National Assessment Report 2016

National Education Assessment System (NEAS)
Ministry of Federal Education & Professional Training
Islamabad (Pakistan)

Message from the Minister

Message from the Secretary

Acknowledgements

National Achievement Test (NAT) 2016 was largest national educational assessment, conducted by National Education Assessment System (NEAS), Ministry of Federal Education & Professional Training. However, performing such a huge task was not possible without the support of officers from the ministry, and provincial and area education departments.

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Thanks are due to all those who made persistent efforts to produce this quality work in hand. Moreover experts from PEC, PEACEs, AEACEs, FDE, Director Schools and Curriculum, District Education Officers (DEOs), Lead Master Trainers (LMTs), Test Administrators (TAs) , Subject Specialists (SS), Head Teachers, Working Teachers and parents and especially students, who participated in this national assessment survey for determining the effectiveness of education system in Pakistan.

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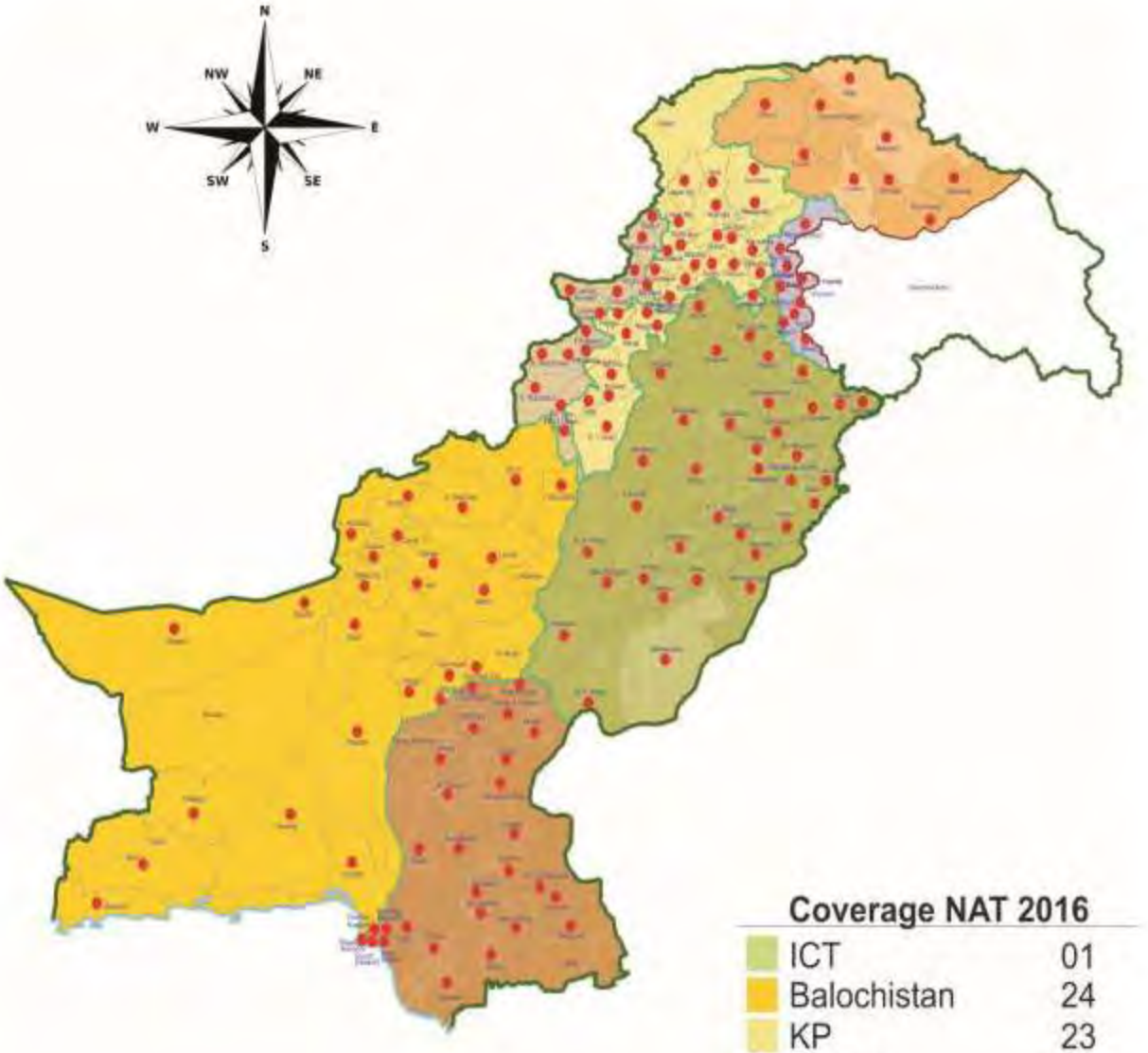
List of Abbreviations and Symbols

AEACE	Area Education Assessment Centre
AEPAM	Academy of Educational Planning and Management
AJK	Azad Jammu & Kashmir
BEAC	Balochistan Examination and Assessment Commission
BECS	Basic Education Community Schools
BGQs	Background Questionnaires
BoC	Bureau of Curriculum0144
CEO	Chief Executive Officer
CT	Certificate of Teaching
DFID	Department for International Development
FATA	Federally Administered Tribal Area
FCE	Federal College of Education
FDE	Federal Directorate of Education
GCETs	Government College for Elementary Teachers
ICT	Islamabad Capital Territory
IRT	Item Response Theory
KEACE	Kashmir Education Assessment Centre
MCQs	Multiple Choice Questions
M/o FEPT	Ministry of Federal Education & Professional Training
MOS	Measure of Size
NAT	National Achievement Test
NCHD	National Commission for Human Resource Development
NEAS	National Education Assessment System
NEMIS	National Education Management Information System
NIP	National Institute of Psychology
PCPP	Printing Corporation of Pakistan Press
PEACE	Provincial Education Assessment Centre
PEC	Punjab Examination Commission
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
PITE	Provincial Institute of Teachers Education
PPS	Probability Proportionate to Size
PTC	Primary Teaching Certificate
QAU	Quaid-e-Azam University
RNT	Random Number Table
SD	Standard Deviation
SLOs	Students Learning Outcomes
SMS	Scaled Mean Score
SPSS	Statistical Package of Social Sciences
TOS	Table of Specification
TIMSS	Trends in International Mathematics and Science Study
TOEFL	Teaching of English as Foreign Language

Map of Pakistan



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Foreword

Chapter 1

Introduction

The challenge facing Pakistan today is to provide equitable access to a growing student population and also to ensure that the education imparted to these students is effective in supplying them with the necessary skills to fully contribute to society and the economy. Improving the quality of education requires a multifaceted approach in order to improve the effectiveness of the teaching-learning process by improving students, teachers and head teachers' characteristics and providing better and effective classroom and school environments to students. Student national assessments must be credible and objective to play a vital role in this process. They provide critical evidence-based feedback to policy-makers on what, and how well, students are learning in a school. Against this background, the present investigation reports student- and school-level factors influencing fourth and eighth-grade students' learning achievement in Pakistan.

The Islamic Republic of Pakistan appeared on the map of the world as a self-governing state on 14 August 1947 as a result of the division of the former British India. Pakistan lies between about 230°45' and 360°50' north latitude and 600°50' and 750° 20' east longitude, touching the Hindu Kush mountains in the north and extending from the Pamirs to the Arabian Sea. It is bordered by Iran in the west, Afghanistan in the north-west, India in the east and southeast, and the Arabian Sea in the south. There is a common border with China alongside Gilgit–Balthistan province in the north.

Pakistan covers 796,095 square kilometers and has a population of 207.78 million, according to the 2017 census. With a present population of about 207.78 million people (Government of Pakistan, 2017), it is the sixth most populous country and 36th largest country in area in the world. It has four provinces: Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh; and four regions: Azad Jammu Kashmir (AJK), the Federally Administrated Tribal Area (FATA), Gilgit-Balthistan (GB) and the Islamabad Capital Tertiary (ICT) as the capital of Pakistan. There are various physiographic regions in Pakistan. The western regions of the Himalayas cover its northern and north-western parts, the highest peak of which is K2 that rises to 8,611 metres above sea level; the Balochistan Plateau; the Potohar Plateau and Salt Range; and the Indus Plain i.e. the most fertile and heavily populated area of the country, sustained by the Indus River and its tributaries. The north

and north-western high mountainous ranges are extremely cold in winter, while the summer months of April to September are very pleasant. The plains of the Indus valley are extremely hot in summer, with cold, dry weather in winter. The country has an agricultural economy with a network of canals irrigating a major part of its cultivated land.

Pakistan has a multicultural and multi-ethnic society. There are between 75 to 80 known Pakistani languages spoken in different parts of the country. As a matter of practicality, there are six major languages (Balochi, Punjabi, Pushto, Sindhi, Saraiki and Urdu), which together are spoken by 95 per cent of the population. Urdu is the official language and used throughout the country. English is the language of administration and official correspondence. The literacy rate of people aging 10 years and above is 58 percent. It comprises 70 percent of males and 48 per cent of females. Literacy rates vary from province to province and there are often large gender differences and between urban, rural and tribal areas.

The formal education system consists of 2 years of pre-primary, 5 years of primary, 3 years of middle/ elementary, 2 years of secondary and 2 years of higher secondary schooling. Pre-primary or early childhood education (ECE) is available for children in facilities provided by the state. Enrolment decreases from primary to higher degree education, and the female dropout rate is greater than that of male students. Education is a provincial subject under the 1973 Constitution and in 2010 the Federal Government devolved the control and management of the education sector to the provinces under the 18th Constitutional Amendment.

Since the independence, education system has undergone several phases of transformation aimed at improving access to quality education. However, most of the changes were of a cosmetic nature. As a result, these changes have contributed only minimally towards improving the efficiency and effectiveness of Pakistan's education system. In 2002, the Ministry of Education (MoE) launched new education reforms based on a sector-wide strategy, with a focus on increasing equal access and improving the quality of all levels of schooling. The reform agenda introduced a paradigm shift in education, programme structure and delivery through a broad-based school curriculum, production of quality textbooks, critical pedagogy skills, action-oriented teacher continuous professional training (CPD) and an improved assessment system. As part of the education sector reforms, the MoE, with the financial and technical support of the World Bank and the Department for International Development (DFID) introduced the National Education Assessment System (NEAS) at the federal level and the Provincial Education Assessment Centres (PEACs) at provincial level and Area Education Assessment Centres (AEACs) at regional level. The purpose of the NEAS is to assess, monitor and supplement learning conditions in schools and to identify weaknesses in curricula, textbooks, teachers' delivery, school administration and the education system as a

whole at the national level.

Large-scale assessments, such as the national achievement test (NAT) 2016, conducted across Pakistan, provided information relevant to policy makers and implementers on overall performance of education system and factors that contribute to performance. Such assessments can play a critical role in determining effectiveness and impact of investments in education and in understanding how efficiently education system is delivering resources that contribute to student learning.

National Education Assessment System (NEAS) has the mandate to conduct Large-scale Assessments across Pakistan to provide its feedback on effectiveness of prevailing education system by measuring the learning achievement level of students. NEAS conducted five cycles of assessments in the years 2005, 2006, 2007, 2008 during project period and then in 2014 after closing of the project.

The National Achievement Test (NAT) 2016 the 6th trend was different from previous ones in many ways. It was for the first time conducted in phases - separately for winter and summer zone schools before the school annual examination in fourth-grade and eighth-grade. This step definitely added value to the validity of its results. For the first time, policy questions were developed and shared with the stakeholders including some national and international partners in provinces and areas for their feedback. These policy questions covered the way for including additional but much required questions in the background questionnaires. These questions were from education, physical facilities, socioeconomic status (SES) of students' family, add main actual areas from policy questions and from health point of view.

Another important change was increase in sample size that raised from 11800 from NAT 2014 to 30,000 in NAT 2016 for both fourth and eighth-grade. This has also helped in making the results, findings and recommendations more reliable and valid.

Assessment Instruments

For large-scale surveys, NEAS used two types of instruments -the achievement tests based on National Curriculum 2006 for the subjects of Mathematics, Urdu, Science and English; and students' performance measured against the learning outcomes (SLOs) given in the national curriculum.

The other set of assessment instrument comprised of background questionnaires for students, parents, teachers and head teachers. These background questionnaires helped to determine the contextual factors affecting the learning achievement of the students in the national achievement test.

In addition to the assessment booklets and background questionnaires, Test Administration manual (TA manual) was also developed to ensure

standardized procedures of national assessment throughout the country. TA manual prepared separately for fourth-grade and eighth-grade test administrators included information about all the steps necessary for assessment procedure. Moreover, attendance sheet, random number table for selection of 20 students each in fourth and eighth-grade among all enrolled students in sample schools and sample/ exercise questions on related subjects were also given in the booklet.

Item Writing

Reliable and valid instruments are the backbone of each assessment instrument. NEAS followed a standard procedure for instrument development that starts with assessment framework development/ review, followed by item writing by the subject experts, pilot testing for selecting more statistically fit test items, data analysis of the items, review by the experts, and final test development in each tested subject.

Thorough discussions in addition to meetings of the experts on review of the test items helped to ensure quality on each stage. The subject specialists and other experts in the field wrote the items for the subjects of Urdu and Math for fourth-grade and English and Science for Eighth-grade. The pilot testing booklets included these items

Pilot Testing:

Purpose of the pilot test conducted in June 2015 was to find the best reliable and statistically fit items for the large-scale assessment. There were 100 schools, 50 each for fourth-grade and eighth-grade, selected from 3 districts i.e. Islamabad, Attock (Punjab province) and Charsadda (Khyber Pakhtunkhwa province). These schools were from both urban and rural areas. Test Administration and data collection was conducted as per plan in the first week of June 2015. Given below is the detail of sample for pilot test 2015.

Table 1.1: Sample for Pilot Test 2015

District	Fourth-grade				Eighth-grade			
	Urban		Rural		Urban		Rural	
	Male	Female	Male	Female	Male	Female	Male	Female
Islamabad	5	5	5	5	5	5	5	5
Charsada	4	3	4	4	4	3	4	4
Attock	4	3	4	4	4	3	4	4
Total	13	11	13	13	13	11	13	13
Total Schools	50				50			

Assessment Instruments for Pilot Testing 2015

The Subject Specialists at NEAS developed test items as per the SLOs given in the National Curriculum of Pakistan 2006 for their respective subjects. In order to assess the achievement level of the sample students across Pakistan items were prepared in Math, Science, Urdu/ Sindhi and English languages as per the detail below in Table 1.2.

Table 1.2: Assessment Instruments for Pilot Test

No.	Subject	Fourth-grade		Eighth-grade	
		Number of booklets	Number of items	Number of booklets	Number of items
1	Mathematics	3	135	-	-
2	Urdu Reading	4	161	-	-
3	Urdu Writing	3	9	-	-
4	Science	-	-	3	125
5	English Reading	-	-	3	146
6	English Writing	-	-	2	6

Data Entry & Analysis

After data entry, the analysis was made using ConQuest software. The piloted items were analyzed with specific objective and only the statistically fit items were retained for scale national achievement test (NAT).

High discriminated items, having the range 0.3 to 0.7 were accepted and retained for the large-scale testing. Since the number of retained items was not enough, some of the items were reviewed and discussed to make them fit for the large-scale assessment after spot testing (testing in 1-2 schools).

Large Scale National Achievement Testing (NAT) 2016

Sample Design for NAT-2017

For NAT 2016, the latest fourth and eighth-grade census of schools 2015/2016 data was used to construct the sampling frame for selecting the sample of schools for Mathematics and Urdu/ Sindhi languages for fourth-grade and Science and English for eight-grad. NAT 2016 was separately planned for winter zone schools in 2016 and in for the summer zone schools in 2017. The National Education Management Information System (NEMIS) database was helpful as a Measure of Size (MOS). The census 2015/ 2016 database contained 1877490 students of doeth-grade and 1237940 students of eighth-grade studying across all four provinces, Balochistan, KP, Punjab and Sindh and four regions AJK, FATA, Gilgit-Baltistan and ICT.

A stratified sampling is a commonly used probability method, and often

considered superior to random sampling because it reduces sampling error. To take a stratified sample, first we have to identify the relevant strata and their actual representation in the population.

Probability proportional to size (PPS)[1] is kind of a modified version of stratified sampling and is usually used in multi-stage cluster (or stratified) sampling for population-level studies. In this sampling method, the school with more students also gets the higher chances of selection. PPS is suitable when the populations of sampling units vary in size.

A stratified two-stage sample design was applicable for selecting the sample of students who were studying in fourth and eighth-grade in the government schools in the country during the 2015/2016 academic year. The objective of the survey was to conduct analysis simultaneously for the country, location type (Rural/ Urban), gender (boys/ girls) within the country including the four provinces and four areas. Therefore, strata are defined as the cross-classification of province and area by location (Rural/ Urban) resulting in 32 primary strata.

It was important to note that number of the schools of population had low enrollment in fourth and eighth grades. The inclusion of these schools could result in increased field cost. Therefore, the schools up to five students were not included in the survey population. Exclusions remained minimum and aimed to reduce cost while still selecting as close as possible to a representative sample. The survey population was therefore all government schools in the country for which fourth and eighth grades enrolment from the 2015/16 census of schools was greater than or equal to six students.

Table 1.3 shows the planned sample of fourth and eighth grade in the public and private schools. A student sample of 15000 designed for 750 schools for fourth-grade was in the subjects of Mathematics, Urdu Reading and Urdu Writing. Similarly, a sample of 750 schools designed for eighth-grade; was with a maximum number of 15000 students in the subject of Science, English Reading & English Writing.

[1] Probability proportional to size (PPS) refers to a sampling technique where the probability that a particular sampling unit will be chosen in the sample is proportional to some known variable such as population size or geographic size

Table 1.3: School Sample Fourth-Grade & Eights Grade

Province/Area	Grade- 4	Grade- 8	Total Schools
AJK	51	55	106
Balochistan	68	61	129
FATA	51	38	89
Gilgit-Baltistan	27	30	57
ICT	32	38	70
KP	145	147	292
Punjab	224	244	468
Sindh	152	137	289
Total	750	750	1500

By the exclusion of extremely small enrollment schools from the desired target population of fourth and eighth grades, in the first stage, a sample of 650 schools was for fourth-grade and 650 schools for eighth-grade selected within strata with Probability Proportional to Size, without replacements. Then in the second stage was a group of 20 students selected from the sampled schools with systematic sampling procedure using Random Number Table (RNT).

Table 1.4 shows the distribution of sampled schools by sampling stratum (provinces and areas by location).

Table 1.4: Distribution of Sampled Schools by Sampling Strata (Province & Area)

No.	Province/ Area	Fourth-grade				Eighth-grade			
		Rural	Urban	Sample Schools	Sampled Students	Rural	Urban	Sample Schools	Sampled Students
1	AJK	37	7	44	880	40	8	48	960
2	Balochistan	29	30	59	1180	19	33	52	1040
3	FATA	44	0	44	880	31	0	31	620
4	Giligit	18	5	23	460	19	7	26	520
5	ICT	9	19	28	560	11	23	34	680
6	KP	97	29	126	2520	93	35	128	2560
7	Punjab	122	72	194	3880	110	104	214	4280
8	Sindh	78	54	132	2640	56	61	117	2340
	Pakistan	434	216	650	13000	379	271	650	13000

Sample Design Private and Non- Formal Schools for NAT 2016

For comparison achievement level between public, private and non-formal school students, 20 schools each including NCHD, BECS, Education Foundation in each province and areas selected randomly for fourth-grade. Similarly, 100 were the private schools selected randomly for eight-grade among all provinces and areas.

For the first time in NEAS assessments, in addition to public schools, the institutions under BECS, NCHD, Education Foundation and Private Sector have also been included in NAT 2016.

Table 1.5 shows the distribution of sampled schools by sampling strata (provinces and areas).

Table 1.5: Distribution of Sampled Schools by Sampling Strata (Type of School)

No.	Sector	Fourth-grade		Eighth-grade	
		Sample Schools	Sampled Students	Sample Schools	Sampled Students
1	Private sector	?	?	100	2000
2	NCHD	?	?	-	-
3	SEF	?	?	-	-
4	BECS	?	?	-	-
	Total	100	2000	100	2000

Selection of Sample Students within School

Systematic sampling procedure required sorting the list of students in fourth and eighth-grade by section and by roll number within a class. The students in a sample school where enrollment was less than or equal to 20 students, all students were selected, otherwise, a sample of 20 students was selected with systematic sampling procedure. The systematic sampling procedure was applicable for the test administrators with the help of computer generated random number table (RNT) to select 20 sequence numbers out of the list of sequence numbers of the fourth and eighth-grade students in the school. The random number table provided to the TAs included numbers from 21 to 500 and a skip interval was there for enrolments of 501 or above.

Mostly, the planned samples are not achieved 100% due to uncontrollable circumstances emerge during national scheduled assessment. The overall target schools reached during NAT 2016 were 1499 (almost 100%) that is a unique achievement in itself.

Contextual Questionnaires for NAT-2016

In the NAT 2016 study, background information gathered through questionnaires was also about contextual factors that affect SLOs. The translated questionnaires were available in three school instructional languages (English, Urdu and Sindhi). The contextual framework encompassed the following three primary areas:

1. At the school level: school contexts.
2. At the classroom level: classroom contexts.
3. At individual student level: student characteristics and home contexts.

The sample schools' head teachers, subject teachers, the selected students and their parents completed the questionnaires including policy-based questions.

- The Head Teacher Questionnaire inquires the about the availability of school resources, types of programs, and environments for learning in their schools. The questionnaire also includes the curricular, co-curricular and extracurricular activities done in the school.

