finding is also in congruence of PEAS 2007 assessment findings in which achievement of students decreased in Urdu achievement with the increase of number of siblings.

Language Spoken at Home

Comparison of students’ achievement by language spoken at home in Science and Social Studies.

<table>
<thead>
<tr>
<th>Language spoken at home by students</th>
<th>Percentage</th>
<th>Science Scaled Mean Score</th>
<th>Social Studies Scaled Mean Score</th>
<th>Level of Significance</th>
<th>Post hoc test shows Significant difference in groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urdu</td>
<td>21</td>
<td>500</td>
<td>546</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punjabi</td>
<td>69</td>
<td>493</td>
<td>533</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siraiki</td>
<td>10</td>
<td>514</td>
<td>554</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Punjab mainly three languages are spoken at home with almost 69% speak Punjabi, 21% Urdu and 10% Siraiki. Punjabi is the most spoken language at home in Punjab by the families. There are some other languages like Barahwi, Balochi, Pashto, Sindhi, Kashmiri and Hindko but their frequency is not sufficient to be representative therefore may not be considered for analysis. All the groups have statistically significant difference in achievement as per ANOVA.

Comparison of groups based on language spoken at home shows that students who speak Siraiki at home has highest achievement in Science and Social Studies. Students with Punjabi home language have lowest performance in Science and Social Studies. It is
interesting if it is further explored that why Siraiki group has high achievement in both subjects and Punjabi students have low achievement level.

**Liking of Subject:**
Students were asked to “Which of the following subjects do you like” Most of the students with 66% have shown their likeness for Science subject whereas the least interest is in Social Studies with only almost 34%. To see the mean difference statistically t-test was applied for group comparison. Both groups are statistically significant from each other.

![Graph showing students' liking of subjects and their achievement] balances

The graphical display of data shows that achievement of students in Science (500) and Social Studies (541) is higher for Science liking students. It means that the person who has scientific attitude and thinking they perform better in all subjects. Whereas on the other side it appears that students who like Social Studies didn’t show good achievement in Social Studies (532). It does mean that liking of subjects do not have any association with achievement. The performance of students who like or study science has good performance in both subjects may be due to the reason that students who study science are generally sharp than other students and secondly they scientific attitude and systematic thinking may also have influence on their achievement. The difference was statistically checked by applying t-test at .05 alpha level.
Learning Support At Home:
Students were asked to report the question “Who teaches you generally at home” by ticking the relevant category like father, mother, elder sister, elder brother, tutor etc. It appeared that most of the students about 23% get help from their elder brothers. The least help is sought from mother which is only 4%.

The above graph shows that students achievement is higher for the group who gets help from other than their close relatives. This result shows do not give clear picture about the home support of family members. Out of family members only father support is significantly affective in students learning especially in both subjects Science and Social Studies. The difference of group means may be seen in the table below.

<table>
<thead>
<tr>
<th>Who teaches you generally at home</th>
<th>Subset for alpha = .05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elder brother</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td></td>
<td>493</td>
</tr>
</tbody>
</table>

Scheffe test
The above table shows the difference of group means and place them in different homogenous subsets after applying multiple comparison test ANOVA and post hoc test Scheffe at .05 alpha level. The groups whose means are homogenous are placed in one column. Left for 1st column indicates the lowest mean score of Elder brother and Mother groups. These two groups are statistically not significantly different from each other with reference to students achievement. The last or 5th column shows the highest performance in term of students achievement in Science subject. This group is taught by other family member and second last is Father group. It appears that the students who get help from their father get high achievement in their academic learning.

### S.Studies Mean

One way ANOVA with post hoc (Scheffe Test)

<table>
<thead>
<tr>
<th>Who teaches you generally at home</th>
<th>Subset for alpha = .05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Elder brother</td>
<td>529</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
</tr>
<tr>
<td>Nobody</td>
<td></td>
</tr>
<tr>
<td>Elder sister</td>
<td></td>
</tr>
<tr>
<td>Tutor</td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td></td>
</tr>
<tr>
<td>Other family member</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Means for groups in homogeneous subsets are displayed.

In both above tables the group of students who get academic support from their elder brothers appear to be the least achiever in both Science and Social Studies subjects. It is also pertinent to mention that most of the students have reported that they get learning support from their elder brothers. Whereas the group who sought help from father have shown good performance with mean score 541 and this is the second group with high achievement after the group who sought help from other family members. The result of support of tutors and fathers is almost same.
Mode of Commutation:
The graph below shows that most of the students (67.5%) goes to school on foot, whereas only 11.5% goes to school by public transport and 1.9% goes by govt. transport which is the lowest percentage out of all means of transportation. It implicates that whether most of the students do not have their own transportation means or otherwise they have close accessibility to school.

Comparison of groups with regard to their scaled mean score in Science and Social Studies

<table>
<thead>
<tr>
<th>How do you go to school</th>
<th>Science Scaled Mean Score</th>
<th>Social Studies Scaled Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>by govt. transport (1.9%)</td>
<td>473</td>
<td>Lowest Group mean, significantly different from others</td>
</tr>
<tr>
<td>on foot (67.5%)</td>
<td>495</td>
<td>There is no significant difference between these two groups</td>
</tr>
<tr>
<td>Public transport (11.5%)</td>
<td>497</td>
<td></td>
</tr>
<tr>
<td>own car (19.2%)</td>
<td>504</td>
<td>Highest group mean, significant</td>
</tr>
</tbody>
</table>

Group means of all the groups are significantly different from each other.
In Science and Social Studies students who come school by their own car has shown the high achievement as compared to all other groups. Whereas the students who come school on Govt. Transport and On foot has shown low achievement in both subjects. Multiple comparisons of groups were made to see the difference at .05 levels. There is no significant difference between in science achievement of students who go to school by public transport or on foot.

**Students Access to School**
Students were asked to state about the time they take to reach the school. It appeared that about 59% students have quick access to school they reach to school within 15 minutes. Policy makers should think about the 4% students who take more than an hour to reach the school.
Punishment and Students Achievement:

a. Mode of Punishment

Students were asked the question “Which of the following do you face at school” with three options i.e. Physical punishment, abusing and both, to know the mode of punishment that students are being faced in our schools.

<table>
<thead>
<tr>
<th>Which of the following do you face at school</th>
<th>Total Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical punishment</td>
<td>7%</td>
</tr>
<tr>
<td>Abusing</td>
<td>75%</td>
</tr>
<tr>
<td>Both</td>
<td>18%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

The table shows that 75% students reported that they get abusing at school and only 6.4% students has reported that they get physical punishment.

b. Frequency of Punishment

Students were asked to report about the frequency of punishment they receive at school by asking question: Do you get corporal punishment at school?” with options Always, Sometime and Never.

About 45% students have reported that they are never given punishment at school. Whereas, 53% have mentioned that they are punished sometimes and only 3% have reported that they are continuously punished. This figure shows that still the rate of punishment is high in schools as 53% reported that they are given punishment sometimes.

Comparison of Frequency of Punishment with Students achievement level.
As reported by students about the level of punishment they get from teachers, the performance of these students has been compared by using one way ANOVA and multiple comparison statistics of post hoc test at .05 level of significance. All these three groups are significantly different in their achievement in Science and Social Studies test. It appears from the graph that as the frequency of punishment decreases the achievement level of student’s increases. Although there seems a relationship between punishment and achievement but statistically it’s not so significant. The Pearson correlation of punishment with Science achievement is \( r = 0.118 \) where as in Social Studies it is \( r = 0.128 \). So we can not say that this increase in achievement is directly related with punishment.
c. Causes of Punishment

The indiscipline is generally created by academically poor students but some intelligent students may also create indiscipline problem. These results shows that the students who got punishment due to indiscipline in the class has shown better performance with scaled mean score (547) in Social Studies and (501) in Science subject than other students. The percentage (13%) of theses students is although not so high but considerable. Whereas the weak students who are punished due to incomplete their homework has shown poor performance in both subjects. This result shows that good performer create indiscipline in class.

Tuition and Students Achievement

a. Need for Tuition

Students were asked questions about the need of tuition for learning in Science and Social Studies in two different questions “Do you feel any need for tuition to learn the science subject?” and in other question “Do you feel any need for tuition to learn the Social Studies
subject?”. In Science about (62.9%) students need and (37.1%) don’t need tuition whereas in Social Studies (33.5%) students need and (66.5%) don’t need tuition.

![Bar chart showing the need for tuition in Science and Social Studies.]

It can be interpreted that those students who need tuition are weak in learning and this can be viewed through their low performance in both subjects. In Science subject who need tuition have low gains with (491) scaled mean score than who don’t need with gains (507) scaled mean score. In both subjects performance of low learner is weak. Their means score difference is checked statistically at .05 alpha level of significance.

b. Frequency of Tuition
Students were asked to state the frequency of tuition they take by asking the question “Do you take any tuition for the science and social studies subject?” almost 47% students stated that they never take tuition, 27.5% take tuition from 1-3 months, 10% for 4-6 months, and 15.6% said that they take tuition for full year.
It appeared that students who do not get tuition in their study has shown good performance with (503) gains in Science and (543) in Social Studies. Whereas those who took tuition for full year has shown poor performance. This is very interesting finding and it needs further investigation that why tuition has negative affect on performance. There is possibility that student who take tuition for whole year are already poor performer and even tuition didn’t help them out or tuition make students dependent and their self effort to learn something is minimized.
It may be interpreted from graph that most of the students of Science have reported (46%) that they do complete their text book one time during study year. Whereas about 11% students reported that they never complete their course work during year. There is need to resolve this problem that why they are unable to complete their text book. The percentage in Social Studies is also about the same as in Science.

**Homework and Students Achievement**

**a. Frequency of homework given to students**

A question was asked from students “how often do you get homework in Science” and “how often do you get homework in Social Studies” with four options i.e Daily, Once a week, Twice a week and Never. The following table shows simple percentage of responses of students regarding frequency of homework assigned to them in Science and Social Sciences.
Data indicates that either Science or Social Studies about 11% students reported that they never been given homework in both subjects. Whereas maximum students about 39% reported that they are given homework once a week in Social Science and Twice a week in Science. The frequency of homework is lesser in Science than Social Studies. In science subjects homework is given less than other subjects. In PEAS 2007 report students reported that they are given less homework in Mathematics than Urdu.

**b. Frequency of Homework Checking and Students Achievement**

A question was asked from students “How often do the teachers check your homework in Science” and “How often do the teachers check your homework in Social Studies” with four options i.e Daily, Once a week, Twice a week, and Never. The following table shows simple percentage of responses of students regarding frequency of homework checking by teachers in Science and Social Studies.
The above table shows that majority (86%) of students in Science and 82% in Social Studies stated that their homework is checked in both subjects reported that their homework is checked always, but even then there are significant number of students who reported that their homework is checked sometimes. The percentage of students whose homework is not checked is very less and is about 1 to 2%. This is a good sign that teachers regularly check homework. There is a good affect of homework checking on students achievement.

It is clear from the graph that students whose homework is regularly checked have shown good performance in both Science and Social Studies subjects. Their scaled mean
difference is checked by statistical procedure ANOVA and post hoc test Scheffe at .05 Alpha level of significance. The linear trendline in Science is more inclined to high scores as the frequency of homework checking increases.

c. Explanation of mistakes in homework in Science and Social Studies

Students were asked to state the frequency of pinpointing mistakes by teachers done by students on a three point level of rating including Never, Sometimes and Always. About 77% students in Science and 74% students in Social Studies have stated that their teachers pinpoint and interpret the mistakes done by students in homework.