- The Teacher Questionnaire investigates the teachers' personal information, their education, professional development, and experience in teaching. It also covers the instructional activities and materials used in the classroom during teaching-learning processes.
- The Student-Parent background questionnaire reflected students' characteristics, their home and school experiences within the testing subjects assessed. The second part of this questionnaire comprised for parents that includes parents or guardians' education, their occupations, books at home, home possessions.

The NAT 2016 curriculum model

The NAT 2016 curriculum design assessment covers three aspects: (a) the intended curriculum, (b) the implemented curriculum and (c) the achieved/ attained curriculum. These three aspects represent the subject areas i.e. mathematics and Urdu/ Sindhi for fourth-grade and for eighth-grade science and English that the society intends for its students to learn, and to facilitate this learning (intended curriculum). It also helped to explore how the intended curriculum is interpreted by teachers and made available to students; what is actually taught in the classroom; the features of those teaching it and how it is taught (implemented curriculum); and, finally, what students have learned, as inferred from their performance on tests.

In all assessment cycles of the NAT, a consensus-building process among all of the participating provinces and area assessment centers helped to develop the framework.

Test Development for Large Scale Testing

One of the most important steps in any assessment is test development. The assessment booklets contained the items, accepted after the data analysis of pilot test. In addition to the newly developed and piloted items, some anchor items from previous national assessment studies were also included in the assessment booklets. For each subject two parallel booklets namely, version A and version B (Test booklet A and B) were developed.

Keeping in view, Pakistan's participation in the forthcoming Trends in International math and science Study (TIMSS) 2019, few items from TIMSS released items inventory were also included in the subjects of mathematics and science.

Before assembling the booklets, table of specification (ToS) for each subject booklet, was prepared. International practices of sequencing the items were used while assembling the booklets based on these ToS (Appendix-A).

Printing of material

After test development, the next important stage was printing of the test instruments. Keeping in view specialized nature of work, all printing jobs of the National Achievement Test (NAT) 2016, were ordered through Printing Corporation of Pakistan Press (PCPP).

The following assessment instruments were got printed through PCPP:

- Four different Urdu booklets for fourth-grade (2 each for reading and writing)
- Six booklets for mathematics fourth-grade in Urdu, English and Sindhi languages
- Six booklets for science eighth-grade in Urdu, English and Sindhi languages
- Four booklets for English eighth-grade (2 each for reading and writing)
- Background questionnaire for students and parents in Urdu and Sindhi
- Separate background questionnaire for teachers for fourth and eights-grades.
- Background questionnaire for Head Teachers.
- Two test administration manuals, separate for fourth and eights-grades.
- Sample questions and instructions charts.
- Envelopes for departure and arrival of all the instruments.
- Introductory brochures.

Experts checked all the instruments through multiple reviews. The printing phase continued until the month of May to October 2016 when the PCPP had to pack up from its location. NEAS technical and non-technical staff continuously monitored the process of packing to ensure proper packing of the materials as it required full attention.

Since the assessment had different phases, the material was packed and dispatched according to the schedule. An extra plastic seal was inside each cloth bag containing assessment material for safe return to NEAS after testing in the schools.

The assessment bag for each school contained the following material:

• Assessment booklets (test)	22 for each subject
• Students and Parents BGQs	For 20 students
• Teachers BGQs	Two for each grade
• Head Teacher BGQ	One for each school
• Empty envelopes for returning the material	Three for each school
• Sample/exercise question and instructions charts	Six for each school
• Plastic seal for returning of bags	One
• Scotch tape for pasting sample charts	One

Total number of assessment tools, printed for NAT 2016, is more than 150,000

All the material was first packed in the plastic bags and then in cloth bags. The purpose of packing in the plastic bag was to keep the material safe from rain or any other liquid during transaction. The cloth bag contained important information like, the name of the school, NEAS ID, Class and Area.

Provision of Stationery Items

Keeping in view the problems, faced during NAT 2014, it was important to provide stationery items to every student who participated in National Achievement Test (NAT) 2016. A box with the following items was sent to each sample school:

- Examination clip board
- Eraser
- Sharpener
- Lead pencil

- Ball point
- Protractor
- Compass
- Scale
- Printed pouch

Provision of protractor, compass and scale was more important for the students of fourth and eighth-grade who had to attempt geometrical questions in mathematics achievement test. Moreover, availability of examination clipboards was also important, because there are still many schools where no proper furniture is available for the students. In such areas, the board proved to be very helpful. All the stationary items came with NEAS logo and print which was one of the dissemination and communication strategy of the organization.

Revitalization of National Planning and Coordination Committee (NPCC)

In post 18th amendment scenario, education has become a provincial subject. Though the associated organizations of NEAS are working in most of the federating units, still there is a need to have strong coordination for the conduct of smooth national assessment activities across the country.

The revitalization of the National Planning and Coordination Committee (NPCC) was a very important step towards coordination. The TORs of the committee are available in Appendix-B.

First Meeting of the NPCC

The first meeting of the NPCC held on May 27, 2016 at NEAS was under the Chairmanship of Dr. Syed Kamal-Ud-Din, Director NEAS M/o Federal Education, and Professional Training, Islamabad. The list of participants is at Appendix-C. All the agenda points came under discussion and decided accordingly.

The meeting proved to be very informative and helpful for all the participants. The meeting cleared many pre and post NAT 2016 questions raised by the NPCC members. The most important aspect of the meeting was that all the decisions taken had complete consensus.

Members of first meeting also decided that for the ownership of assessment activities, each province and area would conduct NPCC meetings by rotation. The CEO, Balochistan Examination and Assessment Commission (BEAC) offered hosting the said committee meeting at Quetta.

First Meeting of National Steering Committee

Following the first meeting of National Planning and Coordination Committee (NPCC) on May 27, 2016, first meeting of National Steering Committee on NEAS was held on July 22, 2016. The meeting was conducted under the chairmanship of Secretary Ministry of Federal Education and Professional Training Islamabad. The purpose of the meeting was to make important decisions regarding NAT 2016 and future large-scale assessments in the country. The main agenda items of the meeting was as under:

1. Participation of Pakistan in Trends in International Mathematics & Science Study (TIMSS
2. Conducting national achievement test (NAT) 2016
3. Conducting unified national assessment in the country
4. Placement of trained assessment coordinators and subject experts in provincial/ area assessment centers
5. Reactivation of FATA and Gilgit-Baltistan Assessment Centers
6. Reactivation of technical groups

After detailed discussions and deliberation, decisions were made to make National Achievement Testing 2016 standardized with unified procedures.

Second Meeting of the NPCC

The second meeting of the NPCC on NEAS was held on October 15, 2016 in the office of BEAC Quetta. The list of participants from all four provinces and the areas is at Appendix-D.

The participants were requested to send confirmation of sample lists, confirming the medium of instruction, climate zone and number of students. For dispatch of the assessment material and stationary items, the following officers were decided to be the focal persons in

their respective provinces and areas:

1.	Mr. Javed Iqbal	AJK
2.	Mr. Abdul Razzaq	Balochistan
3.	Mr. Saleh Shah	FATA
4.	Mr. Faisal Shakir	Gilgit-Baltistan
5.	Mr. Affan Mirza	ICT
6.	Mr. Muhammad Shafiq	Khyber Pakhtunkhwa
7.	Dr. Nasir Mehmood	Punjab
8.	Mr. Aftab Ali	Sind

For the first time, National Achievement Test was to be conducted in two phases, i.e. winter and summer zones separately. After detailed discussion regarding the end of academic year and the dates of internal and central examinations, it was unanimously decided that the NAT 2016 would be conducted before annual examination in each province/ area.

The following dates were decided for the NAT-2016.

a) Winter Zone:

- **Balochistan and Gilgit-Baltistan**
  Test Administrators Training — 4-5 November 2016
  Assessment in sample schools — 8 to 11 November 2016

- **AJK, FATA and KP**
  Test Administrators Training — 2-3 December 2016
  Assessment in sample schools — 6 to 9 December 2016

b) Summer Zone

- **AJK, FATA, K.P and Sind**
  Test Administrators Training — 3-4 February 2017
  Assessment in sample schools — 7 to 10 February 2017

- **Punjab**
  Test Administrators Training — 22-23 February 2017
  Assessment in sample schools — 27 Feb to 2 Mar 2017

- **Balochistan**
  Test Administrators Training — 1-2 April 2017
  Assessment in sample schools — 5 to 8 April 2017

Many other agendas related with sampling, budget, dispatch and return of the assessment material were discussed at length. The members were urged to take the ownership of this national activity by implementing it in their respective provinces and areas in the most efficient manner.

During the meeting, Provincial Secretary, Balochistan Secondary Education and Additional Secretary Education also shared their ideas. They congratulated NEAS and BEAC for successful conduct of 2nd NPCC

meeting in Quetta. They also termed the opportunity of hosting the meeting another milestone towards ownership of national cause of quality education through mega national assessment activity.

Lead Master Trainers' (LMTs) Workshops

Test administration is one of the most important steps of assessment activities. In order to make it smooth and standardized, the training sessions of test administrators were conducted in different areas. In NAT-2016, there is a plan to train 3300 test administrators (two TAs for each sample school and 10% extra TAs trained for standby purposes) across the country. For this purpose, 120 Lead Master trainers for both fourth and eighth-grade training participated in two-day training programs at NEAS Islamabad. These 120 LMTs were then responsible for further training the 3300 TAs in provinces and areas according to the following schedule:

Table 1.6: Schedule of Lead Master Trainers' (LMTs) Workshop

Province/ Area	Sample Schools	No. of students	LMTs Trained	Training Schedule
FATA	87	1740	8	May 25-26, 2016
Khyber Pakhtunkhwa	293	5860	22	May 25-26, 2016
AJK	105	2100	10	May 30-31, 2016
Balochistan	128	2560	12	May 30-31, 2016
Sindh	287	5740	22	May 30-31, 2016
Gilgit Baltistan	56	1120	6	June 1-2, 2016
ICT	72	1140	6	June 1-2, 2016
Punjab	472	9440	34	June 1-2, 2016
Total	1500	30000	120	

Venue and the Resource Persons for LMTs Training

NEAS Islamabad was the venue of the LMTs two days training and the following subject experts from NEAS played the role of resource persons for each session.

- Syed Zulfiqar Shah — Subject Specialist (Mathematics)
- Ms. Shabana Arif — Subject Specialist (Science)
- Mr. Muhammad Shakil — Subject Specialist (Urdu)

First Phase: FATA and Khyber Pakhtunkhwa

In the first phase of LMTs training on 25th and 26th May 2016, 19 male and 12 female participants attended the workshop. It was overall an impressive session where the participants shared their experiences of the previous national assessments. It was a good opportunity to learn from each other's experiences.

After recitation, Director NEAS welcomed the participants and informed LMTs about the history, vision, mission, and benchmarks achieved by NEAS. The Director stressed on the need of effective training for the Test Administrators in the provinces and areas, for which the LMT workshop was an important beginning.

The working session started with briefing about the "Test Administrator's Manual" which is the most important document of the assessment cycle. Later on, concerned subject specialist discusses the subjective parts of the manual. The participants had a chance to learn and practice the filling the random number table and attendance sheets for the sampling of 20 students.

On second day, participants discussed all the background questionnaires. They also learned the details about Head teacher questionnaire Teacher questionnaire, student's-parents' questionnaire and Test Administrator Manual. The participants gave their feedback to improve the quality of the assessment tools. During the sessions, the participants suggested some changes in questionnaires and test administrators' manual. Some of the changes were of critical natures, which had to be incorporated before the final printing. In questionnaires, the participants suggested inclusion of some questions.

Role-play was another important session where the participants had hands on practice of assessment activities in a mock school. They performed the roles in head teacher office, in the assessment classroom, filling up the TA manual and receiving/ dispatching assessment material. These role-plays provided a practical visual guide for all the LMTs.

For closing session, Mr. Munir Ahmed Chaudhary Chairman Advisory Council of the Ministry of Federal Education and Professional Training and Dr. Muhammad Saleem member Advisory Council were the guests of honour. They addressed the audience and shared their experience of educational activities. They reminded the participants about the important role of large-scale assessments in providing feedback to the policy makers. The Chief Guest congratulated Director NEAS and his team for organizing such a successful workshop. Some participants also shared their feelings and ideas about the LMTs workshop. At the end, the certificates were distributed among the participants and group photographs were taken as a token of memory.

Second Phase: AJK, Balochistan and Sindh

In the second phase of training on 30th and 31st May 2016, 33 males and 12 females LMTs attended the workshop. It was an experienced group as from Sindh province, PEACE has been conducting

assessments on regular basis and many of the participants came with assessment background. In Balochistan and AJK too, the situation was not that different since the participants were mostly from BEAC and KEASE.

The working session started with briefing about the "Test Administrator's Manual" which was followed by random number table and group work on the first day. On second day the questionnaires were discussed, some lessons learnt from the previous assessments were also shared and the LMTs were provided opportunity to practice their learnt steps in the form of role-plays. The participants looked very much energetic and attentive during the sessions.

In the final session, Mr. Humayun Khan, Federal Secretary, Ministry of Federal Education and Professional Training was the chief guest, who distributed certificates among the participants. He congratulated the Director and his team for successful conduct of the workshop. He mentioned that the government of Pakistan is working hard to uplift the quality of education in the country. The participants of the second phase also shared their views about the workshop. They expressed their satisfaction over the sessions.

Third Phase: Gilgit-Baltistan, ICT and Punjab

In the third and the final phase of training on 1st and 2nd June 2016, 34 males and 8 female participants attended the sessions. Many of the LMTs from Punjab province were from Punjab Examination Commission who had plenty of experience in conducting national and provincial assessments.

Formal sessions started with discussion on Test Administrators' Manual followed by filling up of attendance sheet and use of random number table. On the second day, after review of the first day activities, a detailed discussion on background questionnaires was very useful. Once again, the role-play proved to be interesting where the participants showed that they had learned the procedures completely.

The chief guest of the final session was the Minister of State for Federal Education and Professional Training, Engineer Muhammad Baligh-ur-Rehman. Director General AEPAM, Mr. Niamatullah Khan, Director AEPAM Dr. Dawood Shah and Director NEMIS Mr. Nasir Amin were also present on the occasion.

The Director NEAS, gave presentation about the salient features of the

workshop and the National Achievement Test 2016. He elaborated the innovative steps taken for the forthcoming NAT 2016. Some of the participants also shared their views about the workshop and regarded the event as the best experience of their life.

Hon'able Minister, while addressing the audience said, "The government will conduct the national assessment survey in the country this time without the financial and technical support of international partners." The Minister further elaborated that, "we understand the importance of these assessments in finding the learning enablers and providing evidence-based data for the policy-makers in the form of their recommendations."

Worthy Minister of state congratulated Dr. Syed Kamal Ud Din Director NEAS and his team for putting up their commitment and professionalism. The Minister of State assured NEAS of all possible assistance for its strengthening and sustainability for future assessments. The Chief Guest distributed certificates to LMTs.

Test Administrators' Training

An important factor behind success of any assessment activity is proper follow-up of standard procedures by the trained staff. In order to make the data collection smooth and error-free, Test Administrators (TAs) received extensive training.

Two TAs accepted the duty to conduct assessment in each sample school. In this way, for 1500 sample schools, 3000 test administrators received training. To avoid any shortcoming due to any emergency or other reason, ten percent extra (300) TAs also received training during TA trainings cycle. Hence, 3300 TAs received trainings at provincial and area level. The detail of training in 41 centers is as under:

Province/Area	No. of TAs Centres	TAs Training Venue
Azad Jammu & Kashmir	4	Muzaffarabad, Mirpur, Rawlakot and Kotli
Balochistan	7	Quetta, Uthal, Turbat, Gwadar, Jaffarabad, Sibi and Loralai
FATA	1	Khyber Agency
Gilgit-Baltistan	2	Gilgit and Skardu
Islamabad	1	NEAS Islamabad
Khyber Pakhtunkhwa	6	Peshawar, Mansehra, Dera Ismail Khan, Kohat, Mardan, and Nowshera
Punjab	13	Lahore, Attock, Bahawalpur, D.Ghazi Khan, Faisalabad, Gujranwala, Jhang, Multan, Rawalpindi, Sahiwal, Sargodha, Sheikhupura and Sialkot
Sind	7	Karachi, Hyderabad, Kandhkot, Larkana, Mirpurkhas, Nawabshah and Sukkur
Total TAs Training Venues	41	

Two Lead Master Trainers (LMTs) were responsible for conducting two-day training in each of the provincial and area venues. The participants of these training sessions were the working teachers and

For standardized national assessment in 1500 sample schools, 3300 Test Administrators (TAs)

subject specialist from schools, PITEs, RITE, GCETs, and BoC.

were trained by 120 Lead Master Trainers (LMTs)

During the training, the participants learned details from reaching the school to meeting the head-teacher and informing them about the ongoing activity. They also practiced opening the assessment material, selecting students on the basis of random number table, conducting the assessment, getting the background questionnaires filled, and at the end properly packing the assessment material for dispatching it to the allotted venue.

Participants practiced filling up several forms, attended lectures, and performed the role-plays. They took it as an opportunity where the participants showed their skills to face certain possible issues during the course of assessment activities.

The test administrators also recapped to be as cooperative and polite as they could. Moreover, they reassured repeatedly to make the students and the participating teachers understand that it was not the assessment to gauge their personal learning level rather a check of overall education system. The LMTs got copies of the power point presentations for further trainings. Besides, to have clear information on what is required to be filled in background questionnaires, PDF copies of the same were also shared with the LMTs.

Packing and Dispatch of Assessment Material

In order to send the assessment material on the selected venues, a well-planned packing and dispatch strategy helped to keep the process effective. Each school received one sack containing the assessment instruments and one carton, containing stationery items. The large sacks contained assessment material in five small sacks. Similarly, the big carton had six small stationery cartons packed inside it. All materials sent to the selected centers, reached in time in the respective provinces and areas. These centers were the training venues of the test administrators and the TAs received the assessment items on second day at the end of training sessions.

To minimize the cost of courier, the services of Pakistan Post, which has the largest coverage in the entire country, was the most appropriate choice for dispatching the material. However, in some urgent situations and due to time constraints, other courier services also served the purpose. The TAs within ICT received materials directly from NEAS office. Dispatch and delivery of the materials was happening only on the days when the roads were clear and weather was suitable. Although no serious complaints received regarding assessment material, the stationery cartons were found torn out in

few areas. This was probably because of mishandling on the part of responsible people for loading and unloading of the material.

Return of the Assessment Material

NEAS received back all the assessment materials for the purpose of marking/coding, data entry, analysis and reporting the findings. However, the stationery items were gifts for students from NEAS, Ministry of Federal Education and Professional Training Islamabad. Where the number of students was less than 20, the TAs handed over the items to the concerned head teachers for onward distribution among the deserving students. The teachers, participating in the assessment activities were also gifted stationery packs as a souvenir from NEAS.

In most of the cases, the test administrators packed all the assessment material themselves and dropped the same to the designated centers. It was the responsibility of center heads to send all the assessment material back to NEAS through Pakistan Post. Except for a couple of occasions, no serious problems occurred during the process of sending and receiving the assessment material.

After receiving all the material in NEAS, the teams of markers and coders took out the English and Urdu writing packets first for marking the booklets before data entry.

Chapter 2

Conduct of the Study

For the first time, the national achievement test (NAT) 2016 was conducted separately in winter and summer zones. It was a learning in the previous studies that when the assessment processes happen simultaneously in all provinces and areas it creates many problems. The academic calendar is different in provinces and areas. Conducting assessment in May-June means the winter zone students have finished their syllabus at least five months ago.

Likewise, another learning is that if the exit-level assessment for fourth-grade involves sample from newly promoted fifth-grade students, the low achievers remain excluded. The eighth-grade students when promoted to ninth-grade leave the schools that are up to middle level and enroll in high schools. In addition to these issues, another is the different vacation schedule for schools in different provinces and areas. Keeping in view all these details, the assessment process included two different phases for winter zone and the summer zone separately.

Later during the 2nd meeting of NPCC, the nominated coordinators shared the most appropriate dates for the assessment activities in their respective provinces and areas.

Assessment in Winter Zone:

National Achievement Test 2016 was conducted in winter zone schools in two phases as per the following schedule:

No.	Province/Area	TAs Training & NAT	Date of Training
1)	Balochistan and Gilgit-Baltistan	Test Administrators Training National Achievement Test	i) 4th-5th November 2016 ii) 8th -11th November 2016
2)	KP, AJK and FATA	Test Administrators Training National Achievement Test	i) 2nd-3rdDecember 2016 ii) 6th-9th December 2016

First Phase

In first phase the assessment activities were conducted in winter zone on 8-12, November 2016 in Balochistan and Gilgit-Baltistan.

a) Balochistan:

In Balochistan, there were 35 schools for fourth-grade and 25 schools for eighth-grade in the sample in winter zone. These schools were located in cold region of Balochistan, including Quetta, Pishin, Killa Abdullah Loralai, Zhob, Kohlu, Musakhel, Khuzdar, Harnai and Ziarat.

On 8th November 2016, the assessment activities were conducted for fourth-grade students and their teachers in sample schools. It was mathematics achievement test for fourth-grade students. The students also filled their portion of background questionnaires and took the same to get them filled by their parents. The teachers and head teachers were also requested to fill their questionnaires. The stationery items were taken back from the students on first day.

On 9th November, Iqbal day (the national poet birthday) was announced in the province so the activities were shifted to 10th November 2016. First the background questionnaires were collected back after which the students of fourth-grade took assessment of Urdu Reading comprehension followed by achievement test of Urdu writing. At the end of the testing, the stationery items were distributed as gift among the students.

On 11th November, 2016 it was the first day of assessment for the students of eighth-grade. The same sequence of questionnaires was repeated in the schools however, the students of eighth-grade took science achievement test on first day. On second day the students first took English reading comprehension test after which they showed their creativity in English writing achievement test.

To perform duties at different centres, two Test Administrators (TAs) were given the duty at each centre. These TAs had already received the assessment material in a cloth assessment bag and stationery items in a carton.

In order to monitor the activities of NAT 2016, NEAS experts, officers of Ministry of Federal Education and Professional Training and its attached organizations were deputed to visit the selected centres and provide their monitoring reports. The monitoring reports revealed that the activities remained smooth and peaceful and nothing extra-ordinary reported from any part of the province. The CEO and other officers of Balochistan Examination and Assessment Commission (BEAC) also ensured the smooth conduct of assessment activities.

b) Gilgit-Baltistan:

In Gilgit-Baltistan the assessment was conducted in one phase from 8th-12th November 2016. There were 27 schools for fourth-grade and 30 schools for eighth-grade. For smooth conduct of tests in entire region of Gilgit-Baltistan, two centers for trainings of Test Administrators were established. For the Test Administrators of Gilgit and Diamer-Astore region, the centre was established in Directorate of Education Gilgit, while for the TAs of Baltistan Region, another center was established at Boys High School No. 1 at Skardu. For the Gilgit and Diamer-Astore regions, 29 test administrators were trained, while 28 TAs were participated in

training in Baltistan Region. In May 2016, five Lead Master Trainers of Gilgit-Baltistan were trained through NEAS Islamabad.

The schedule for the NAT 2016 was 8th-9th November for fourth-grade and 10th-11th November for eighth-grade; but due to the announcement of holiday on 9th of November by the provincial government of Gilgit-Baltistan and sudden death of Mr. Joher Nafees (Late) General Secretary Gilgit-Baltistan Teachers Association on 11th of November and subsequent announcement of holiday by Education Department G-B, the test were further delayed for one day taking NEAS authorities in confidence.

In addition to formal public schools, the assessment was also conducted in NCHD, BECS and private schools in Gilgit. Mr. Hameed Niazi Section Officer from Ministry of FE&PT also visited the centres and reported smooth conduct of the assessment activities in the region.

Second Phase

In second phase the assessment activities were conducted in winter zone schools of Khyber Pakhtunkhwa, FATA and Azad Jammu and Kashmir on 6th-9th December 2016.

a) **Khyber Pakhtunkhwa:**

In KP winter zone, there were 37 schools for fourth-grade and 35 schools for eighth-grade. These schools were located in cold region of Khyber Pakhtunkhwa including Abbottabad, Batgram, Buner, Chitral, Lower Dir, Malakand PR. Area, Mansehra, Shangla, Swat and Upper Dir.

On 6th and 7th December 2016 the assessment activities were conducted for fourth-grade students and their teachers. While on 8th and 9th December the same activities were scheduled for the students of eighth-grade.

Just like the first phase, once again the officers from NEAS, Ministry of FE&PT and other organizations visited assessment venues to ensure the quality and standards. The monitors reported smooth conduct in most of the areas but in some areas a serious problem was the medium of instruction. According to the data received from provincial authorities all the schools in eighth-grade were Urdu medium but in many places,

It was found that it was English medium. In such circumstances, new booklets were sent in few places while in some places the test administrators translated the questions for the students.

Issues of minor nature came to the notice of NEAS authorities during assessment and the same were addressed well in time in the best possible manner.

b) Federally Administrated Tribal Areas (FATA):

In winter zone schools of FATA, the assessment activities of NAT 2016 were conducted on 6th-9thDecember 2016. In the sample, there were 24 schools for fourth-grade and 16 schools for eighth-grade. The six agencies included in the sample for winter zone NAT 2016 were, Bajour, Khyber, Orakzai, Lower Kurram, South Waziristan and Upper Kurram.

All the sample schools were assessed as per the sample under administration of already trained Test Administrators. For each sample school two test administrators were deputed. The daily activities were performed as per the schedule and nothing extra ordinary reported from any assessment venue.

c) Azad Jammu & Kashmir (AJK):

In AJK, NAT 2016 was conducted for winter zone schools on 6th-9thDecember 2016. Out of 106 sample schools from AJK, only seven were located in winter zone. There were 5 schools from fourth-grade while 2 schools were from eighth-grade. These schools were from four districts of AJK i.e. Haveli, Poonch, Neelum and Sudhnoti.

The test administrators were trained at Muzaffarabad and later they performed duty in the allocated sample schools. Nothing extra ordinary reported from any assessment venue and the activities completed in a smooth manner according to the plan.

Assessment in Summer Zone:

National Achievement Test 2016 was conducted in summer zone schools in three phases as per the following schedule:

No.	Province/Area	TAs Training & NAT	Date of Training
1.	AJK, FATA and KP and Sindh	Test Administrators Training	I) 2nd-3rd February 2017
		National Achievement Test	ii) 7th-10th February 2017
2.	Punjab	Test Administrators Training	I) 27th-28th February, 2017
		National Achievement Test	II) 1st- 4thMarch, 2017
3.	Quetta	Test Administrators Training	i) 30th-31stMarch, 2017
		National Achievement Test	II) 5th - 8thApril, 2017

Third Phase

In third phase of NAT 2016, assessment activities were carried out in summer zone schools of AJK, FATA and KP. In addition to that the assessment was also conducted in Sind from 7-10 February 2017.

a) AJK (Summer Zone)

In this phase of NAT 2016, summer zone schools of Azad Jammu and Kashmir were included. On first two days, assessment involved fourth-grade schools while the next two days were for eighth-grade schools. In fourth-grade, 46 schools and in eighth-grade, 53 schools were involved in this phase. These schools were from Muzaffarabad, Hattian, Bagh, Haveli, Poonch, Sudhnoti, Kotli, Mirpur, Bhimber, and Neelum districts of AJK.

During the four days of assessment, in addition to the officers from NEAS and Ministry of FEPT, the Secretary Education of AJK and officers of AJK Education department also visited many schools and monitored the ongoing activities. Overall report of the activities, throughout the region remained admirable and nothing unexpected reported from any place.

b) FATA (Summer Zone)

Dates of Summer Zone assessments for NAT 2016 in FATA were 7-10 February 2017. Total 27 schools from fourth-grade and 22 schools from eighth-grade were included in the sample for this phase. These schools were from Mohmand agency, FR Peshawar, FR Kohat, FR Bannu, FR Tank, FR D.I. Khan, North Waziristan, South Waziristan, Orakzai and Khyber agencies.

In addition to public schools, NCHD, BECS and private schools were also there in the sample. The monitors reported smooth conduct of NAT activities in the whole region and nothing additional reported.

c) Islamabad Capital Territory:

In ICT schools, the activities of NAT-2016 dated on 7th to 10th February. Total 70 schools were involved. Out of these 72 schools, 32 were from fourth-grade and 38 were from eighth-grade.

Two teachers from the schools under Federal Directorate of Education (FDE) got training as Test Administrators for each school to conduct the activities. NEAS experts, including the Director visited few schools for monitoring purpose and found the activities smooth and without any irregularities.

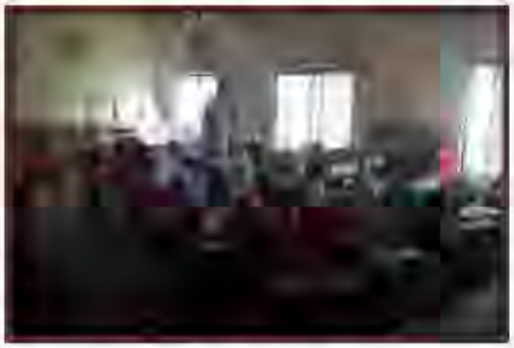
Out of 70 schools, 8 schools were those, which are under the administration of NCHD, BECS, or private sector.

d) Khyber Pakhtunkhwa (Summer Zone):

In Khyber Pakhtunkhwa 108 schools from fourth-grade and 112 schools from eighth-grade were included in the sample for this phase. In these schools, there were 38 private, NCHD, BECS and Education foundation schools, which were included for the first time in national achievement test. The first two days were for fourth-grade assessments while the next two days were assessment in eighth-grade schools.

The districts of Khyber Pakhtunkhwa included in this phase of NAT-2016 were Bannu, Buner, Charsada, Dera Ismail Khan, Hangu, Haripur, Karak, Kohat, Laki Marwat, Malakand Protected Area, Mansehra, Mardan, Nowshera, Peshawar, Swabi, Tank, Torghar, and Upper Dir.

The assessment activities were smooth in all the schools except for a couple of centers where due to merger of the schools some confusion arose. Later those schools were also included in assessment activities.



As in winter zone, once again in summer zone schools some problem arose for the medium of instruction. Due to this confusion, once again the test administrators had to translate science questions in English language for the students of eighth-grade in English medium schools.

e) Sindh:

Activities of NAT 2016 throughout Sindh were in second phase. In the Sindh sample for NAT 2016, there were 289 schools from Sindh. For fourth-grade, there were 152 while for eighth-grade there were 137 schools. Among these schools were included 40 schools run under the administration of NCHD, BECS, Sindh Education Foundation and private sector.

Out of total 29 districts of Sindh, the sample schools were available in 28 of them. The activities of NAT 2016 were carried out on 7th-10thFebruary 2017. On 7th and 8th February, it was for fourth-grade while on 9th and 10th the assessment activity involved eighth-grade students.

Sindh is the only province where assessment booklets of mathematics and science and students' background questionnaires were already in three languages, i.e. Sindhi, Urdu and English.

The activities remained normal in all the districts and nothing unusual reported from anywhere.

Fourth Phase

a) Punjab

In fourth phase of NAT 2016, these were Punjab schools which were assessed from 27thFebruary to 4thMarch 2017.

Being the largest province, the number of sample schools in Punjab, for this mega activity was also relatively high. There were total 468 schools assessed in the province. For fourth-grade, there were 224 schools while for eighth-grade there were 244 schools included in the sample.

Punjab Examination Commission was the implementation organization for the assessment activities in the province of Punjab. Their expertise in assessment made the activities very organized and smooth. The district education authorities were on board for conduct and monitoring of the assessment activities.

As the PEC examination for eighth-grade had finished, it was important to maintain that the students remain present in the school during assessment days. In Punjab, all 36 districts were included in assessment activities.

The monitors reported smooth and up to the mark conduct of the activities in the whole province. The only problem faced during the assessment was of medium of instruction. As per the local education authorities, Government of the Punjab had declared all the schools as English medium, but many of them were continuing with Urdu medium syllabi. This caused issues in the schools but it was resolved by translating the questions for the students.

Fifth Phase

a) Balochistan

In the summer zone schools of Balochistan province, the dates for assessments for NAT 2016 were between 5- 8 April 2017. There were total 33 schools for fourth-grade and 36 schools for eighth-grade, which were included in sample.

The assessment in this phase involved schools from Chaghi, Gwadar, Jaffarabad, Jhal Magsi, Kachi, Kech, Lasbela, Naseerabad, Noushki, Sohbatpur and Sibi.

All the target schools were included except for a school in Panjgur, which was included on later date.

Conclusion of Data Collection

With the assessment activities in Balochistan summer zone, the data collection phase of NAT 2016 ended. It is a matter of pride for NEAS

that for the first time almost 100 % school sample was included. Though it is normal to miss out few schools because of inevitable reasons but here the plan worked well and wherever any problem arose the schools from the reserved (replacement school) sample were assessed. Hence, the data collection phase remained excellent.

Marking and Coding

Data entry of MCQ's based booklets and contextual questionnaires were performed by the professional key punch operators. However, assessment of writing papers made by professional marker.

In NAT 2016, there were two subjects Urdu writing for fourth-grade and English writing for eighth-grade, which required such marking and coding. For this task, working teachers from different schools of FDE, Islamabad received training. The Subject Specialist of NEAS guided the markers.

The team comprising of 17 subject experts for each subject from different public and private institutions was involved in the process of marking and coding. The marking and coding team, being new to the job, received guidance and training on the similar methodology for use of rubrics in the subjects of Urdu and English. Each answer had a specified code number. The markers and coders were received a comprehensive training how to mark and code a question in the light of rubrics. The objective of this training was to achieve a general standard for the whole exercise and to avoid impact of individual difference of the markers and coders on the real essence of the study. The standardization method helped markers and coders understand the real spirit of such marking.

The process of marking and coding took more than four months to mark and code more than 30,000 booklets. To maintain validity and reliability in the marking & coding 25% of the marked scripts were re-checked through other subject experts.

Following is the detail of province & area wise total Urdu writing booklets marked for fourth-grade in NAT 2016:

Table 2.1: Showing the total marked and coded fourth-grade Urdu booklets

Provinces/ Areas	Districts								
	AJK	Balochistan	FATA	GB	ICT	KP	Punjab	Sind	Total
TOTAL Booklets	817	1150	906	457	627	2625	4092	2216	12890

Below is the detail of province & area-wise total English writing booklets marked for eighth-grade in NAT 2016.

Table 2.2: Showing the total marked and coded eighth-grade English booklet

Provinces/ Areas	Districts								
	AJK	Balochistan	FATA	GB	ICT	KP	Punjab	Sind	Total
Total Booklets	1038	1101	711	537	758	2916	5085	2677	14823

Data Entry and Data Analysis

National Achievement Test data often displays a multilevel structure, in the form of result of stratified sampling, school settings and other contextual factors. This type of data analysis needs highest caution, so that there are findings, based on valid and reliable analysis. NEAS takes great care in analyzing data by using the different software.

First was the data entry process completed at National Institute of Psychology (NIP) Quaid-e-Azam University, Islamabad; which was then followed by its conversion into SPSS file format. In addition to SPSS, following software were also used for detailed analysis:

- ConQuest (Generalised Item Response Modelling-IRT analysis)
- AM (AM is a statistical software package for analysing data from complex)
- HLM (Hierarchical linear modelling at student and school-levels)
- Iteman (provide detailed item and test analysis reports using classical test theory (CTT)

The data gathered from around 1499 sample schools was then assessed in NEAS experts who analyzed it in detail to determine the achievement and background variables that were influencing policy making, curriculum development, text-book authoring and teaching-learning process in the education system. The report focused on three explicit strata i.e. gender, location (urban or rural) and provinces/ areas. All three strata are of great importance and have an attraction for the stakeholders to understand the contextual factors influencing student-learning achievement in fourth and eighth-grades.

The analysis of NAT-2016 data opened many new avenues for the stakeholders to deliberate further. Some alarming results will definitely get the attention of policy and practice.

Lessons Learnt

Progressive organization always remains ready to learn from the shortcomings of their activities. The maintenance of credibility demands rectification of the gaps at priority. Even after best planning, some areas remain untouched or overlooked and cause delays in the

activities. After concluding the wide large-scale assessment NAT 2016, there are certain areas, which need to be included for the next cycles of assessments. NEAS has learnt the following lessons from the national assessment NAT 2016:

- Print bilingual assessment booklets to avoid confusion of medium of instruction.
- Confirmation of sample lists from multiple sources in the provinces and areas·
- Training of Lead Master Trainers not too early but close to the Test Administrators training in the centers.
- Selection of Senior Subject Specialists for LMTs Training and (Secondary School Teachers (SST) for the role of Test Administrators.
- Selection of test administrator from the nearby area of sample school as spreading of the sample over a large area causes logistic and other problems.
- Reducing the assessment phases as much as possible.
- Preparation of more items for pilot testing so that better statistically fit and enough items may remain available for final booklets.
- More realistic budget should available in advance for each assessment activities.

Chapter 3

Characteristics of Students and their Parents

This chapter primarily focuses upon analyzing the background characteristics of sampled students and their parents. The background characteristics of students include their age and its compatibility with the grade level, gender wise participation in grade four and eight. The data taken from the parents about the different characteristics include their education, profession, the trend of reading in their kids beyond textbooks, home to school distance, homework practices, visits by health department at home for Polio vaccination etc. The chapter presents descriptive analysis of student and parents characteristics with respect of background variable in graphical and tabular form.

Age-Grade Compatibility

Out of school children and dropout are primary issues faced by education in Pakistan and government has focused on overcoming these challenges in for several past years. Late enrollment of students is an offshoot of the same issue. The official school going age of students is 5 years, therefore, fourth-grade and eighth-grade student should be of 9 and 13 years respectively.

42.7% of the students in fourth grade were overage which dropped to 24.4% in eighth grade reinforcing the assumption that overage students are at greater risk of dropout.

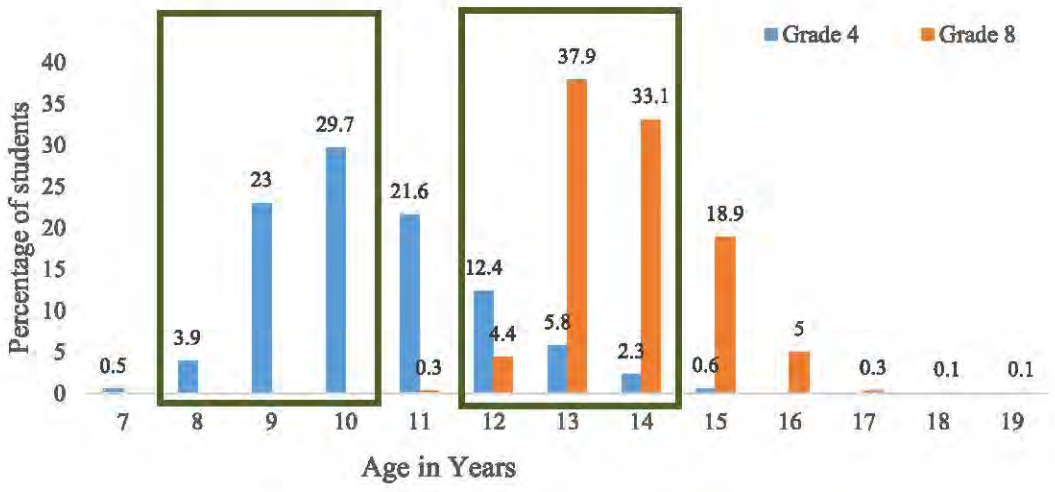


Figure 3.1: Student age distribution by grade

If we keep in mind a small number of late entrants and/ or repeaters the expected age range of students in fourth-grade should be between 8-10 years and for eighth-grade, it should be 12-14 years.

This is noticeable that 42.7% (N= 13197) of the students in fourth-grade were 11 years of age or more which indicates presence of repeaters more than once or students getting enrolled in schools considerably late than prescribed age. Beside the social and/or psychological implications for late entrants, the phenomenon has repercussions for peers in the class as well. The risk of students' dropout or prospectus of success is also associated with entry age in any grade. In eighth-grade, relatively less percentage (24.4%, N= 13959) of are overage which strengthens the assumption that late entry in schools leads to dropout. Probably, many students having late entry in fourth grade, dropped before reaching eighth grade.

Policy Suggestion	*Parents, community and school education department should be involved to ensure student enrollments in school at right age in appropriate grade*

Gender disparity

Participation rate of girls is almost 10% lower than males in fourth-grade. The disparity increases to 22.4% as the students reach eighth-grade. More girls discontinue their education as they approach to elementary schools.

Girls are at greater risk of non-enrollment or dropout

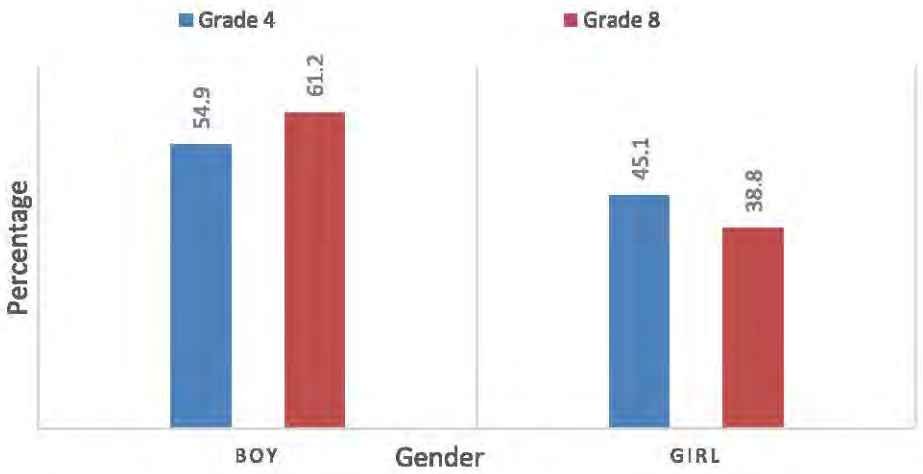


Figure 3.2: Distribution of students by Gender

Policy Suggestion	*Federal and provincial education ministry/departments take measures to bring girls to school and once in school, incentivize to retain in schools by involving parents, community leaders and school environment.*

Parental education

The parent's education reported here is of either mother or father (mostly the one who filled the questionnaire). Therefore, it was not possible to identify that reported education level is mother's education level or father's education level.

In situation where majority of the parents of fourth grader are not even primary school graduate, there is desperate need to promote awareness of value of education among parents

Nearly 43 % of the parents of fourth-grade students have 5 or less than 5 years education. Only 35.5% managed to complete 8-10 years of education. Intermediate/ Diploma (higher secondary school) is 12 years of education and only 10 % of the parents of the students in fourth-grade were educated to this level. The percentage of parents having qualification more than 12 years of education is negligible.