Use of Local Language in Instruction:
A question was asked from “How often does the teacher use the local language to explain a concept or procedure in Science and Social Studies” with three options showing categories i.e Never, Sometimes, and Always for answer by marking a tick in the relevant box. The objective was to see the effect of local language during instruction of two different types of subjects like Science and Social Studies. The following table shows the percentage of responses of students as reported by them in questionnaire in both Science and Social
The above graph shows that almost 40% students have reported that their teacher speak local language during instruction of Urdu and same percentage in Math subject. Whereas almost 38% has reported that their teacher speaks local language during instruction in Urdu and 36% reported in Math. An average of both Urdu and Math students about 23% has reported that their teacher do not use local language during instruction of Urdu and Math. It appears that in both subjects almost equal percentage of students are taught in local language during teaching of Urdu and Math.
The above graph shows that the effect of local language during teaching of Science and Social Studies is negative, as the level of speaking local language increases the level of student’s achievement decreases. These findings are not in congruence of PEAS 2007 results in Urdu language. It means that while teaching Urdu teachers should always use Urdu language in class. On the other hand the affect of using local language in Mathematics was positive. With the increase of use of local language the achievement of students also increase, but excessive use of local language in Math is also negative. It means that understanding of concepts easy if it is elaborated in local language as mixed method of instruction. Complete use of local language has negative affect on students’ achievement. After applying ANOVA at .05 level and post hoc analysis test for group comparison it appeared that all these categories have shown significant difference in their performance.
Co-curricular Activities and Achievement

Co-curricular activities are as important as the academic learning to improve the different dimensions of personality of students. In our schools these activities are squeezing due to extra concentration to curriculum only. Now students are racing to get highest marks in academic achievement but neither teacher nor parents are paying heed towards the promotion of co-curricular activities. To know the factual position about students participation in co-curricular activities some questions regarding Naat, Qirat, Drama, Debate, and Physical exercise were asked. Response was got on three levels ie Never, Sometimes and Always.

The above graph shows that mostly students do not participate in drama, debate and Scouting and Girls Guide. These three areas are most neglected. Some efforts should be made to improve the participation of students in these activities. Most of the students have reported that they participate in games and physical exercise. The high response in this area may be that those students may also have responded positive even who play in the break or in the morning time in the school. But this do not shows that games are in abundance in schools. Second most reported activity is Naat and Qirat respectively. These activities are regular activities which are performed in daily morning assembly and in all functions of schools.
Absenteeism from School:
Students were asked three questions regarding taking leave from school due to different reasons. As we know that parents pull them out of school to get their help in home business. This may affect the performance of students in academic achievement. To explore the affect of taking leave from school students were asked to following questions “Do you …ever have to take leave from school to look after your brothers or sisters” “Do you…. ever have to take leave from school to help with the harvesting” and “work outside to earn money”, illness and other reasons. The following graph shows the percentage of students who take leave due to different reasons.

The above graph shows that mostly (94%) students take leave from school due to illness, 88% due to other reasons and 31% to look after their younger brothers and sisters. Where as (23%) students take leave from school due to help their parents in harvesting. It is worth to explore that almost 13 % students have to work to earn their food and help their parents in earning money. This shows the social status of students, that they even are unable to given full concentration to their study.

a. Leave from School and Students’ Achievement in Science and Social Studies
To see the association of absenteeism of students from school with their achievement a comparison of all the categories was made with reference to their achievement in science and social studies. Students take leave from school with different reasons every group
shows the high level of frequency a student take leave from school. The student who has ticked all the categories in “Yes” it means he is most frequently habitual of leave taking.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Leave for single reason</th>
<th>Leave for two reasons</th>
<th>Leave for three reasons</th>
<th>Leave for four reasons</th>
<th>Leave for five reasons</th>
<th>Total Frequency of Leave from School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42</td>
<td>5</td>
<td>45</td>
<td>0</td>
<td>47</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is evident from graph that there is tendency of low achievement of students who take frequent leave from school. Students who take leave due to single leave have highest achievement with 544 and 501 means score in Science and Social Studies respectively. In Science there is little bit divergence at the highest level of leave taking. The students who take leave for about five reasons have highest achievement which does not look logical. After applying ANOVA at .05 level and post hoc analysis test for group comparison it appeared that all these categories have shown significant difference in their performance.

b. Frequency of Leave and Students Total Achievement
To further explore the impact of leave on student’s achievement, student’s achievement in Science and Social Studies was averaged and a new variable “total mean score” was computed. The association of frequency of leave taking was seen with total students score in both subjects.
From graph it may be interpreted that as the frequency of leave taking increases the performance of student’s decreases. It means that frequent absenteeism from school may lead to poor performance. The performance of group who take leaves for single or three reasons is highest among other groups. Whereas the who takes leave for many reasons has poor performance. After applying ANOVA at .05 level and post hoc analysis tests for group comparison it appeared that there is no significant difference in performance between the groups of students who take leave for four or five reasons. Similarly there is no significant difference between two and three reasons group.

**Questioning in Classroom and Students Achievement:**
Students were asked to report whether their teacher allow them to ask question during instruction. They were asked to report on dichotomous responses Yes or No. Their mean comparison was also done on in Science and Social Studies Following table shows mean difference between students who are allowed and who don’t

<table>
<thead>
<tr>
<th>Does your teacher allow you to ask questions in the class?</th>
<th>Science Scaled Mean Score</th>
<th>Level of significance by using ANOVA test (.000)</th>
<th>Social Studies Scaled Mean Score</th>
<th>Level of significance by ANOVA test</th>
</tr>
</thead>
</table>
The above table shows that most of the students with 84.7% have reported that during instruction they are allowed by the teacher to ask question, whereas only 2.4% have reported that they are not allowed to ask questions in the classroom during teaching.