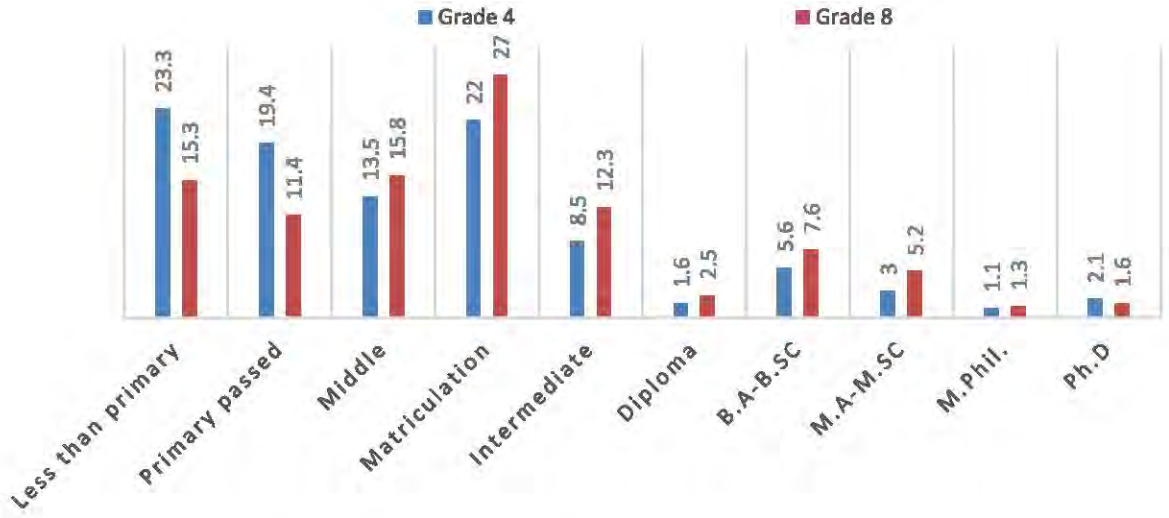


Figure 3.3: Academic Qualification of Parents

Parents of the students in eighth-grade were relatively more educated although most of them were lower secondary school graduates (10 years of education). Only 12.3 % completed higher secondary school (12 years of education). A large percentage (40.2 %) of parents of eighth-grade students were having 8 or less than 8 years of education. Only 15.7 % parents were educated up to undergraduate or higher level (14 years of education or more).

Parental education is directly associated to students' chances of education

Figure 3.3 showed some evidence that students having more educated parents are more likely to have access to post-primary education as compared to students having parents with lower education level. The students' probability to continue education to higher grades is directly associated with parents' education.

Policy Suggestion	*Departments of School Education through head teachers and teachers should increase contact with parents and make them realize the value of education in improving the lives of their children. Less Educated parents should be convinced about worth of education and its role in improving lives*

Parental profession

Both Public and private schools included in the sample cater the middle/ lower middle-class families. Farming, government job private job and small business were the source of earning for many families. Parents having government or private jobs tend to send their children to private schools.

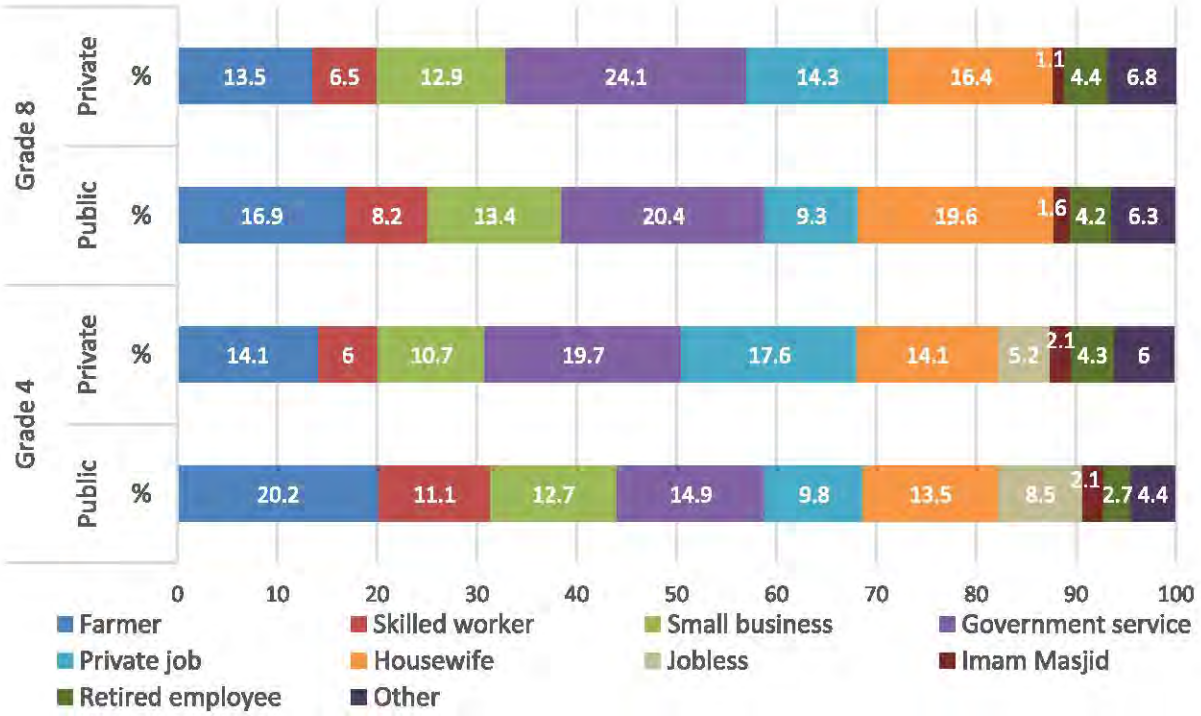


Figure 3.4: Profession of Parents

Parents earning and choice of school is related to each other. Parents in government service and private jobs (assumed as better earning jobs) tend to send their children to private schools as compared to parents in farming, skilled work and small business, which are assumed as low-income jobs.

Children of jobless parents are more likely to dropout as compared to children of employed parents

The students whose parents are jobless seems to be at greater risk of being dropout from schools as none of the parents reported as jobless in eighth grade data as compared to 14% parents reporting jobless in fourth-grade.

Policy Suggestion	*Parents sending their children to public schools are from low income professions. School Education Department may arrange financial support program to improve student retention, especially girls' retention in schools.*

Reading beyond textbooks

Students were asked to report the number of books other than textbooks at their homes. The assumption behind asking this question was to assess the probability of student reading beyond textbooks.

Schools need to embed reading activities as part of school curriculum for promoting reading culture

Predominantly, students reported to have less than 50 books at home other than textbooks which indicated meager possibility of students reading beyond textbook. This reiterates the need of creating opportunities for development of self-reading habits among students by embedding opportunities to read beyond textbooks within our schooling system.

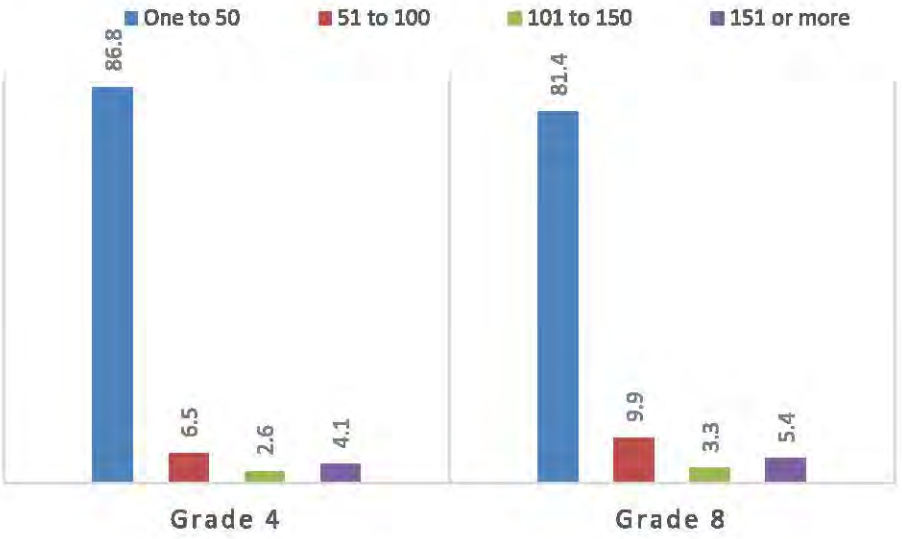


Figure 3.5: Books at Home (reported by Parents)

Policy Suggestion	*Federal and Provincial School Education Departments strengthen school libraries and manage dedicated time for reading books other than course material in school timetable to develop reading habits in students.*

Means of Traveling to school

The students were asked to report the means of travelling to school to know about school vicinity and access to schools. Mostly schools are in closer vicinity as most of the students walk to their schools. Access to schools at primary level is better than elementary level.

The schools are at walking distance for overwhelming majority of students in fourth and eighth grade.

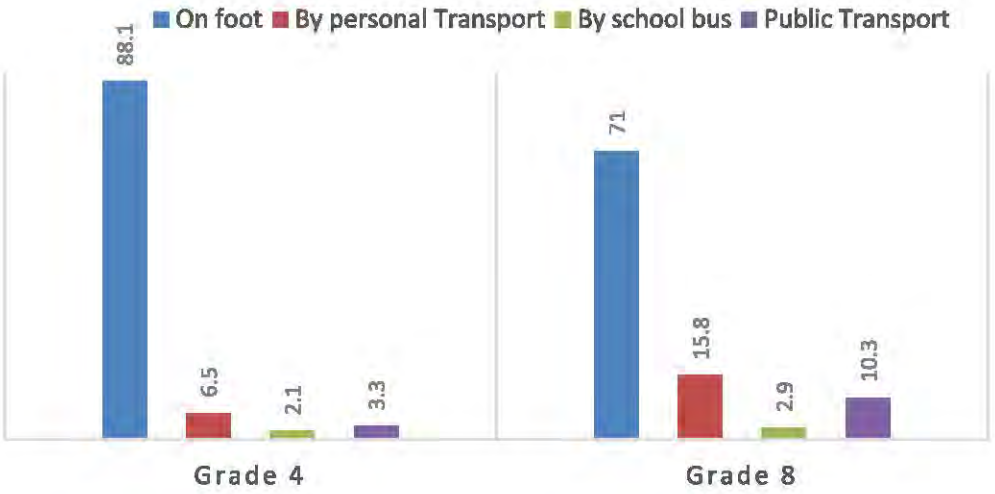


Figure 3.6: Means of Transport to Schools

There are less number of elementary schools as compared to primary schools thus students have to travel more in eighth-grade as compared to fourth-grade. There is slight transformation in means of commuting from walking to personal owned transport in eighth-grade.

Policy Suggestion	*Federal and Provincial school authorities Upgrading existing primary schools to elementary schools can further improve school access for students and help in overcoming challenge of bringing children to school.*

Travel Time to School

Another measure of access to schools was time consumed to reach schools. Overwhelmingly, students reported less than 30 minutes consumed in reaching schools.

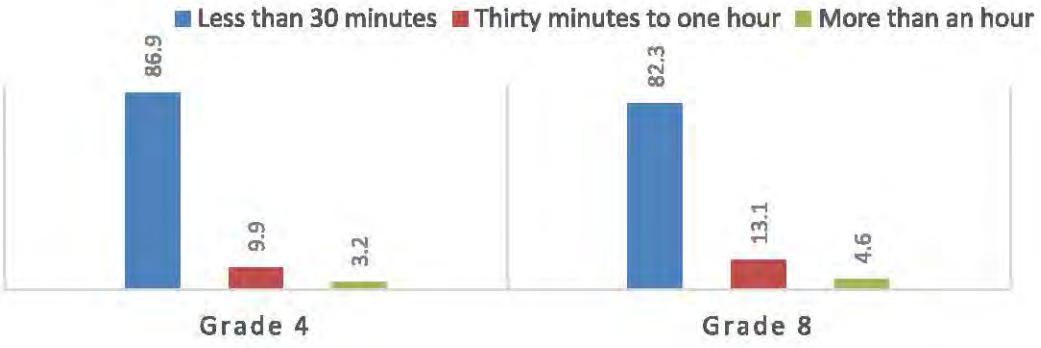


Figure 3.7: Time Consumed to Reach School Every Day

Relatively larger percentage (13.1 % in eighth-grade as compared to 9.9% in fourth-grade) spend more than half an hour to reach schools which can be because of two reasons; Firstly, there are less number of elementary schools available as compared to primary schools and secondly, parents choose schools with better reputation even if they have to go relatively far.

Majority students need less than 30 minutes to reach schools

Homework

Homework is considered an important measure of the teaching learning process. It taken as a tool of student learning by most of the teachers and parents. Homework is usually given from the areas covered in classroom to ensure self-study and/ or practice.

Parents and tutor help students in doing their home work

Students reported father, mother and/or tutor as support in completing their homework. The students in fourth-grade were more dependent on someone to help them in their homework as compared to students of eighth-grade. It is encouraging to note that students become more independent in their work as they reach eighth-grade. As the question was asked as multiple response item, it is possible that students received help from more than one of the listed resources at the same time.

Majority of parents are uneducated or have less than 10 years of education, which makes it difficult for them to help their children in homework.

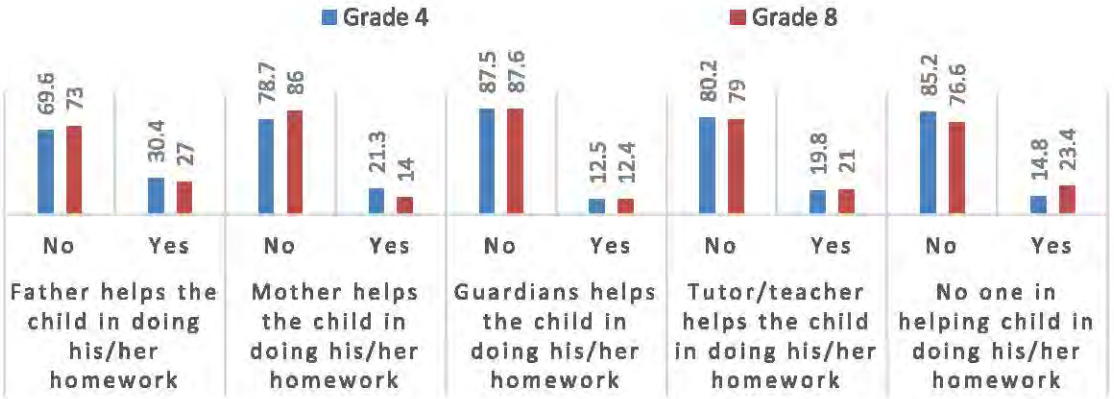


Figure 3.8: Help Received at Home in Study

Policy Suggestion	*Schools days can be extended and teachers may be asked to ensure completion of work in schools to reduce the disadvantage for students having less educated parents or unaffordability to hire services of private tutors at home.*

Students were also asked about the amount of time spent on studying at home. It is assumed that the time spent on study at home includes the time consumed in completing the daily homework.

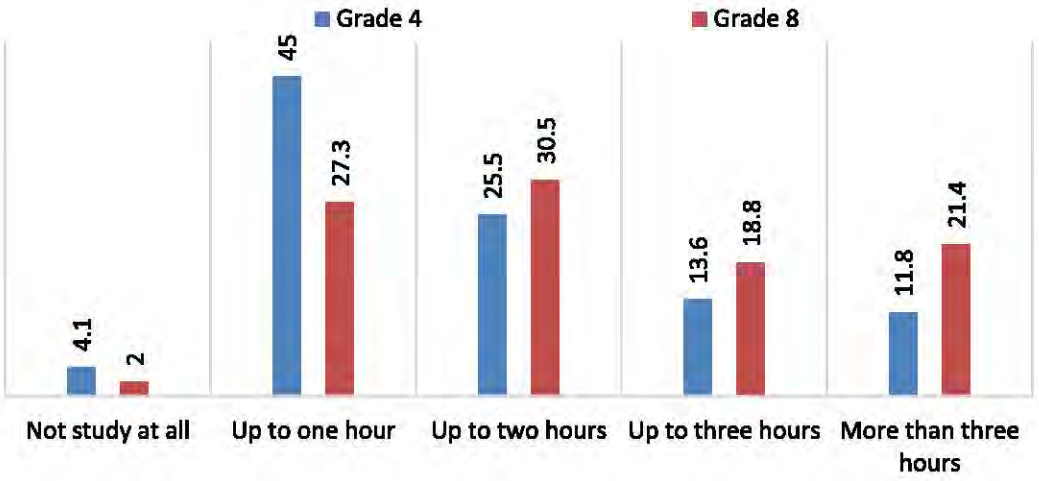


Figure 3.9: Time Spent at Home for Studying

Almost all students study at home. Mostly, fourth-grade students spend between one to two hours in study at home (70% at primary and 60% at elementary level). In eighth-grade, students have to spend relatively more time on their study at home. Almost 40% of the parents reported their children spending 3 hours or more on their study at home in eighth-grade.

Students in eighth-grade spend more time on study at home as compared to students at fourth-grade

Polio Vaccination

Government of Pakistan has been striving hard to eliminate polio from the country and comprehensive polio vaccination program has been launched. A part of the program is to access household. Students were asked about the Polio vaccination team visits to their homes.

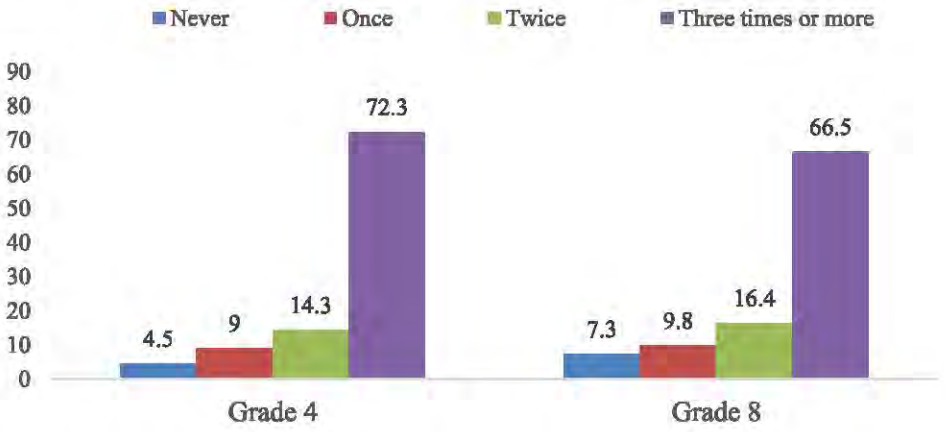


Figure 3.10: Number of Visits by Health Department at Home for Polio

Polio Vaccination reached to almost all households once at least but still there are 4.5% and 7.3% students reporting no visit by polio vaccination teams in last one year by fourth-grade and eighth-grade students respectively. There is probability that student reporting information did not know about polio vaccination team visit or any

Despite efforts, a small percentage of students is yet to receive Polio vaccination

cultural or religious reservation on the part of the household restricted the visit of the polio vaccination team. There is need to ensure polio vaccination of every child to eradicate this disease from the country.

Policy Suggestion	*Federal and Provincial Ministry of Education should intensify its efforts to improve public reservations about polio vaccination by aggressively using radio, television and social media campaign.*

Conclusions

Understanding student and parent characteristics unfolded several fundamental factors potentially contributive in education of students. School authorities need to introduce measures to bring students to schools at appropriate school age in fourth and eighth grade. Student assessment in fourth grade needs to be redesigned and use of assessment data for failing or promoting students should to be discouraged. Instead, students' assessment data should be used for supporting students learning as in developed countries. This pass-fail policy is detrimental towards achieving universal primary education. Girls participation and retention needs special attention, especially in eighth grade. The lesser number of girls as compared to boys' participation in fourth and eighth grade can be a greater risk of gender parity while decreasing the probability of girls to attend school as the grade level increases. The higher level of parent's education can be associated with the students' probability to continue education to higher grades. Improving access to schools by upgrading primary schools into elementary schools and building new schools where schools are not available can bring and retain more students in system, especially for girls.

Chapter 4

Characteristics of Teachers and Classrooms Environment

This chapter provides a comprehensive view of relevant background characteristics of teaching workforce for grade four and grade eight serving in the different regions of Pakistan. The different characteristics of the teachers include their age and its distribution at different grade level, academic and professional qualification, their participation in the Continuous Professional Development programs, teaching experience, availability of textbooks and teaching kits and other resources, the trend of conducting Parent-teacher meetings and multi-grade teaching along with their satisfaction towards this concept. This chapter can help the reader to understand the range of characteristics and the capacity of teaching workforce responsible for the primary and elementary level education system of Pakistan.

Age Distribution of Teacher Workforce

The data was collected from 1146 (590 male and 556 female) fourth-grade teachers and 944 (518 male and 426 female) eighth-grade teachers. The cross tabulation of teachers age and gender shows that the teacher workforce is between 25 to 45 years.

More than half of the teaching workforce in Pakistan is less than 35 years in age.

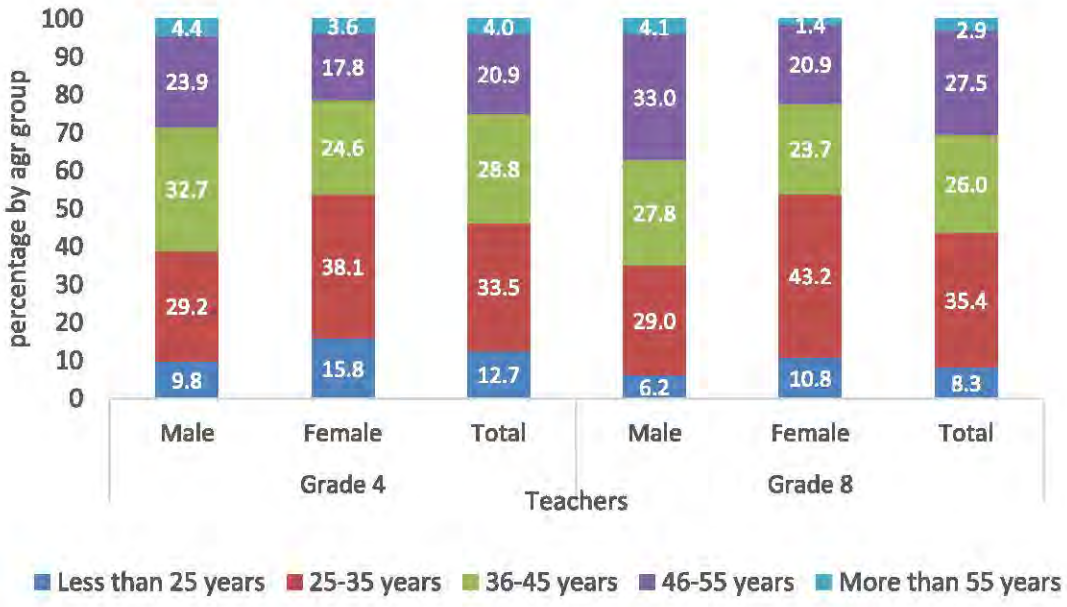


Figure 4.1: Cross-tabulation between Teachers Age and Gender

Teaching workforce in Pakistan is relatively young, especially more than half of the female teachers were less than 35 years of age. In the remaining, more than one quarter were between 36-45 years in age.

Teachers have fundamental importance in realizing the improvement in curriculum, teaching and assessment envisioned by the government in recent years. The younger teacher workforce can be a value addition in spearheading the change process. Incentivizing the professional and career development opportunities for young cohort of teachers is an investment worth offering to equip schools with professionally competent teachers ready to serve for coming decades.

Offering career development opportunities for young teachers is an investment worth offering to equip schools with professionally competent teachers

Policy Suggestion

Federal and Provincial Ministries of Education should work in closer liaisons with pre-service teacher education institutions to raise the level of teacher training. Moreover, induction training should be geared towards acquainting young male and female teachers to school vision, mission and needs in early career.

Teacher Qualification

Results shows that 40% of teacher at primary level still have professional qualification of PTC and CT. These 40% have academic qualifications ranging from matric (secondary school certificate) to MA.

Table 4.1: Cross-tabulation between Academic and Professional Qualification

Professional Qualification	Academic Qualification													
	Fourth-grade							Eighth-grade						
	Matriculation	Intermediate	BA	M.A	M.Phil	Ph.D	Total	Matriculation	Intermediate	BA	M.A	M.Phil	Ph.D	Total
PTC	83	72	109	37	0	0	301	0	2	2	3	0	0	7
CT	0	33	41	16	0	0	90	0	7	29	10	2	0	48
Diploma in Education	0	4	7	2	0	0	13	0	4	6	4	2	0	16
B.Ed/BS.Ed	0	2	141	254	13	0	410	0	1	142	300	28	1	473
MEd/MSEd/MA(Edu)	0	0	23	149	6	2	180	0	0	22	299	14	0	335
M.Phil	0	0	0	4	6	0	10	0	0	0	6	7	0	13
Ph.D	0	0	0	2	0	0	2	0	0	0	0	0	0	0
Total	83	111	321	464	25	2	1010	0	14	201	622	53	1	893

Another 40% have B.Ed with academic qualification of BA and MA. 18% have done MA Edu with academic BA or MA. At elementary level 85% of teachers have done B.Ed, M.Ed or MA Edu. with academic qualification of MA and BA.

Policy Suggestion	*The majority of the teachers in fourth and eighth grade have B.A./M.A with B.Ed/M.Ed which is higher qualification than what is required for recruitment in primary or elementary schools. These teachers join teaching profession because of high un-employability in the country but they rarely take it as their destination and keep seeking for better jobs. Ministries of Education at Federal and Provincial level should work on grades, pay scales and career paths for teachers to retain these highly qualified teachers in schools.*

Teacher Continuous Professional Development

Teacher professional development remained one of the key focus of the government. There are dedicated directorates of professional development for teachers in all provinces and areas. Various kinds of need-based trainings are offered to teachers across the year.

Need based teacher continuous professional development for all teachers on periodic basis should be ensured

Despite these efforts less than half of the teachers in the sample reported to have received professional training in last two years. It showed need of further strengthening of professional training efforts and ensuring wider participation of teachers in such training on periodic basis.

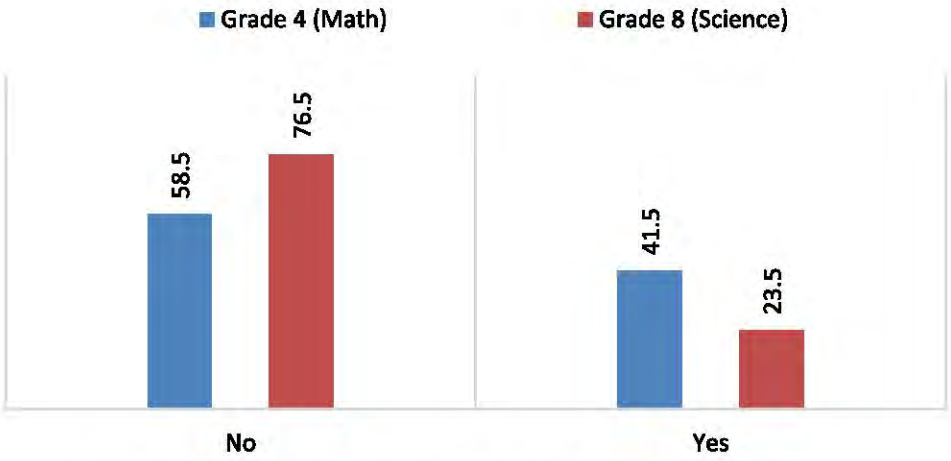


Figure 4.2: Trainings Attended in Last two years

Policy Suggestion	*Fedral and Provincial ministries of Education should develop a teacher data base to ensure the record of training received by the teachers and ensure trainings on periodic basis for all teachers in various content and pedagogy areas. Teacher training should be taken as investment towards quality education and all teachers should be included in this program. The concept of mentoring should be strengthened overtime to empower teachers to take responsibility of their professional development on them. The career path in teaching should be linked to the professional development for encouraging quality teachers.*

Teacher Experience

Teacher workforce is between the age group of 25-45 years as shown in figure 4.1. As far as experience is concerned, more than 40% have more than 16 years of experience in both fourth-grade and eighth-grade.

More than 40% of the teaching workforce have more than 16 years of teaching experience.

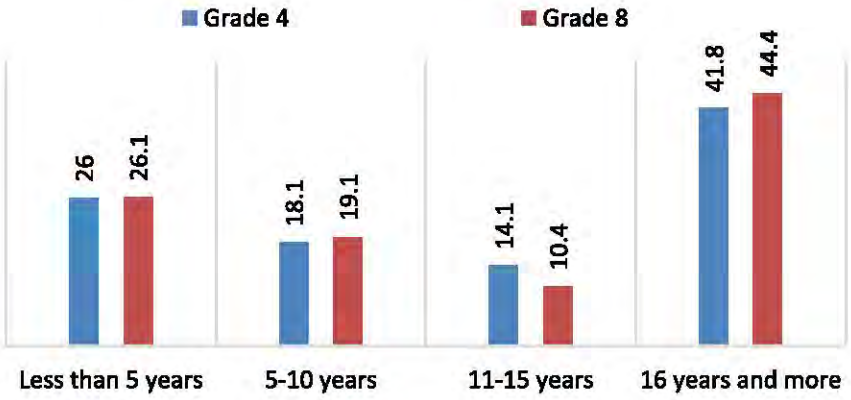


Figure 4.3: Total Teaching Experience of Teachers

Teachers enter into teaching career at early age after completing the minimum entry requirements and continue to improve their academic and professional qualification during service.

Policy Suggestion	*Teaching workforce in the country is quite young and experienced which is likely to serve for many years. Federal and provincial ministries of education should engage them in diverse professional development programs to empower them with skills needed for teaching students in 21st century. Hands-on and on-job models of professional training should be introduced at federal and provincial institutes of teacher training.*

Provision of textbooks/teacher guides/teaching kits

Textbooks are provided free of cost to teachers in all grades once, at the start of the academic session. The teachers have to purchase new books if they happen to damage or lose their books during academic years. The teachers were asked about provision of textbooks, teacher guides and availability of teaching kit in their school.

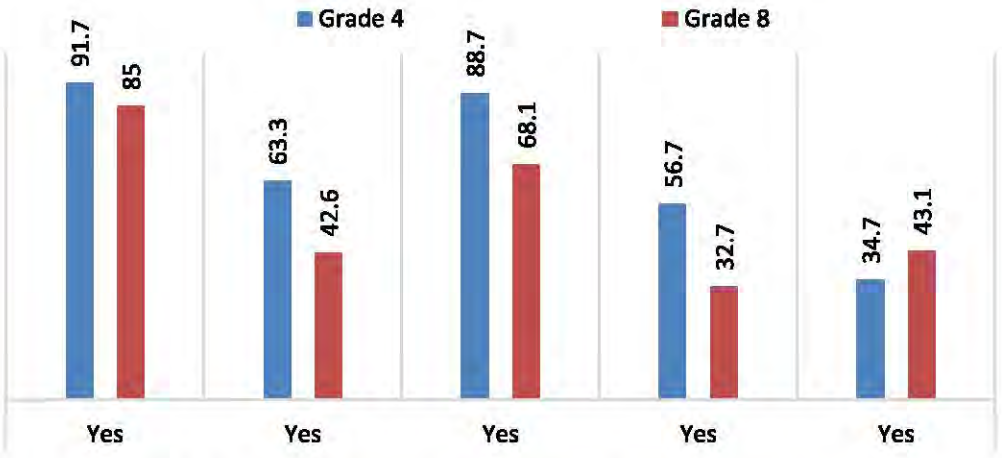


Figure 4.4: Availability of textbooks and teaching kit

Textbooks are available to substantial majority of teachers in schools. A few who reported to not having the textbooks may have damaged or lost after being provided free textbooks from the school. However, provision of teacher guides needs to be ensured. Teacher guides provide details on how the textbook can be used effectively for teaching in classroom. Teachers can optimally utilize the learning from professional development sessions for improving their teaching, if training are supplemented by the provision of teaching guides to assist in selecting right teaching material, suitable pedagogies and relevant assessment modes in classroom.

Provision of teacher guides and teaching kits to all schools can improve teaching and learning processes at fourth and eights-grades

Furthermore, teaching kit is a mandatory part of the teacher guide. It provides a set of teaching aids suggested in teacher guides. Teachers don't have to look for teaching material material/ AV aids need for teaching in classroom. In absence of teaching kit teachers have to acquire/purchase/borrow related AV aids personal or school resources which is difficult to manage.

Policy Suggestion	*Federal and Provincial Ministries of Education in collaboration with Directorate of Trainings should make teacher guides and other open educational resources available on-line for teachers through a portal like elearn.punjab*

Parent-teacher meetings

Parent teacher regular meetings is a salient feature of schools. The meetings are scheduled on quarterly basis and/ or need basis from both sides. The meetings are not only focused on sharing academic progress of the students but absenteeism, participation in co-curricular activities and student discipline related challenges.

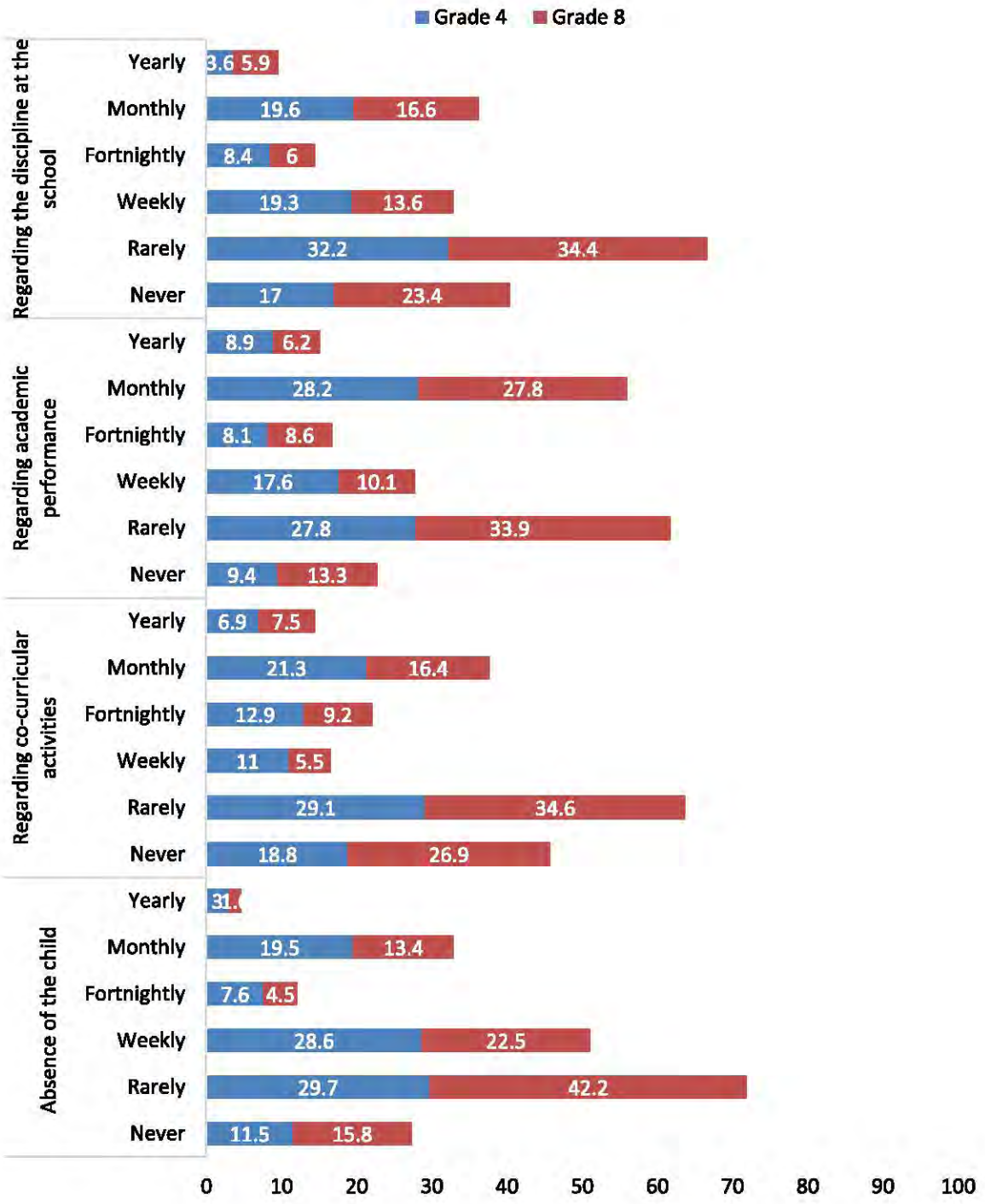


Figure 4.5: Parent Teacher Meetings

There is need to create awareness about value addition linked to parent-teacher liaison for the educational progress of the students. Parents with less educational qualification rarely realize the value of parent-teacher meetings. The percentage of parents attending monthly meetings is relatively more because these are officially scheduled with quarterly school examination. These quarterly meetings are meant primarily for sharing student academic progress.

There is a need to engage parents in schools with regard to become a partner in educational, social and personality development of the students.

The recent focus of school education departments on reducing student absenteeism has encouraged schools to be in contact with parents if a student fails to attend school. A reasonable increase in frequency of parent-teacher meetings is visible in this connection. There is a need to engage parents in schools with regard to become a partner in educational, social and personality development of the students.

Policy Suggestion

Student Councils have become a reality in almost all schools and substantial funds are made available to schools in this regard. Departments of School Education in their respective provinces and areas need to work on eligibility criteria for the membership in these committees to make them contributive towards the goals aimed towards school improvement.

It is assumed that community members know the need of their children but in fact they have very little exposure to best practices and possibilities of improvement in school. Thus, orientation session needs to be held by the school education department for exposing possibilities to the community members in School Councils, so that they can choose the relevant option for themselves when situation arises.

Multi-grade teaching

The policy of one or two teacher schools at primary level was pursued in the past. This obviously led to multi-grade teaching in schools, especially in primary schools (grade 1-5). Recently, a shift in policy is in debate to have one-teacher for one class in primary schools and appointment of subject teachers in elementary schools.

More than half of the teachers have either taught in multi-grade teaching situation or still practicing it in fourth grade

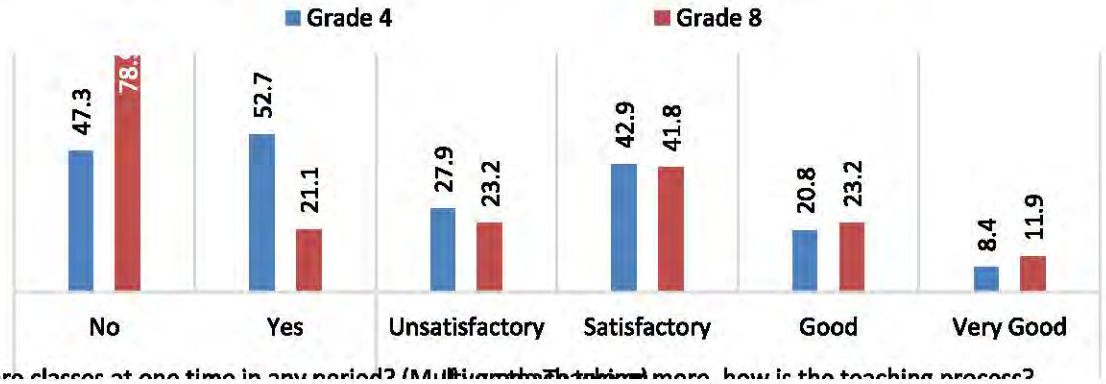


Figure 4.6: Multi-grade teaching and teachers' satisfaction

At present more than half of the fourth-grade teachers are involved in multi-grade teaching while in eighth-grade, the number of teachers engaged in multi-grade teaching reduces to almost a quarter. The teachers seem to have adjusted with multi-grade teaching and feel satisfied with it.

Policy Suggestion	*Multi grade teaching is a reality, especially in rural area schools. There is hardly any arrangement for training of teachers in this mode. Directorate of Teacher Education in Federal, Provincial and Areas should develop modules on multi-grade teaching for teachers involved in multi-grade teaching.*

Conclusions

Teacher welfare and professional development is the key to improve quality of education in the country. The teaching workforce is quite young but experienced because of entry to profession at young age. Mostly, young teacher is academically and professionally highly qualified, thus opening an opportunity for the policy makers to device policies to retain and train these teachers to utilize their potential to optimal level and deliver. Offering career path, pay scales and professional development opportunities conversant with their qualification can lead to achievement of goal of quality education. It is important to capitalize on technology related provisions to open professional development avenues for teachers by using Open Educational Resources (OERs) for content and pedagogical learning. Formalizing the teacher networks to promote peer learning, collaborative activities and resource sharing can be introduced as contemporary mean of personal and professional development.

Chapter 5

Characteristics of Head Teachers and Schools Environment

The performance of schools is contingent upon the kind of leadership offered by the school heads and the richness of facilities available in school. This chapter ascribes the details about characteristics of head teachers in sample schools and the school facilities available in selected schools. The head teacher characteristics include the gender wise age distribution, their academic and professional qualifications and teaching experience in years. The schools' facilities are explained by describing information on ownership of school buildings, administrative gender of schools, situation of student absenteeism in schools, significance laid on moral and social development of students, duties performed by head teachers, the cooperation and parents' involvement in school activities and related challenges faced by head teachers.

Age distribution of Head teachers by gender

The data revealed that most of the head teachers were in age group of 46-55 years in by the time they are promoted/selected as head teachers in both fourth-grade and eighth-grade. It means in the current system of primary and elementary schools teacher are elevated to the rank of head teachers when they left with 5-15 years of service.