The above graph shows that students who are allowed to ask question in the classroom during teaching have shown better performance in Science with mean score 500 as compared to 523 who are not allowed to ask question. The statistics about Social Studies also shows that students who are allowed to ask questions have high achievement in test. The position of trend line, in dotted line, show the trend of increase in score of students in both subjects. It means that asking questions in the classroom have positive impact on students’ achievement irrespective of the subject difference. Measures should be taken to professionally develop teachers to make practice in the classroom to allow students to ask questions.

Use of Blackboard and Achievement:
Students were asked to report whether their teacher uses blackboard during instruction. They were asked to report on a three level scale i.e. Never, Sometimes and Always. Their mean comparison was also done on in Science and Social Studies. The percentage of responses for Never is 3%, for Sometimes 27% and for Always 70%. It means that in most
of the schools blackboard is used as teaching aid in learning process. But still there is a large percentage who do not use regularly.

The above graph and table shows that student who are always taught by using blackboard in the class have good achievement i.e. 500 and 541 mean score in Science and Social Studies as compared to other groups. In science subject the students who are taught with use of blackboard sometimes have shown performance less that first group who never uses blackboard. But this deflection is temporary and do not change the trend of data. We can see that in both subjects trend line (dotted line) show upward elevation as the frequency of usage of blackboard increases, it means that there is strong association with usage of blackboard and students achievement. Multiple comparison of group performance in term of scaled mean score was done by using ANOVA. To identify the group with high performance post hoc test Scheffe was run. In both subjects three different groups were identified. It means that all these three groups are not homogenous and they have significant difference in their scaled mean score.

**Extra Reading Book than Text Books**

Students were asked question “Besides text books, I also study other informative books, stories etc.” on three point level of rating i.e. Never, Sometimes and Always. The percentage of responses was 10%, 62% and 29% respectively. Majority of the students read the extra books but not regularly rather sometimes when they get time.
The above graph it is obvious that student who reads books sometime have high achievement in both subjects. Whereas the student who reads too much extra books have low achievement than those students who read books less frequently. But if we observe the direction of trend line it appears that as the frequency of reading books increases the achievement of students also increases. But this is also fact that excessive reading of extra books may affect the achievement of students, the possible reason may be that they do not give proper time to their text books and school study. Multiple comparison of group performance in term of scaled mean score was done by using ANOVA. To identify the group with high performance post hoc test Scheffe was run. In both subjects three different groups were identified. It means that all these three groups are not homogenous and they have significant difference in their scaled mean score.

**Parents Interest with Student Education and Students Achievement**

A question was asked from students about their parent’s interaction with them about their education. They were asked question “My parents ask about my study at school” and was required to rate their level of interaction on three point rating scale i.e. Never, Sometimes and Always. About 77% students have stated that their parents ask them about their study at school. Whereas 20% students rated their level of interaction with their parents as “Sometime” and only 3% said that their parents do not ask about their study at school.
Graphical presentation of data shows that as the level of parent’s interaction with students increase the achievement level of students also increases. The performance of students, whose parents always ask about the study of their child and discusses with their problems, better than other students. Multiple comparison of group performance in term of scaled mean score was done by using ANOVA. To identify the group with high performance post hoc test Scheffe was run. In both subjects three different groups were identified. It means that all these three groups are not homogenous and they have significant difference in their scaled mean score.

Availability of Text Books in Market
Students were asked to rate the difficulty they face in availability of text books in bazaar in their area. They were asked question “I always face the difficulty of the unavailability of text books in the bazaar” and were required to tick on out of three options i.e. Never, Sometime and Always. About 46% students responded that they didn’t feel difficulty in availability of text books in market. Whereas 42% stated that sometime they feel difficulty in getting the text books from market. And 12% always feel difficulty in getting text books.
Students’ Home Activities:

Students were asked to rate the time allocation for different activities they perform at four levels of rating i.e. i) Never ii) Within One hour iii) One to Two hours iv) More than two hours.

A large number of students about 88% in Internet and 77% in Computer Games do not perform these activities. About 57% students study extra books at home within one hour and 55% students play physical games.
a. Watching T.V at Home and Students Achievement.
Students were asked how much time they give to watch T.V. at home. They were required to rate their time allocation at given time scale from Never to More than 2 hours.

It appears from graph that as the time allocation for watching T.V. increases the performance of students decreases as well. In Social Studies the trend of line is different, the performance of students increases up to three level and then decreases when students give time more than two hours. It shows that excessive time allocation to watching T.V may affect the performance of students. T.V. is a good source of information for students as it gives visual information which is more affective than textual information, so it may helpful for students to improve their achievement in both subjects but up to a limited time allocation. It should not exceed more than two hours.

b. Playing Computer Games and Students Achievement
Students were asked how much time they give to playing computer games. As we know that computer games have become craze in students and students are being victimized by computer mania. They were required to rate their time allocation at given time scale i.e Never, Within one hour, one to two hour and More than 2 hours.
The above line graph shows the tendency of students’ achievement in Science and social Studies subjects with the increase of time they spend on playing games on computer. A controlled time for playing computer may have positive affect on students’ achievement but excessive use of computer games have negative affect on achievement. The students who have never played computer games performed better than those who use more than two hours.

c. Use of Internet and Students Achievement

Students were asked question “How much time do you spend to use internet” to know their trend to use this technology and its affect on their academic achievement if there exist. Although the use of internet is very limited due to its availability in remote areas but in advanced metropolitan areas its use is very frequent. Still about 88% students reported that they do not use internet.
Students Attitude towards Subject and Their Achievement:

a. Social Studies
Students were asked to rate some statements to know their attitude towards Social Studies. All the statements were computed and converted into three levels with the hierarchy from low to high attitude. Following table and graph shows the scaled mean score of students in Social Studies with respect to their level of attitude towards Social Studies.