The head teachers are well experienced teachers, mostly in their mid-career with 5-15 years' service left

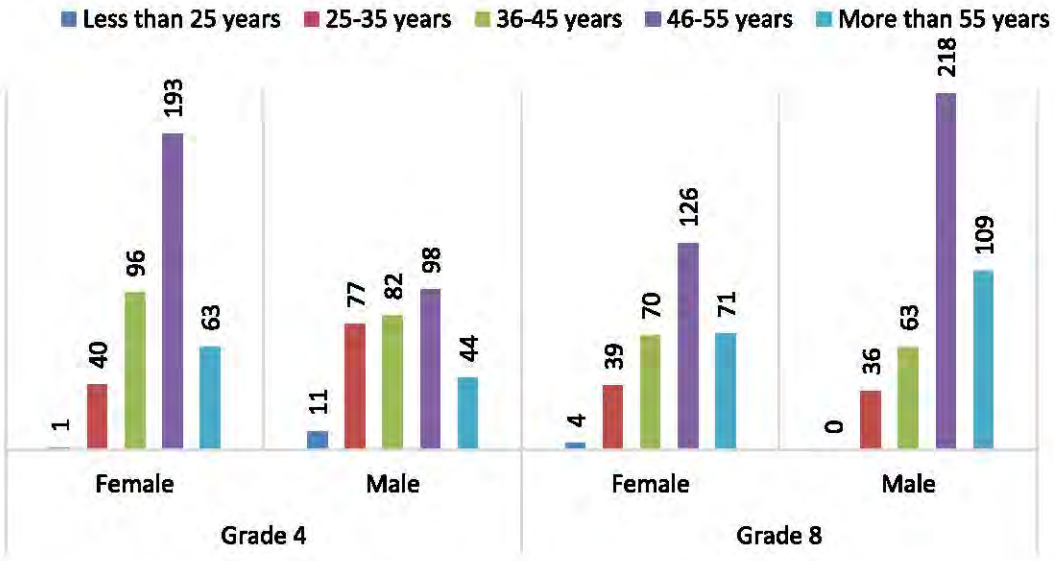


Figure 5.1: Distribution of Head Teacher by Age and Gender

It is important to have young leadership in schools to bring change in school systems. A system to promote capable teachers to the position of head teachers on the basis of their eligibility, performance, qualification and contribution to the profession need to be worked out for bringing dynamic leadership in schools.

Performance based or direct induction of head teachers can be a change agent in school improvement

Policy Suggestion	*Head teachers can be important tool of change in the quality of school education. A special cadre of highly qualified, professional competent leaders can be introduced to work as head teachers. The ministries of Education at Federal and Provincial level can introduce direct hiring of head teachers (in larger proportion as compared to current provisions).*

Academic Qualifications of Head Teachers

In schools mostly, head teachers are appointed by promotion from the senior teachers in the department of education on the basis of qualification cum experience. In primary school, the designation of head teacher does not exist but the senior most teacher in the school are designated as head teacher for the purpose of administration in schools. The eligibility to become designated head teachers in primary schools was same as qualification to become a teacher. Keeping in view the improved opportunities of higher education in the country and unemployment, several highly qualified people have joined schools as head teachers through direct recruitment and/or form among teachers who has improved their academic qualification at job became head teachers through promotion. A negligible number of teacher with designated head teachers are still working in rural schools who have academic qualification as low as Matric/Intermediate (10-12 years of education). Most of these low qualified teachers are at the verge of their retirement and are least interested in improving their qualification.

Many highly qualified teachers are available in primary schools, who be raised to the position of head teachers for better academic leadership

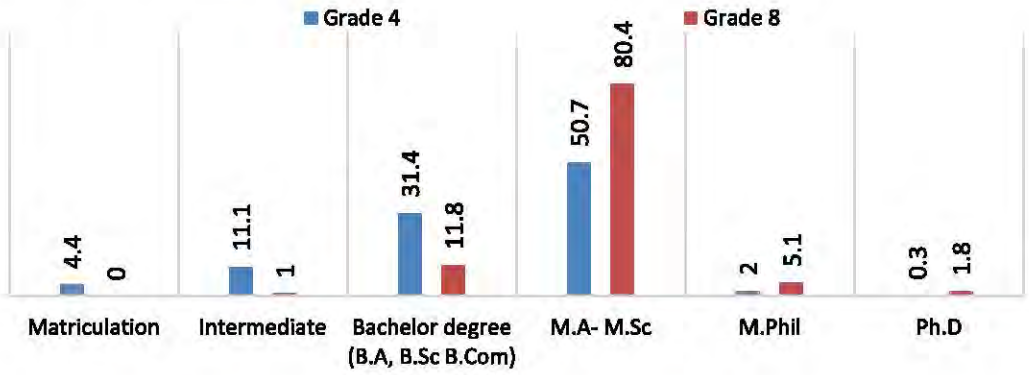


Figure 5.2: Academic Qualification of Head Teachers

Mostly, head teachers have M.A/M.Sc. (16 years of education) by the time of becoming head teachers in elementary school or designated head teacher in primary schools. Head teachers with academic

The number of highly qualified head teachers is on rise in schools

qualification as high as MPhil/PhD (18-21 years of education) is a recent trend in schools. They have joined schools as head teachers through direct selection in very recent years. Unemployment is the basic reason of such highly qualified to join primary or elementary schools. They are very unlikely to continue their job as there is hardly any incentive for them in school career.

Policy Suggestion

- *School Education Departments in provinces and areas can introduce a separate cadre of head teachers with separate recruitment criteria, service structure and career path to provide visionary leadership for school improvement*
- *In primary schools, Permanent designation of head teachers in can improve leadership in primary schools*

Professional Qualifications of Head Teachers

B.Ed and M.Ed is the professional qualification of head teachers

PTC and CT was required qualification for primary school and middle (elementary) school teachers after matriculation and Intermediate respectively. Both PTC and CT are phased out and replaced by Associate Degree in Education (2 years professional qualification after intermediate) as a part of recent teacher reforms in the country. Therefore, the number of existing designated head teachers with above mentioned academic and professional qualification will eventually phase out in coming years.

Mostly, head teachers (in elementary schools) and designated head teachers (in primary schools) have B.Ed./M.Ed. (one-year professional qualification after 14 years of academic education) or M.A. in education (2 years of professional education) after 14 years of academic education.

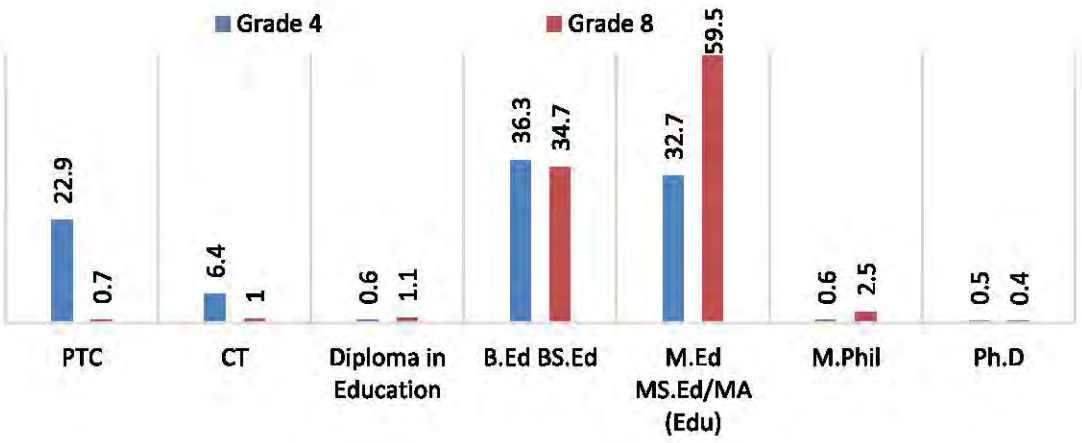


Figure 5.3: Professional Qualification of Head Teachers

The entry qualification for recruitment of teachers and head teachers has been elevated in the recent years across the country, thus the number of highly qualified (i.e. B.A./B.Sc. and B.Ed.; B.A/B.Sc. and M.Ed.; M.A/M.Sc. and M.Ed) head teachers have increased substantially in the recent years.

The entry qualification for recruitment of teachers and head teachers has been elevated

Policy Suggestion	*Ministries of Federal and Provincial Education should device teacher/head teacher recruitment policy in-line with teacher education policy to strengthen teacher education and attract professionally competent teachers in school education. A realistic policy towards content and professional qualification as pre-requisite for entry in teacher education can bring committed teacher/head teachers in the field of education.*

Teaching Experience of Head Teachers

There are two routes of becoming head teachers i.e. through direct recruitment in a competitive examination and through departmental promotions on the basis of seniority.

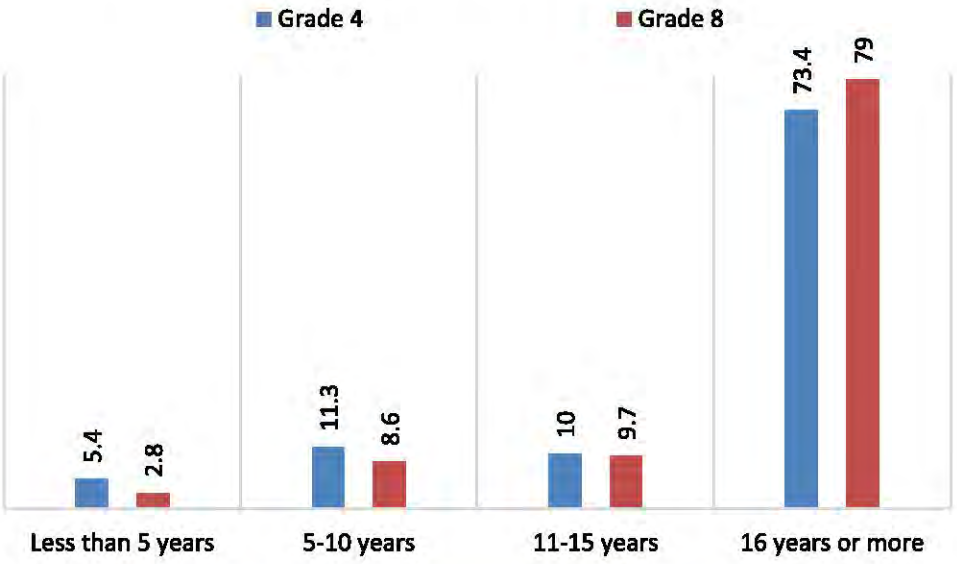


Figure 5.4: *Teaching Experience of Head Teacher*

The number of head teachers recruited through direct selection require less experience as teachers for appointment as head teachers but their number is very low usually as evident in the data presented in figure 5.4. Mostly, head teachers come through departmental promotion, which takes longer service as teachers. It takes 16 years of teaching experience or more to be promoted to the rank of head teacher in both primary and elementary schools.

The ratio of head teachers coming through promotion is substantially more than head teachers recruited through direct selection

Policy Suggestion	*The educational leadership consonant with demands of the 21st century is needed to reorient schools ready for preparing graduates for working in knowledge economy or continue their study in competitive environment. Ministries of Federal and Provincial Education needs to lay down emphasis on recruiting or promoting innovative minds for leadership places to realize the change envisioned and capitalize opportunities exposed by CPEC in near future. The opportunities for recruiting less experienced but more qualified head teachers should be increased to give chance to "change" in schools*

School Buildings

Government sector schools are in purpose build school buildings owned by school education department. A negligible number of newly established government schools can be in rented premises or housed in another already existing high school building temporarily.

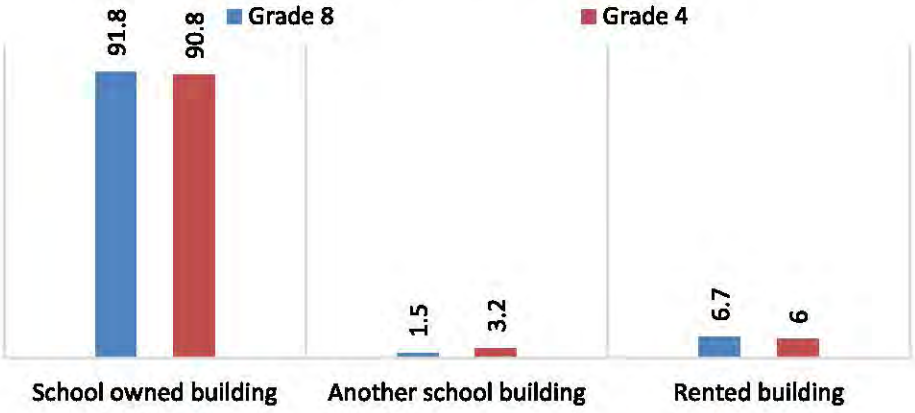


Figure 5.5: School Building Ownership Status

The schools working under organizations other than school education department (like NCHD, BECS) are usually housed in rented or donated premises or located in the house of the designated teachers.

Government schools are mostly in their own purpose-built building

Policy Suggestion	*Ministries of Education at Federal and Provincial level should financially support alternate schooling (NCHD, BECS etc.) to establish schools in self-owned buildings on permanent basis.*

Administrative Gender of Schools

In recent years, government has encouraged co-education at primary school level. Girls can be admitted in primary schools designated as boy schools and vice versa, especially in areas where school are not available. This initiative was meant at improving the access to education especially for girls.

The administrative gender of school refers to it status at the time of its establishment and generally refers to the administrative hierarchy under which it will be dealt for the purpose of recruitment of teachers and other administrative matters. Governments in some provinces has allowed recruitment of female teachers in boys' school and vice versa as well which further diminished the idea of separate schools at primary level.

At present the number of boy's schools is more than girl's schools. The number of co-educational schools at primary level is on rise under prevailing policy.

The number of boy school is more than girl schools both at primary and elementary level at present but this gap will gradually reduce as the number of coeducation schools will rise under prevailing policy of school education departments.

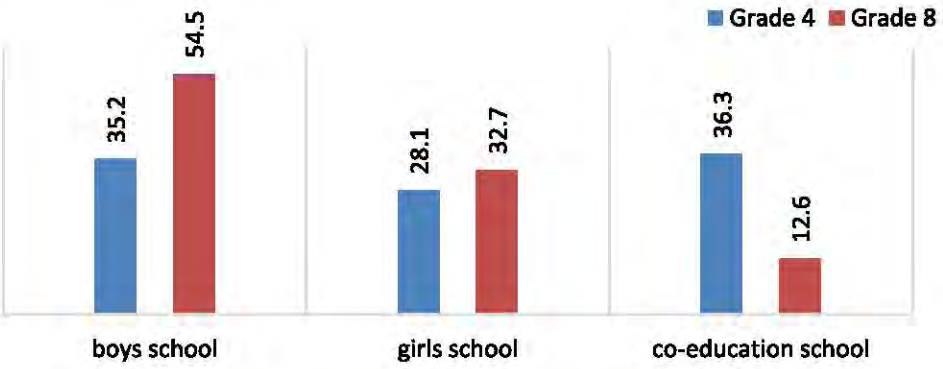


Figure 5.6: Administrative Gender of School

Policy Suggestion	*Ministries of Education at Federal and Provincial level should systematically convert primary school into coeducation schools*

Student Absenteeism

School Education Department has focused on reducing student's absenteeism by engaging parents, community, district and tehsil level staff in school education department, head teachers and teachers. Especially in rural areas, where parents are less educated and they tend to be careless about their children presence in school. Traditionally in harvesting season, students work with their parents in fields rather than attending school.

Engaging parents has reduced the absenteeism

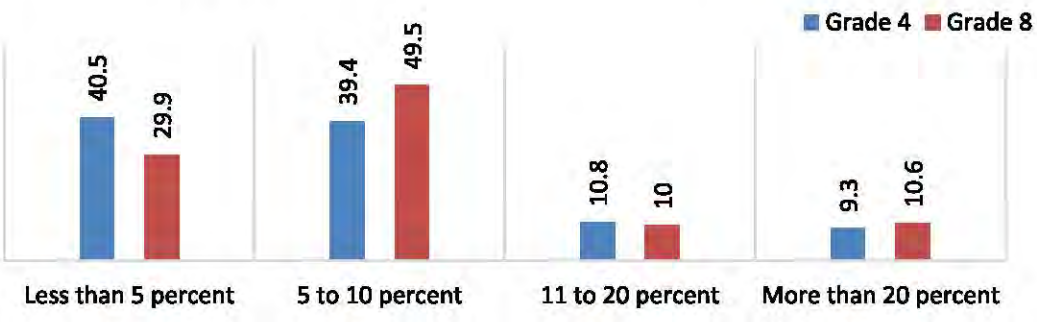


Figure 5.7: Percentage of Daily Absentees in the School

On the basis of data collected form 1499 sample schools, student absenteeism is reduced to 10% or less in almost 80% of the schools at both fourth-grade and eighth-grade level.

Policy Suggestion	*School Education Department should engage community and parents through school councils in school activities to ensure student presence in schools throughout the year*

Moral and Social development of Students

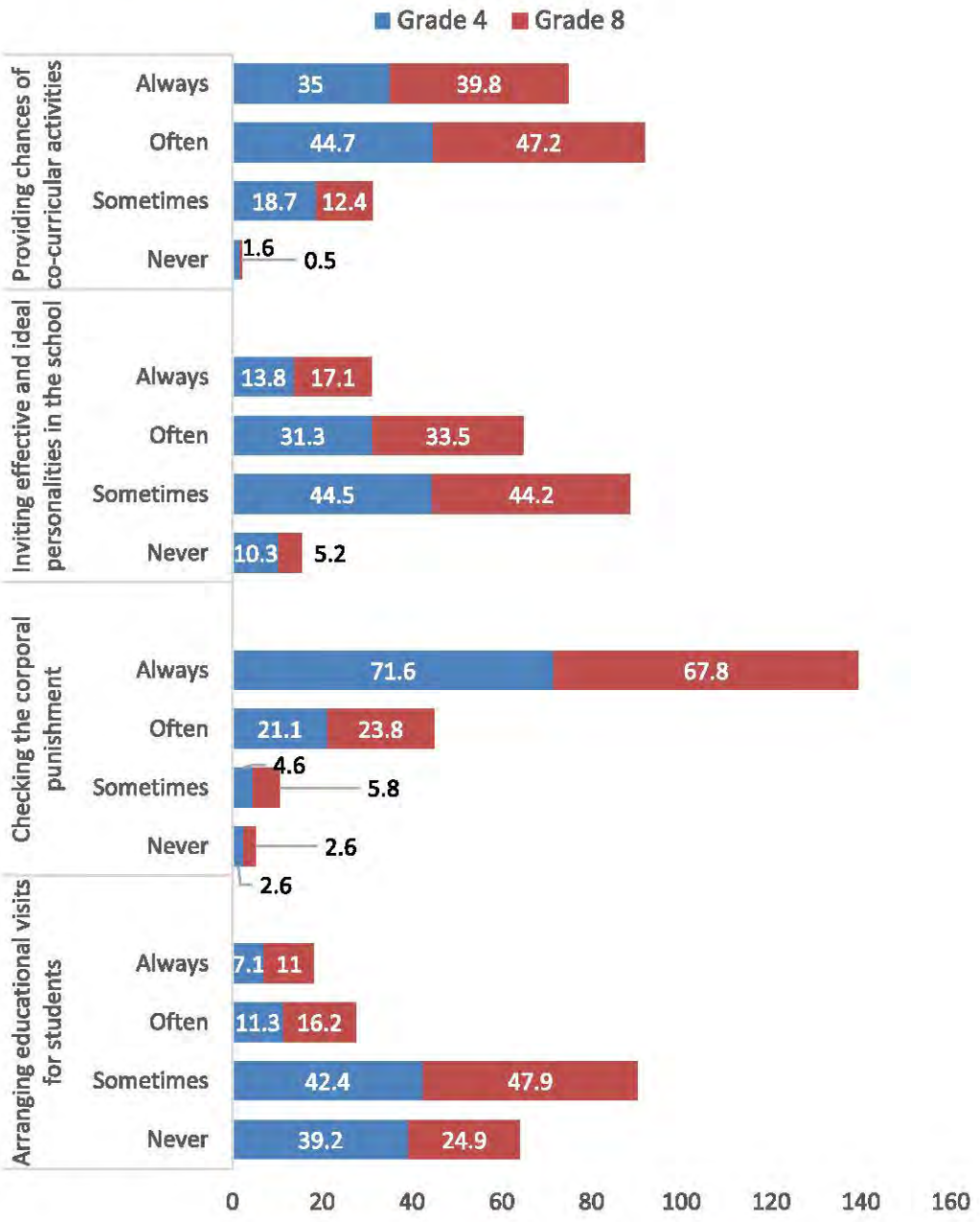


Figure 5.8: Social and Moral development

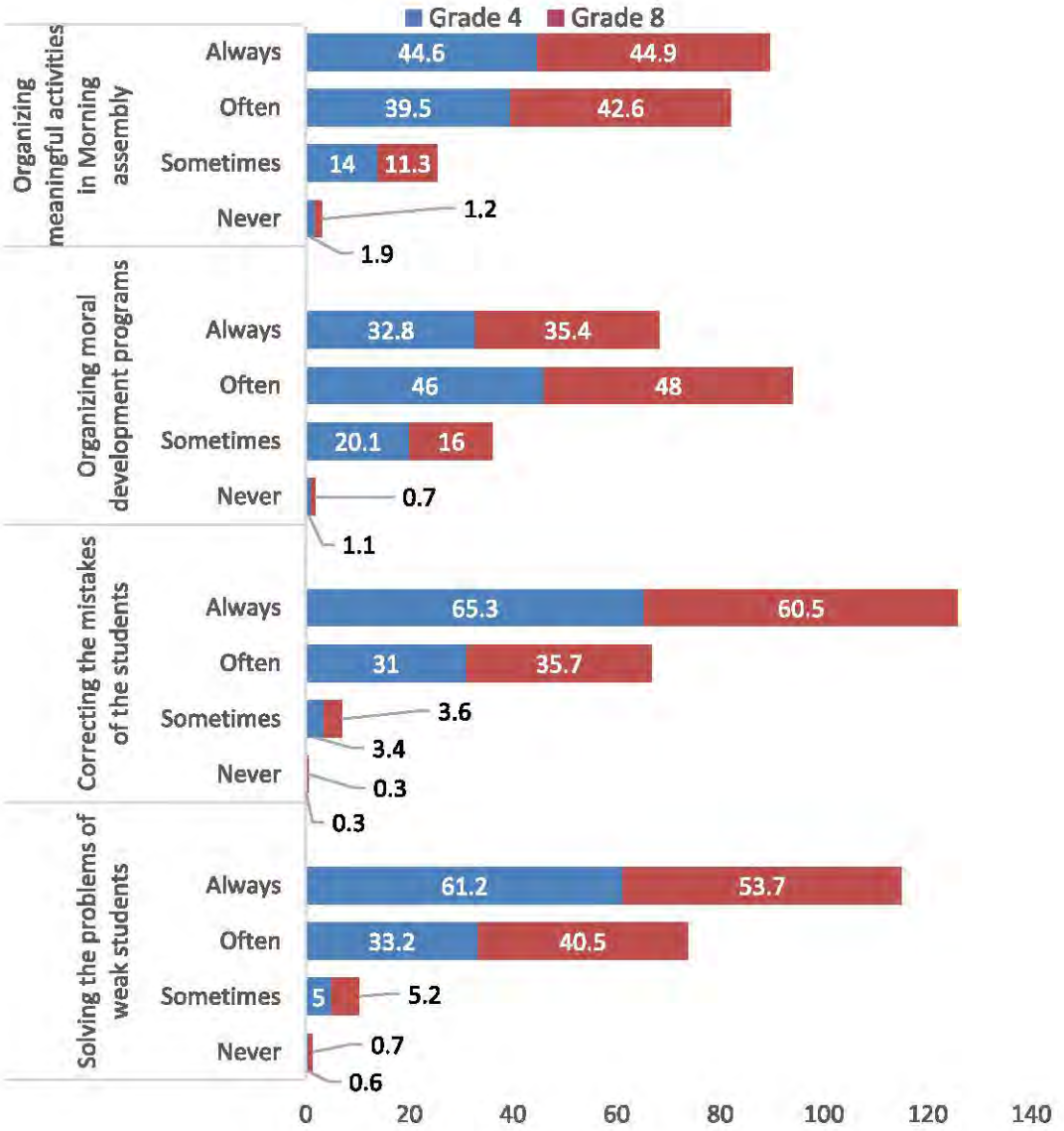


Figure 5.9: Social and Moral development

Schools are being answerable for focusing too much on the academic development of students and at times ignoring the moral and social development.