<table>
<thead>
<tr>
<th>Level of attitudes in Social Studies</th>
<th>Social Studies Scaled Person Measure</th>
<th>Level of significance .05 alpha level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low attitude</td>
<td>525</td>
<td>All three groups were significantly different in achievement</td>
</tr>
<tr>
<td>Moderate attitude</td>
<td>538</td>
<td></td>
</tr>
<tr>
<td>High attitude</td>
<td>545</td>
<td></td>
</tr>
</tbody>
</table>

In social studies there is positive relation in student’s attitude towards subject on their academic achievement. We can see form above graph that as the level of attitude of students increases the level of achievement of student’s increases. Although there is no strong relationship between these two variables. The value of r is .06 show a weak relationship. All these groups have different academic achievement level and it is significantly different from each other.

b. Science

<table>
<thead>
<tr>
<th>Level of attitudes in Science</th>
<th>Science Scaled Person Measure</th>
<th>Level of significance</th>
</tr>
</thead>
</table>
The above graph shows that students' attitude towards Science has negative impact on their achievement in Science. As the attitude level increases, the achievement of students decreases, which shows a negative association. This result is quite opposite to previous one.

Parents/Guardian Education

Some questionnaires about the education of student’s parents and guardian were asked with three options to tick i.e. Father, Mother and Guardian.

The above graph shows that among the illiterate parents/guardian the Mother is with the highest percentage among the total illiterate parents consisting about (61%). Father and Guardian becomes second and third illiterate with 28% and 11% respectively. Fathers are in
good percentage among the parents/guardian who have passed primary education with 48% representation. Fathers have also big share among the parents/guardian who have passed M.A/M.Sc. qualification with 60% representation.

**Parents Employment and Students Achievement:**
Parents were asked to state about the status of their employment. Although there is a very limited percentage of students who’s both parents work about 9% only whereas the percentage of students whose both parent do not work is about 91%. Although this is not a good percentage of both groups for comparison to check their performance but even then it may give a weak indication of their trend.

The students whose both parents work to earn income have shown poor performance than those whose both parents do not work. This decrease in score show that if both parents work then their students are ignored and they show poor performance. This difference of mean is checked by applying t-test at .05 alpha level of significance. The performance of students in both groups in Science and Social Studies is significantly different from each other.

**Help in Homework and Students Achievement**
Students were asked to report about the help they get from father, mother, guardian and other people at home in completing their homework.
The achievement of their students was compared by applying ANOVA test for multiple comparisons and Scheffe test to see the highest and lowest achiever among groups. The comparison of groups may be seen in the following table in Science and Social Studies groups.

<table>
<thead>
<tr>
<th>Category</th>
<th>Science Scaled Mean Score</th>
<th>Level of significance</th>
<th>Social Studies Scaled Mean Score</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guardian</td>
<td>490</td>
<td>This group is significantly different from other groups.</td>
<td>Guardian 528</td>
<td>All the groups are statistically significantly different from each other at .05 alpha level</td>
</tr>
<tr>
<td>Mother</td>
<td>497</td>
<td>There is no significant difference among these groups.</td>
<td>Mother 534</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>498</td>
<td></td>
<td>Others 539</td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>501</td>
<td>This group is significantly different from other groups.</td>
<td>Father 543</td>
<td></td>
</tr>
</tbody>
</table>

It is evident from the above table and graph the performance of students who get help from father at home is better than other students who get help from mothers, guardian or other family members. The performance of students who get help from father is better in both Science and Social Studies subject.
a. Parents Follow Up and Interest in Child Activities

Parents of students’ visits school for various reasons. Parents were asked to rate their level of visits for five reasons. Following table shows their frequency of visits to school for the reasons like i.e. to check child absence, to see child performance, school performance and discipline problems of child at school. Comparison of all these activities also shows their preference for each reason.

The above graph shows that most of the parents visits schools in a week to check child absence (34%), for checking child performance (35%) visit school monthly, for school performance most of the parents never visit to District Education Officer office (67%). Almost (29%) parents visit school for child discipline problem and about 23% never visited school for this purpose. Whereas after one month they mostly visit to check child performance in study.
a. Parents Visit to School for Checking Child Performance

Parents were asked to rate their frequency of visit to school to check their child academic performance in class by asking question “Do parents discuss the child's performance at school?”

From above graph it appears that performance of those students whose parents visit school monthly or yearly is better than other groups. It appears that frequent visit of school with short time span may not affect the student’s performance. Frequent visits may not have positive impact. The possible reason may be that teachers do not pay heed to frequent visit of parents and student may also become habitual of their parents frequent visits. Furthermore generally schools arrange a monthly parent’s teacher meeting for detailed discussion about the academic or discipline problems of the students. So this is good that parents should visit school at least once in a month. The table below indicates that performance of students whose parents visit monthly or yearly is significantly better than other students. Multiple comparisons are made by applying One Way ANOVA test to see the difference of means among the groups. Scheffe test has been applied to indicate the highest and lowest achiever among the groups.
Parents School Visit and Students Performance

<table>
<thead>
<tr>
<th>Category</th>
<th>Science Scaled Mean Score</th>
<th>Level of significance</th>
<th>Social Studies Scaled Mean Score</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>after 15 days</td>
<td>492</td>
<td>This group is significantly different from other groups.</td>
<td>after 15 days</td>
<td>533</td>
</tr>
<tr>
<td>Never</td>
<td>495</td>
<td>There is no significant difference among these groups</td>
<td>weekly</td>
<td>533</td>
</tr>
<tr>
<td>weekly</td>
<td>496</td>
<td></td>
<td>Never</td>
<td>533</td>
</tr>
<tr>
<td>yearly</td>
<td>500</td>
<td>There is no significant difference among these groups</td>
<td>monthly</td>
<td>544</td>
</tr>
<tr>
<td>monthly</td>
<td>500</td>
<td></td>
<td>yearly</td>
<td>546</td>
</tr>
</tbody>
</table>

Whereas the students whose parent pay frequent visits about weekly or after 15 days have shown poor performance in both Science and Social Studies subjects.

Parents Satisfaction with School Performance
Parents were asked question to give their opinion about their level of satisfaction about the performance of school by asking question “Are you satisfied with the performance of the school?” with dichotomic response “Yes” or “No”.

![Parents Level of Satisfaction with School Performance](image)
it seems that parents are satisfied with the performance of school. It is a good sign that at least the parents whose children are studying in government schools are satisfied with the school performance. As 93% parents responded that they are satisfied with school performance.

**Reasons for Un-satisfaction with School Performance**

Parents who were unsatisfied with the performance of schools were further explored that what they think could be the possible reason for their un-satisfaction. They were enquired about the four general reasons on dichotomous responses Yes and No. The responses of parents have been given in percentages. These are the responses of only those parents whose children are studying in government schools and are not satisfied with school performance.

Most of the parents are not satisfied with school performance due to the reasons that there are lack of teaching aids and lack of teachers in schools. There is need to overcome these shortcoming in schools.

**Fixed Study Time at Home and Students Achievement**

Parents were enquired about the time they have stipulated for study of their kids at home by asking question “Have you stipulated study timing for your child at home?” with two options Yes or No. The objective was to explore the interest of parents towards the education of their children and to know how much regular are they in teaching their children.
Graphical representation of data shows that students who have been given a stipulated time of study at home by their parents have shown good performance than others. The scaled mean score of students in Science is 497 and 538 in Social Studies respectively. The scaled means score of both groups is significantly different from each other and is checked by applying t-test at .05 alpha level.
Chapter-4

Teachers Background and Students Learning Achievement

**Teacher Location and Students Achievement:**
A question was asked about the location of teachers. Following table shows the comparison of students who are being taught by rural and urban teachers.

<table>
<thead>
<tr>
<th>Teacher Location</th>
<th>Science Scaled Mean Score</th>
<th>Level of Significance</th>
<th>Social Studies Scaled Mean Score</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>491</td>
<td>Significant difference</td>
<td>547</td>
<td>Significant difference</td>
</tr>
<tr>
<td>Urban</td>
<td>485</td>
<td></td>
<td>531</td>
<td></td>
</tr>
</tbody>
</table>

The above graph shows that students of urban teachers have significantly shown better performance in Science and Social Studies than students who are being taught by rural teachers. This indicates that rural Urban Science teachers are significantly less competent than urban teachers in Science teaching or rural students are good performer. On the other hand, students of rural teachers are significantly better in Social Studies than students of urban teachers. This indicates that teachers of rural areas have better command in teaching Social Studies.

**Teachers Age:**
Teachers were asked to report their age span on five age categories. Following table shows the percentage of teachers in different age span in both Science and Social Science subjects.
The above graph shows that teachers in Social Studies are higher in group with age span of 36-45 years. But teacher of Science are in greater number in age group 25-35 years. Majority of teachers are in 36-45 and 25-35 life span groups. The percentage of teachers in under 25 and above 55 span groups is very low.

A keen observation of above graph shows that as the age of teachers increases their student’s achievement also increases. The increase in science subject is very clear but in social studies students achievement trend in not clear. We can see in the above graph that the achievement of students who are being taught by the teachers who are in the age span of “above 55” is significantly high in Science and Social Studies. The elevation of trend line (dotted) in Science shows the increase of students achievement with the increase of teacher
age. It means that there is positive association between teachers age and students achievement. A multiple comparison of all the sub groups was done by applying oneway ANOVA for checking mean difference and post hoc test Scheffe was also done to identify the highest and lowest achiever. In science subject all the groups have significant mean score from each others. Whereas in Social Studies two groups “Under 25” and “36-45” have shown equal performance.

**Teachers’ Gender and Students Achievement**

An analysis of students’ achievement with regard to their teachers’ gender was made to see any association of teacher gender with students’ achievement.

The above graph shows that the female students who are taught by female teachers have shown significantly better performance in Science (492) and Social Studies (539) than male students with 485 and 536 scaled mean score in Science and social studies respectively. These groups were analyzed by applying t-test to see the difference in their achievement in both Science and Social Studies. All the male and female groups are significantly different in their achievement at .05 level of significance. The students of female teachers have performed better in Science and Social Studies.

**Teachers’ General Education and Students Achievement:**

Teachers were asked to report about their academic qualification. Following table shows the percentage of teachers that fall in that category.
Most of the Science and Social Studies teachers are master degree holder. In Science 40% and in Social Studies 35% teachers are postgraduate. Bachelor degree holders are about 35% and 33% in Science and Social Studies respectively. It appears that about 79% teachers in Science and 70% in Social Studies are graduate or more than it.

In the above graph it may be viewed that students’ achievement has increased with the increase of teacher general education. There seems a positive association with teachers’ general education and their student achievement. The performance of students who are taught by teachers with high qualification like “higher than masters” is better with 525 score than other students in Science and 565 score in Social Studies. The performance of students whose teachers’ have intermediate or higher secondary level qualification is also better than matriculation or bachelor groups. In PEAS 2007 report it was explored that students who were taught by the teachers with intermediate qualification performed better.
It is evident from the above graph that the students who are taught by teachers with intermediate qualification have shown better performance with scaled mean score 515 in Social Studies and 440 in Science subject. The lowest performance is of teachers who are matriculate. Level of difference from other groups was checked at .05 level of significance by applying ANOVA and then Scheffe test in post hoc. All other groups have shown significant difference in their performance in both subjects.

**Teacher’s Professional Education and Students’ Achievement**

Teachers were asked to report their level of professional education. Professional education was categorized into five categories i.e PTC, CT, Diploma in Education, B.Ed. M.Ed. and Higher than M.Ed. The percentage of Science teachers in each group is PTC (5%), CT(24%), Diploma in Education (3%), B.Ed. (52%), M.Ed.(14%), and Higher than M.Ed.(2%). Whereas the percentage of Social Studies teacher in each group is PTC (5%), CT(39%), Diploma in Education (3%), B.Ed. (39%), M.Ed.(11%), and Higher than M.Ed.(3%). Most of the teachers in Science and Social Studies groups have B.Ed qualification.