Essential moral and social development areas were listed in the questionnaire for the head teachers and they were asked to respond at the most appropriate level on the given scale.

Schools very rarely organize educational visits thus limiting the opportunities for students to interact outside school environment and having direct experience of learning practical sites.

Frequent educational visits to various places can add to direct experience of students needed for higher order learning

Corporal punishment is banned by law but still schools have some occurrence of corporal punishment as it has social and cultural sanction in some of the areas. Parents and teachers believe in it as source of correction in students. The level of corporal punishments has

Corporal punishment is banned by law but still it exists in some area

substantially reduced in past decade but consistent effort is required to eliminate it.

Schools are expected to engage community and invite notable from the local community to address students occasionally for motivating students to role model such personalities of eminence.

Local notables from the community are rarely invited to address students

The schools are yet to make it a practice as very few school are engaging community in this manner according to the information reported by the head teachers.

Co-curricular activities are another focus of schools for the development of student personality. These activities of part of school calendar, thus schools are conducting these activities regularly. Mostly, schools arrange debates, exhibitions of student work, science fairs etc. across the academic year on regular basis.

Co-curricular activities are regular feature of academic calendar of schools

Schools rarely have councilor facility for students as there is no provision of recruiting student councilors for assisting students in dealing with their socio-emotional and psychological challenges. According to head teacher reports, school are handling with this challenge at their own by designating volunteers from among the teachers to assist students in such cases as they arise or reported. This cannot be replacement of professional student councilors but as an ad-hoc arrangement it is being practices till provision of student councilor is managed.

Professional counselors are rarely appointed in schools and head teachers has assumed this role informally

Moral training of students is expected from schools and schools are organizing such events in schools which aim at development of moral responsibility and adherence to the culture, tradition and values of the society. Such activities are traditionally, part of the morning school assembly. Teachers, community leaders, students and parents are invited to morning assembly for sharing experiences and teachings about the social, religious and moral norms with students on regular basis to develop a sense of responsibility and set social expectation from students as responsible part of the community. Morning school assembly is quite effectively used for this purpose as reported by the head teachers.

Morning school assembly is the platform to induce moral, social and cultural values among students

Policy Suggestion

- *To make the school climate conducive for learning, teachers and head teachers should promote:*
  - *Co-curricular activities, Positive parent-teacher relationship, Child friendly environment*
  - *Student centered, interesting methods of instruction*
  - *Schools should be made attractive for children, not only through adequate physical facilities (toilets, drinking water, boundary walls, furniture etc.) but also by a caring and nurturing attitude of staff and SMC/PTA.*

Leadership Role of Head teachers

Majority of head teachers discuss less plan with teachers and visit classes regularly

Head teacher are expected to be the role model and academic leader in their schools. For this purpose, as set of such expected roles were listed in the questionnaire and head teacher were asked to self-report on each of the given role. Almost 2/3rd of head teacher discuss lesson plan with teachers on weekly or monthly basis in both fourth-grade and eighth-grade. Head teachers daily or weekly visit the classes to have direct interaction with students and teachers to appreciate, motivate and facilitate their work.

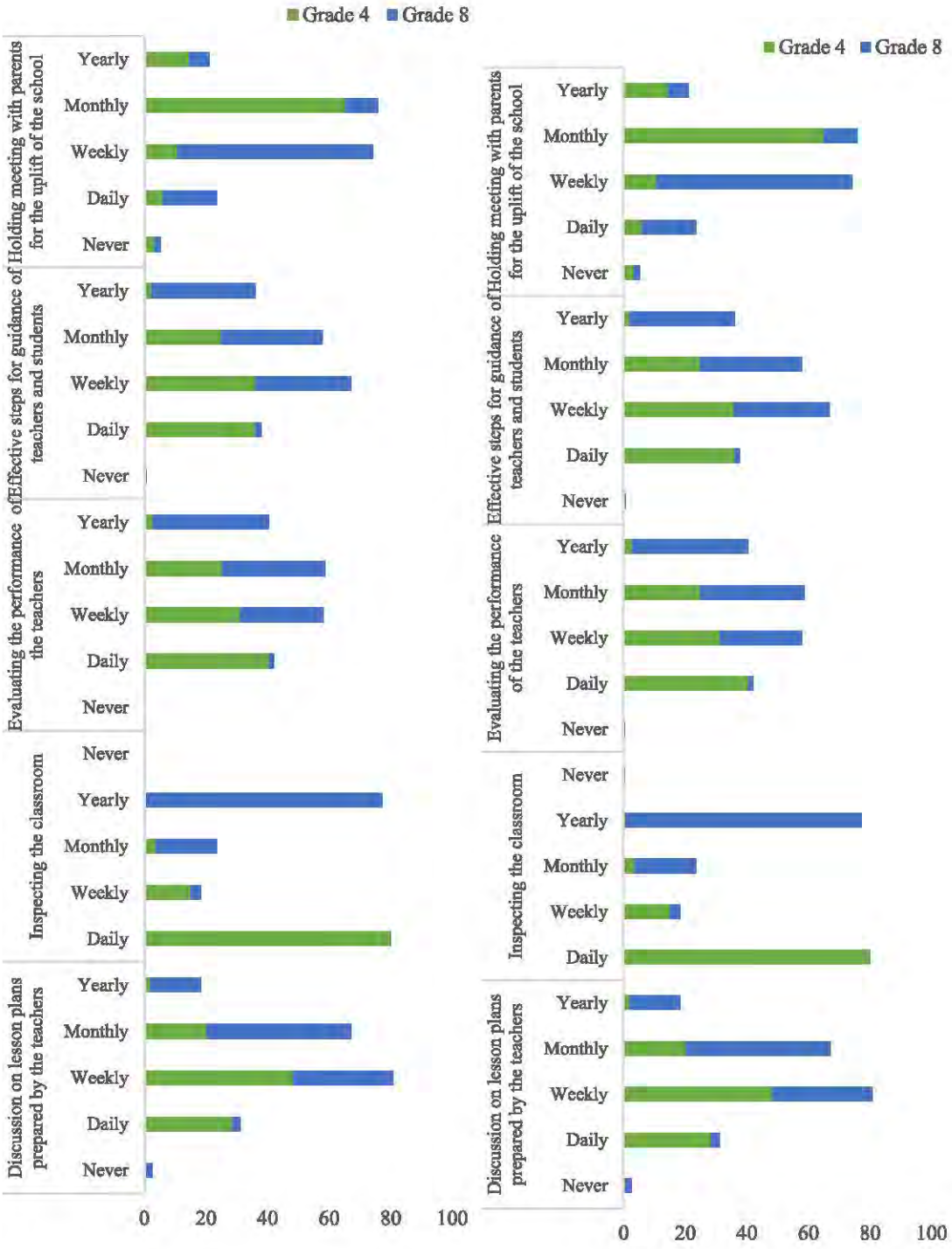
Teacher performance is evaluated on regular basis

Performance of teachers is evaluated by the primary school head on almost daily basis by majority of head teachers while in elementary school head teachers perform teacher evaluation on weekly or monthly basis. Primary school usually have limited number of teachers per schools and same teacher remains in class for whole day which makes daily evaluation of teachers possible but in elementary schools, number of teachers and classes is more. Moreover, one teacher is taking more than one classes which makes teacher evaluation more complex and time consuming.

Head teachers play active role in resolving issues faced by teachers and students in school

Head teachers engage themselves in resolving the challenges faced by the teacher and students during the process of teaching and learning as and when they happen. Such guidance is usually verbally provided on spot when any such things comes to the notice of head teachers or reported to them.

Parent teacher meeting is a regular feature of the school activities. Such meetings are scheduled with monthly examination report. Parents are communicated the schedule of parent teacher meeting quite ahead of time.


Grade 4
Grade 8
Holding meeting with parents for the uplift of the school
Effective steps for guidance of teachers and students
Evaluating the performance of the teachers
Inspecting the classroom
Discussion on lesson plans prepared by the teachers
Yearly
Monthly
Weekly
Daily
Never
0
20
40
60
80
100

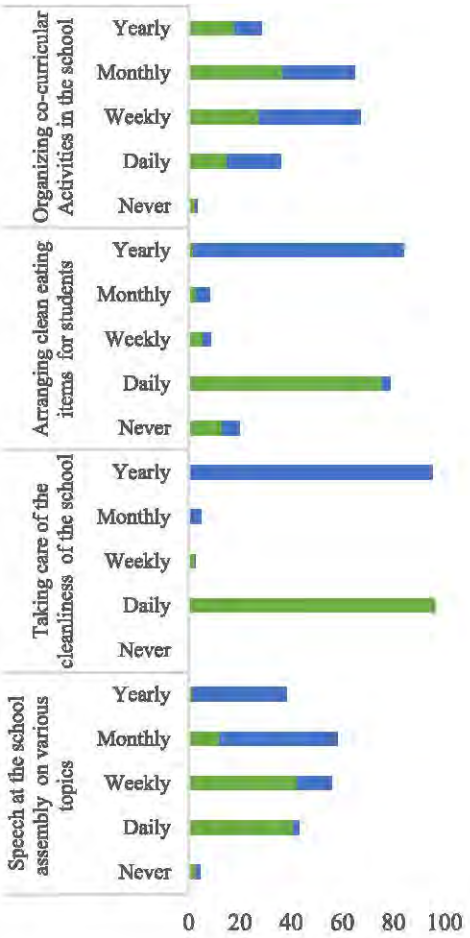


Figure 5.10: Leadership roles performed by Head teacher in school

Head teachers arrange parent-teacher meetings to address student performance

The meetings usually focused on students' academic performance and means to improve their academic work by collective efforts of parents and teachers. Parents can approach for any such meeting when they feel the need for this with prior appointment with head teachers. Teachers or head teacher can also request to parents for such meeting as and when deem suitable for assisting student in their studies and other school activities.

Morning assembly is a mean for head teachers to be in touch with students

Head teachers keep in touch with students in morning school assembly by addressing them daily or weekly. This speech is usually about current activities in school, moral lessons, religious teachings, school achievements, motivational talks and opportunities for students to participate in co-curricular activities.

Head teachers are keen in ensuring school cleanliness

Head teachers are also attentive about school cleanliness, ensuring hygienic quality of the food available at school canteen and organizing co-curricular activities on regular basis. Head teachers daily take care of cleanliness and quality of food served to students in schools.

Policy Suggestion	• *Mentoring of newly inducted teachers by the head teacher and senior teachers should be encouraged.* • *Head teachers should ensure preparation and delivery of lesson plan, including checking and feedback of the teacher on homework.* • *Job description of head teachers should include their academic and administrative tasks. It should be provided to them with their appointment letters and training for performing these multiple roles arranged.*

Parents' involvement in school activities

Parents are involved in school activities as members of School Management Committees (SMCs), volunteers and individuals.

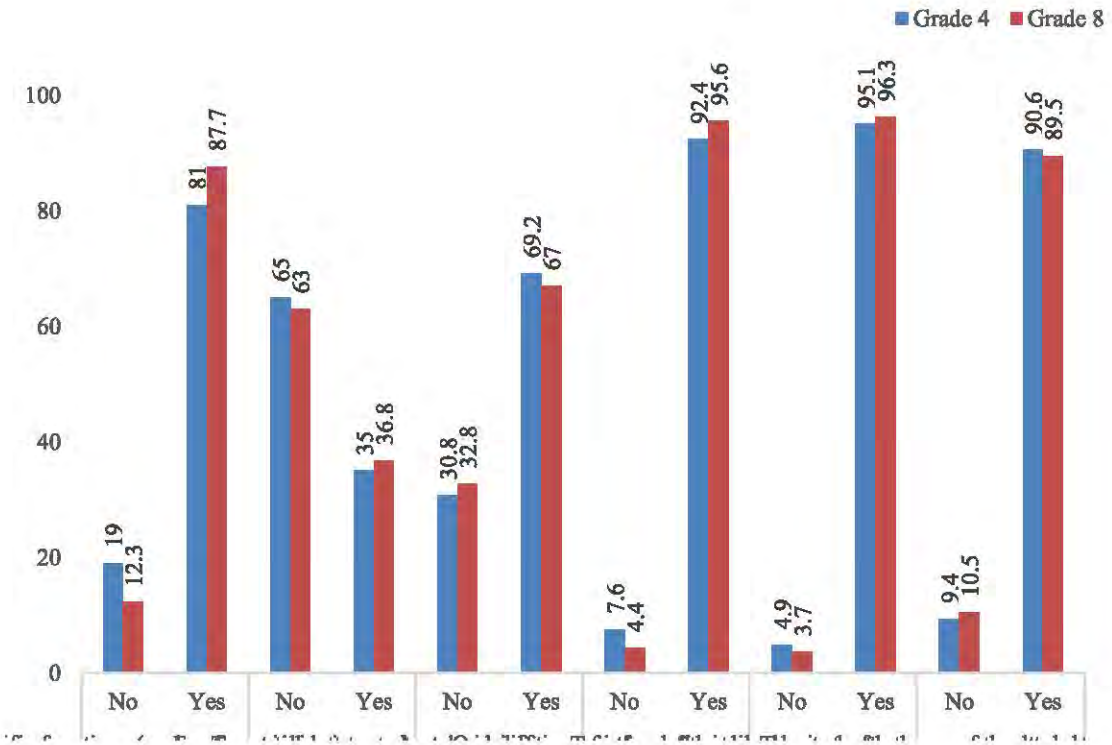


Figure 5.11: Involvement of Parents in School Activities

Except being able to financially assist school (which is generally beyond their means as parents from low-middle income group send their children to public schools), parents participation is overwhelming. They are engaged in school functions/ activities as volunteers, keep in touch with school about the activities of their children and follow the academic performance of their children.

Parents involvement in school activities/functions is overwhelming

Policy Suggestion	*Schools should initiate campaigns to familiarize parents regarding:* • *children's learning needs and parents' role in supporting them* • *nutritional and hygiene needs of their children* • *giving attention to their children at home to complete their class assignment and visiting regularly their school.*

Challenges faced by Head Teachers

Support from higher authorities for action suggested by head teachers is essential

In order to successfully run the affairs of school, head teachers need require support form administration, teachers, parents and other stakeholders. Head teachers were asked to report challenges faced in various school related academic and administrative domains.

Lack of teachers is the biggest challenge to manage classes

Lack of teachers in schools in comparison to number of classes and student strength in schools is a challenge for almost 3/4th of the head teachers. This is taken a fundamental problem in meeting with requirements of quality of education. The teachers available in schools are strained due to lack of teachers and at times they are given subjects to teach which does not fall in their expertise, especially in eighth-grade are. The rationalization of teachers was carried our several times by the School Education Department but it helped in managing the issue to some extent only.

Teacher absenteeism has been resolved to large extent due to government policies

Teacher absenteeism has been focus of all governments since last five years and the problem has been eliminated to large extent. Less than a quarter of head teachers reported this as a minor issue.

Continuous professional development of teachers has been strengthened by governments

The government has strengthened in-service teacher professional development programs significantly over the years. Need specific programs and on-job trainings has improved the skills of teachers for better delivery of education in classrooms. Increased competence has increased interest level of teachers in teaching as reported by head teachers. The training can be further strengthened by making them more need oriented by subjects or even topic within subject and making it on-job.

The transfer of teachers during academic years creates problem for head teachers

Unplanned transfers of teachers disturb the academic activity in schools and makes it harder for head teachers to manage. Almost half of the head teachers are facing this problem at fourth-grade level while the problem is even more severe for head teachers in elementary schools. The transfer of teachers during the academic year without consultation with head teacher can hamper the quality of teaching and learning.

Specific content based trainings for teachers at school level is needed

Head teachers reported lack of professional courses for teachers despite overall increase in professional development trainings. It might implicate the need for targeted subject based (topic based) trainings at school level as continuous activity without drawing relevant teachers from their workplace. Its format can be a senior colleague taking care

of the junior colleagues as part of jobs usually referred as mentoring.

The recruitment of content qualified but professionally untrained teachers is a challenge for head teachers

In recent years, school education department has tended to recruit teachers without professional qualification only on the basis of their academic qualification. The recruited teacher were given induction training and placed in schools for teachings in several provinces. Almost 1/3rd of the head teachers in primary schools reported this as handicap for newly recruited teachers while teaching in classroom. The challenge becomes bigger for teachers recruited in elementary schools.

Lack of AV aids in schools is a hurdle in quality teaching

The benefit of teacher trainings can only be realized if teacher are provided with conducive environment for teaching and learning in schools. The schools lack AV aids required for higher order learning. Almost 3/4th of the schools don't have AV aids need for quality teaching in classroom.

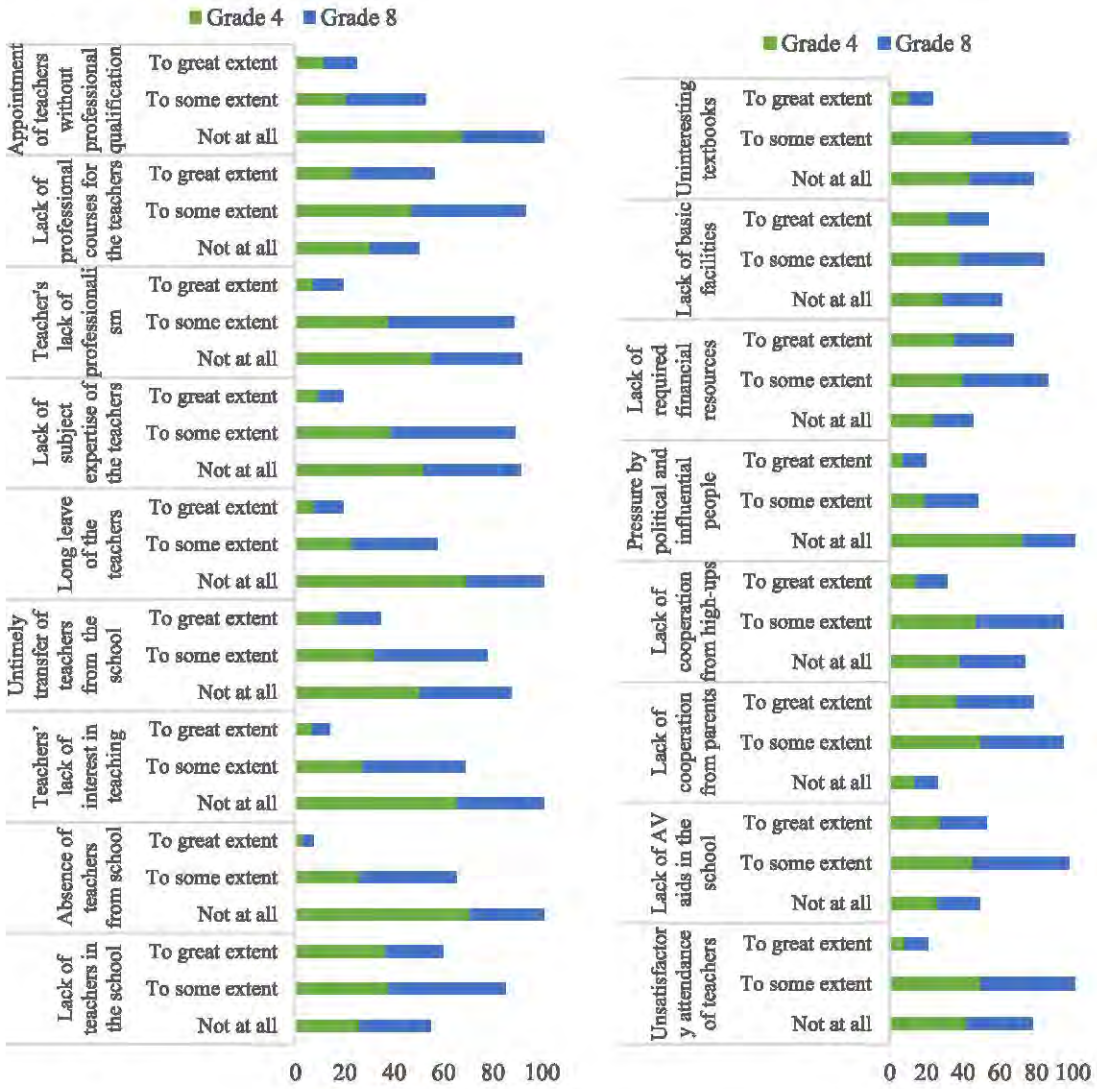


Figure 5.12: Common problems faced at school by head teachers

Despite several efforts by the School Education Department, school heads reported that parents support to school with regard to follow up of academic progress of their children required attention. Besides scheduled meeting with parents, it is difficult to contact parents to discuss the ways to support children in their study. More than 80% parents are not interested in knowing and discussing the progress of their children and school heads find it hard to involve them.