![Teachers' Professional Education and Students' Achievement](image)

Apparently we have three major groups of teachers who has reasonable representation for comparison purpose having professional qualification i.e. C.T, B.Ed and M.Ed. The achievement of students who’s teachers have C.T qualification has shown significantly better performance in Science test with Scaled Mean Score about 502 as compared to other two major groups of B.Ed and M.Ed qualification. Overall the performance of students decreased with increase of teachers’ professional education. The trend line (dotted)
inclination is downward. Level of difference from other groups was checked at .05 level of significance by applying ANOVA and then Scheffe test in post hoc.

The performance of C.T group of teacher is better in Social Studies subject as well. But the highest scorer group is M.Ed. group with scaled mean score 556 but the performance of teacher who have education more than B.Ed is not so good but this group is very short almost less than 3%. Out of the two major groups of C.T and M.Ed. degree holders the teachers of first group have shown significant better performance with having scaled mean score 556 than the B.Ed. group with Scaled Mean Score about 532. All others group have shown significantly different performance in Math test from each other. Level of difference from other groups was checked at .05 level of significance by applying ANOVA and then Scheffe test in post hoc.

**Availability of Text Books to Teachers**

Teachers were asked about the availability of text books with teachers. About 90% teachers of Science and Social Studies have reported that they have text books.

![Pie Chart](image.png)

**Association of Teachers Content Knowledge and Students Achievement:**
To see the association of teacher knowledge with students’ achievement, the results of teachers test were correlated with students’ results in Science and Social Studies. Teachers score in Science was correlated with students score in Science and teachers score in Social Studies was correlated with students score in Social Studies. Regression analysis was done to see any association between these two variables in both subjects.

**Association of Science Teachers Test Score with Students Achievement Score**
There is a positive correlation between teachers subject knowledge and student achievement in Science with $R=.167$ and $R^2=.028$ which means that this variable may affect the achievement of students in Science Subject.

**Association of Social Studies Teachers Test Score with Students Achievement Score**

There is a positive correlation between teachers subject knowledge and student achievement in Science with $R=.167$ and $R^2=.028$ which means that this variable may affect the achievement of students in Science Subject.

There is a positive correlation between teachers subject knowledge and student achievement in Science with $R=.167$ and $R^2=.028$ which means that this variable may affect the achievement of students in Science Subject.

There is a positive correlation between teachers subject knowledge and student achievement in Science with $R=.167$ and $R^2=.028$ which means that this variable may affect the achievement of students in Science Subject.
There is a positive correlation between teachers' subject knowledge and student achievement in Social Studies with $R=0.122$ and $R^2=0.015$, which means that this variable may have affected about 1% on achievement of students in Social Studies. Although this relationship is not strong, it’s a good positive direction. If teachers have a strong grip on subject knowledge, it may bring positive change in students’ achievement. The upward inclination of the fit line shows that the relationship is positive.

**Difficult Areas of Teaching**

Teachers were asked to report the subjects’ areas they can easily teach and identify the areas which are difficult. Following table shows their level of easiness and difficulty in some hard area which they are difficult to teach.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Percentage of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Experiments</td>
<td>73%</td>
</tr>
<tr>
<td>Solar System</td>
<td>78%</td>
</tr>
<tr>
<td>Chemical Reaction</td>
<td>55%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Percentage of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy</td>
<td>27%</td>
</tr>
<tr>
<td>Difficult</td>
<td>45%</td>
</tr>
</tbody>
</table>
Science teachers have reported that areas of chemical reaction and scientific experiments are difficult to teach. Whereas most easy area to teach, for them is solar system.

Social Studies teachers have reported that the areas of “Geography”, “Economy and Business” and “Solar system and our cultures” are the most hard areas to teach. Whereas “Historical Events and Personalities” and “Social Responsibilities” are most easy to teach.
Chapter-5

School Environment and Students Achievement

General Education of Head teachers
Heads of schools were asked about their general education. This information gives us statistics about the level of education of head teacher and to see if there exist any association of heads education with students’ achievement in school. Most of the head teacher possesses master degree. Percentage of this group in our sample is about 69% and second group is Bachelor degree holder with 22% in the hierarchy.

To see the association of headteachers’ general education with school performance a new variable was computed by taking the mean score of Science and Social Studies subjects. The level of association of headteacher education with school performance may be seen in the following line graph.
The graph shows that as the education level of head teachers increases the performance of school also increases. There is a positive trend in performance of school. To further explore the association of these variable simple Regression analysis was run. Following is the summary of regression model with $R=.111$ and $R^2=.012$.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.111(a)</td>
<td>.012</td>
<td>.012</td>
<td>70.84587</td>
</tr>
</tbody>
</table>

a Predictors: (Constant), Highest formal education completed by HT
Although the performance of school increased with increase in headteacher education but we see that there is weak relationship between these two variables. The measure of relationship is $R=0.111$ which shows positive correlation but $R^2$ is $0.012$ which shows that this variable has very little influence on the dependent variable of school performance.

**Professional Education of Head teachers and Students Achievement**

Heads of schools were asked about their professional education. This information gives us statistics about the level of professional education of head teacher and to see if there exist any association of heads education with students’ achievement in the subject of Science and Social Studies.

Most of the headteacher possess B.Ed. and M.Ed. degree. Percentage of these groups in our sample is about 55% and 40% respectively. The students of schools with heads having M.Ed. and B.Ed. has shown good performance. There seems a positive association between headteacher professional education and students performance. Performance of all the groups is statistically different from each other. Statistical test of ANOVA was run to see the mean difference and post hoc test Scheffe was run to identify the homogenous and heterogeneous groups with lowest and highest achievement. The value of $R=0.110$ shows that although there is significant difference among the mean score of all the groups but correlation is not strong. There is positive trend in performance of students with the increase of headteacher professional education.
Daily Absenteeism in Schools:
In our schools students take leave from schools due to different reasons. But to know that to what percentage are they daily absent from schools, heads of schools were asked to report the percentage of daily absenteeism in their school on four options i.e Less than 5%, 5-10%, 11-20% and More than 20%.

About 45% headteachers included in our sample has reported that the percentage of daily absenteeism in their schools is from 5-10% and 39% reported that it is less than 5%.

Head teachers Views about Parents Participation in Schools:
Headteachers were asked to report their views about participation of parents in students academic and school activities on five point rating scale i.e. Too Much Less, Less, Average, More, Too much. They were asked questions about “Parents cooperate in the education of students” and “Parents participate in the school activities”. Both variables were transformed into one variable and their three level were made as per response of headteachers with three categories “low participation” “medium participation” and “high participation”. Group comparison was made to see their mean difference in term of students mean score in Science and Social Studies.
As the participation level of parents increase in school the performance level of students increase too. It is also evident from graph that excess level of participation may negatively affect school performance. A moderate level of parents participation in school activities may have positive impact on students as well school performance.

**Headteacher Opinion about PTA/SMC/SC**

Headteacher were asked some questions to report about their views about the functions of PTA/SMC and SCs. Two questions were asked to rate on these option i.e. Too Much Less, Less, Average, More, and Too much. It was enquired whether PTA/SMC/SC cooperate with school for academic improvement and in problem solving.
About 43% headteachers have reported that PTA/SMC/SC cooperate in improving academic performance of school. About 38% headteachers have reported that PTA/SMC/SC cooperate in problem solving of school. A small percentage about 13% to 15% have reported that the role of PTA/SMC/SC is very much less in both type of task.

**Use of Teaching Aids and Students Achievement**

While teaching teachers use different teaching aids to improve the instruction. Headteacher were asked to report about their teacher whether they use teaching aids during their instruction. A question “Do the teachers use teaching materials?” was asked on rating options i.e. Never, Seldom, Usually.

The above table shows that use of teaching material during teaching has positive impact on students’ achievement. The level of achievement decreases as the level of use of teaching aid decreases Science and Social Studies. A moderate approach may be useful in using the teaching aids. This data shows that excess and less use of teaching aids may result in low performance. We can say that overall teaching is supported by teaching material. The mean comparison of groups may be seen in the following table to explore further dimensions of data set. All the analysis in this table is done on .05 alpha level of standard error. ANOVA test of significance was run to see the mean difference of groups and a multiple comparison was made for this purpose. Scheffe test was also run to identify the high and low achiever among the groups.
Use of Teaching Aids in Instruction and Students Achievement

<table>
<thead>
<tr>
<th>Science</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do the teachers use teaching materials?</td>
<td>Do the teachers use teaching materials?</td>
</tr>
<tr>
<td>Level of significance At .05 Alpha</td>
<td>Level of significance At .05 Alpha</td>
</tr>
<tr>
<td>Science Scaled Mean Score</td>
<td>Social Studies Scaled Mean Score</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Never (2%)</td>
<td>Never</td>
</tr>
<tr>
<td>478</td>
<td>509</td>
</tr>
<tr>
<td>Always (11%)</td>
<td>Always</td>
</tr>
<tr>
<td>486</td>
<td>532</td>
</tr>
<tr>
<td>Usually (48%)</td>
<td>Usually</td>
</tr>
<tr>
<td>496</td>
<td>538</td>
</tr>
<tr>
<td>Seldom (39%)</td>
<td>Seldom</td>
</tr>
<tr>
<td>500</td>
<td>539</td>
</tr>
</tbody>
</table>

Inviting Resource Persons in School

Headteachers were asked to state the frequency of inviting resource person other than teacher for lecture or speech in school. They were required to rate on four point rating scale i.e. Once a year, twice a year, thrice a year and many times yearly.

The percentage of inviting guests or resource person outside school is very low, as most of the headteacher arrange external resource person only once or twice in a year. Practical or experienced based knowledge is as important as bookish knowledge. People who have
experimental knowledge in different fields may be called in schools to address students and share their knowledge with them.

Description of School Facilities and Physical Conditions:
Some data was gathered from headteachers and teachers by test administrators by asking questions on three options i.e. None, Present but Unusable and Adequate and usable. Following is the percentage of responses which shows percentage of availability and non-availability of facilities in the schools.
This table shows the percentage of facilities available in public schools.

<table>
<thead>
<tr>
<th>Availability of Physical Facilities</th>
<th>By Gender</th>
<th>By Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Drinking Water</td>
<td>87.1%</td>
<td>80.8%</td>
</tr>
<tr>
<td>Electric Supply</td>
<td>90.9%</td>
<td>93.6%</td>
</tr>
<tr>
<td>Dispensary</td>
<td>12.6%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Library</td>
<td>32.1%</td>
<td>30.1%</td>
</tr>
<tr>
<td>Science Laboratory</td>
<td>52.0%</td>
<td>48.9%</td>
</tr>
<tr>
<td>Playground</td>
<td>53.6%</td>
<td>43.3%</td>
</tr>
<tr>
<td>Heating</td>
<td>2.5%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Electric Fans</td>
<td>75.9%</td>
<td>86.5%</td>
</tr>
<tr>
<td>Boundary Wall</td>
<td>55.7%</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

Review of above table it appears that in boys’ schools there is shortage of dispensary and library facilities. Science laboratories and libraries are missing in most of the male and female institutions. In rural school the facilities like dispensary, library, playground are less available in schools. It is interesting to note that the availability of dispensary is in greater percentage than urban schools.