Head teachers find it difficult to bring parents to school, other than schedules parent-teacher meetings, to discuss student progress

Head teachers in both primary and elementary schools reported insufficient cooperation from the officials supervising schools from district management. More than 60% head teachers from primary and elementary schools reported lack of cooperation from their high-ups in administration in resolving their administrative and academic problem where they can be of help. Schools reportedly lack in financial resources and autonomy as reported by more than 2/3rd head teachers.

Mutual understanding of head teachers and district administration can result in better schools

Linked with lack of financial resources is the provision of basic facilities in schools which include electricity, boundary wall, useable washrooms, etc. Almost 70% of the head teachers reported lack of these provisions in their schools.

Conclusions

A substantial number of old aged male and female head teachers can be considered beneficial for schools due to being more experienced while the newly recruited young head teachers with higher level of academic and professional qualification can provide fresh blood to the whole system. Moreover, there needs to make essential changes in the promotion policy of the head teachers that could support the promotion of capable teachers to the position of head teachers based on their eligibility, performance, qualification and contribution to the profession for bringing dynamic leadership in schools. Keeping in view the current and future needs the situation of more boys' schools than girls' schools is alarming due to which not only the female teachers who are being recruited in boys' schools while may create hindrance for the girls participation in higher grade levels. The strong collaboration of parents can be helpful to improve the situation of student absenteeism in schools. Simultaneously, this may also be fruitful to combat with the contemporary challenges of moral and social development of students faced by head teachers.

Chapter 6
Students Learning Achievement Scores

This chapter provides details about the achievement scores of fourth grade and eighth grade students with respect to the personal, geographical and institutional factors. This chapter has been divided into three sections. Section one is about the background factors of learning achievements under which the provided information include the comparison of teacher-student achievement by subject, grade and location. Second section includes the information about the provinces/areas-wise situation and availability of physical and academic facilities in the schools. Last section is about the personal, parental, institutional factors influencing the achievement of students in fourth and eighth grade.

Section 1: Background Factors of Learning Achievements

Comparison of Teacher-Student Achievement by subject

The student performance corresponds directly with teacher performance

The data on achievement test in Urdu/Sindhi writing, Urdu/ Sindhi reading and Mathematics was collected from 740, 692 and 688 teachers respectively and 12915, 12890 and 13007 students respectively. Figure 6.1 shows average performance of teachers and students in all three subjects. Similarly, average performance of teacher and students in English writing, English reading and Science is shown. The data was collected form 861, 820 and 813 teachers and 14026, 14022 and 14133 students respectively in English writing, English reading and Science.

Figure 6.1: Subject results teachers & students (mean 500)

There is correspondence between teacher and student performance

Unlike earlier NEAS report, the performance of teachers in higher than their students. The professional development trainings for teachers has contributed in this regard. Another valuable aspect is correspondence in average marks between teacher and student performance in both fourth and eighth-grade. Students scored higher on subjects in which teacher scored higher, although students' performance remained quite below teacher performance.

Student Achievement by Provinces/Areas

The scaled mean (X= 500, SD= 100) score of students in all three subjects of fourth-grade and eighth-grade is shown in figure 6.2a and figure 6.2b by province and areas respectively. National score

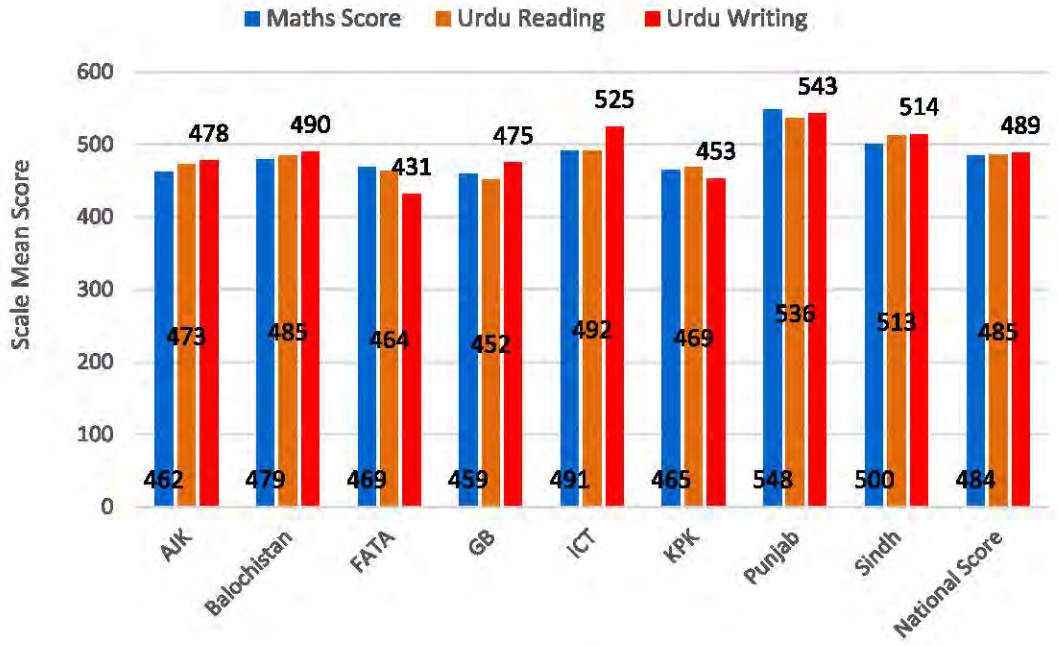


Figure 6.2: Achievement of Students in Fourth-grade in Provinces/areas

In fourth-grade, performance of students in Punjab and Sindh remained above 500 in all three subjects and in ICT students scored more than 500 in Urdu writing. For the students from rest of the provinces/areas performance remained below the scaled mean score of 500. (National score)

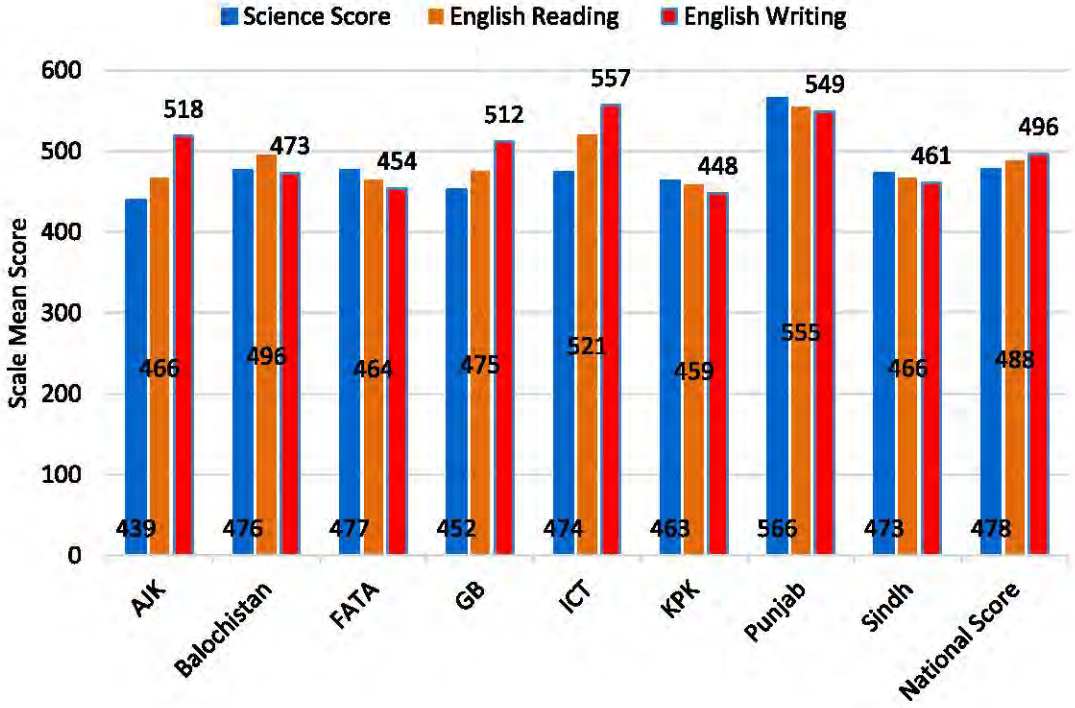


Figure 6.3: Achievement of Students in Eighth-grade in Provinces/areas

The mean score generally remained below 500 in all subjects except for Punjab in all subjects, Islamabad Capital Territory (ICT) in English Reading and English Writing, and Gilgit-Baltistan (GB) in English Writing.

Slight improvement has been noticed in student performance

Although the student performance increased marginally as compared to previous years but still there is need for improvement in performance all three subjects in fourth and eighth-grades. Science has traditionally been a difficult subject for students to deal with and still the condition is same in almost all provinces/areas in eighth-grade. Similarly, in fourth-grade, there is improvement in student score in mathematics but still improvement is required.

Habit of independent reading and writing needs to be encouraged

English reading and writing in eighth-grade students and Urdu/Sindhi reading and Urdu/Sindhi writing in students of fourth-grade require attention. There has been a major intervention, in last 3 years on improvement in reading and writing skills of the students at elementary level except in Punjab through Pakistan Reading Project. Students were provided with supplementary readers to improve their reading skills but the results hardly depict any significant change resulting in student performance. The habit of independent reading and writing needs to be encouraged and language writing based on crammed material needs to be discouraged in learning and assessment in both grades.

Section 2: Facilities in Schools by Provinces/Areas

Facilities in schools are segregated as physical facilities (Table 6.8) and academic facilities (Table 6.9). The selection of facilities is based on items focused by national, provincial and area governments as basic facilities required for a school to function perfectly.

Average situation of facilities in the Schools

Mostly schools are provided with basic facility but not uniformly

Governments have invested in providing physical facilities like electricity, clean drinking water, boundary wall, playgrounds, laboratories and libraries in schools. Mostly schools are provided with facility of electricity and water but still it is not uniform across the provinces/areas. Moreover, none of the province except Punjab (Only in elementary school) managed to provide these two basic facilities to all schools.

Table 6.1: Physical facilities in the Schools

Grade	School Province/area	School electricity	School water	School Boundary/fence	School playground	School laboratory	School library
Fourth-Grade	AJK	58.24	72.12	31.44	30.84	22.42	16.37
	Balochistan	76.60	74.16	48.57	25.59	22.64	20.88
	FATA	40.26	71.82	50.05	18.72	1.74	2.18
	GB	69.34	91.54	31.71	46.30	21.14	21.14
	ICT	94.34	97.48	50.31	49.69	28.30	40.88
	KPK	83.51	92.93	67.83	16.46	1.86	11.24
	Punjab	96.51	99.04	84.88	40.44	32.89	35.83
	Sindh	63.15	87.44	42.04	26.38	7.68	2.57
	Total	78.84	89.58	61.29	30.31	17.79	19.83
Eighth-Grade	AJK	86.91	93.96	18.63	32.12	50.86	33.53
	Balochistan	84.30	84.13	44.22	46.55	51.21	41.61
	FATA	59.28	97.37	58.31	49.58	62.60	48.06
	GB	82.76	88.89	36.59	44.44	35.82	34.10
	ICT	100.00	100.00	47.40	59.97	81.69	68.99
	KPK	87.18	94.77	67.73	37.01	62.64	44.17
	Punjab	97.51	99.17	84.53	58.31	79.78	80.11
	Sindh	81.84	95.30	47.20	44.97	54.99	33.74
	Total	88.55	95.65	61.82	48.10	65.33	54.58

Lack of facilities affect the practical performance, hence quality education suffers

A considerable number of schools lack school boundary wall (AJK & GB), playground (KPK, Baluchistan, FATA & Sindh), laboratory and library (FATA, Baluchistan, AJK, GB, KPK & Sindh) of grade four however the conditions are far better in grade eight. The schools lacking or having insufficient physical facilities are unable to provide the opportunities for practically performing scientific experiments and sufficient reading materials other than textbooks to enrich the students' learning. Hence, it limits a school's capacity to deliver quality education and students chances of developing higher order learning skills.

The situation in primary schools is poorer than as in elementary schools. School facilities and school environment plays a vital role in

early development of students. The faculties of mind are fast developing in the early grades and students need supportive but challenging school environment more than any other stage in their academic life but unfortunately, primary school seem the most ignored.

Facilities at primary level are worse than elementory level

Table 6.2: Educational facilities in the Schools (continuation of table 6.8)

Grade	School Province/area	Teaching kit/Science kit/ Math kit	Teachers guides	Charts/models	National curriculum booklets	School fan	School heating facility	Dispensary or medical facility
Fourth-Grade	AJK	37.84	54.57	47.45	42.47	40.81	7.95	4.98
	Balochistan	35.35	55.98	73.65	56.73	44.28	10.02	4.88
	FATA	20.24	54.84	59.96	42.00	32.54	0.00	6.53
	GB	55.60	63.64	89.22	43.97	29.60	27.70	0.00
	ICT	50.31	75.47	81.13	65.41	72.33	31.45	9.43
	KPK	33.32	92.96	75.47	77.85	65.19	0.37	1.94
	Punjab	55.66	96.44	90.79	85.28	82.04	8.05	19.79
	Sindh	15.53	47.14	59.53	66.99	42.52	2.62	6.37
	Total	38.45	75.77	75.26	69.83	59.92	6.99	9.40
Eighth-Grade	AJK	46.22	63.54	61.63	44.31	18.83	28.60	4.43
	Balochistan	55.34	43.95	75.25	38.30	34.62	10.58	8.43
	FATA	63.57	46.95	61.36	39.75	25.48	5.12	12.33
	GB	47.13	62.84	96.17	59.20	33.52	34.67	6.32
	ICT	56.42	58.20	67.35	60.11	19.13	27.32	9.84
	KPK	58.26	36.09	79.63	39.44	21.08	3.53	9.18
	Punjab	74.85	88.00	93.36	69.83	11.05	16.49	19.08
	Sindh	44.23	43.68	55.54	52.29	34.68	0.78	2.35
	Total	60.05	60.12	77.41	54.03	21.61	12.14	11.00

Some provinces/areas like AJK, FATA GB and Sindh need more attention than other areas as the percentage of school having these basic facilities is alarmingly low. While, the heating and dispensary or medical facilities are substantially missing across all the provinces and other areas mentioned in the above table.

Medical and heating facilities are missing across all provinces

Combined Score vs. School Facilities

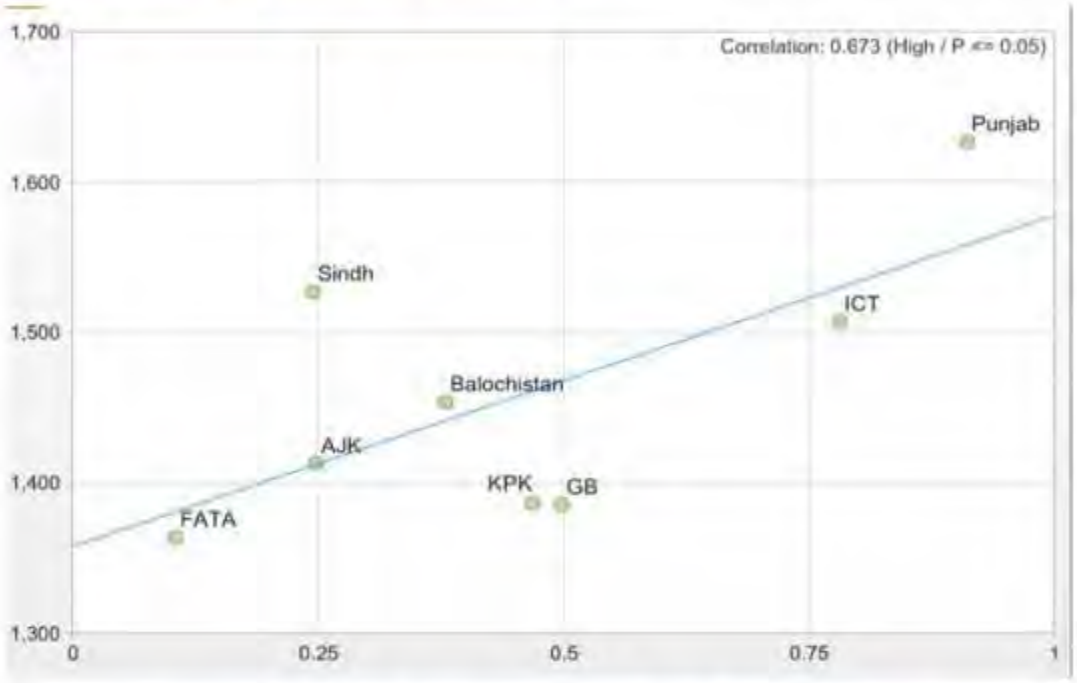


Figure 6.4: Grade 4 Combined Score vs. School Facilities

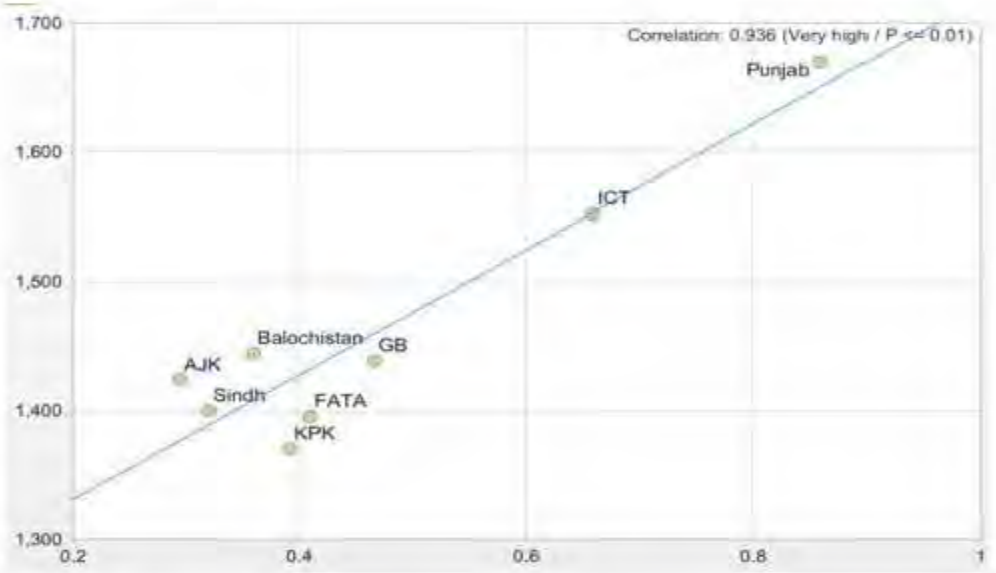


Figure 6.5: Grade 8 Combined Score vs. School Facilities

Section 3: Factors Influencing Achievement in Eighth-Grade

In this section presents school level and students level factors influencing student achievement. HLM was applied to determine factors contribute in student achievement.

Absenteeism and Achievement

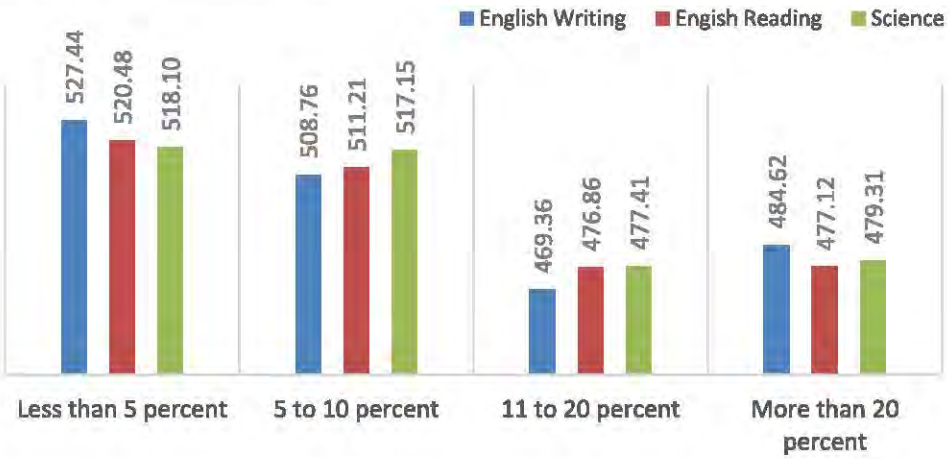


Figure 6.6: Relationship of Student Absenteeism and Achievement

Students in schools reported with minimum absenteeism performed better in the three subjects than those in schools with more absenteeism was common among students. This shows that the students who show more commitment toward school actually gain more in term of performance.

Less absentees shows higher achievement

Level of School

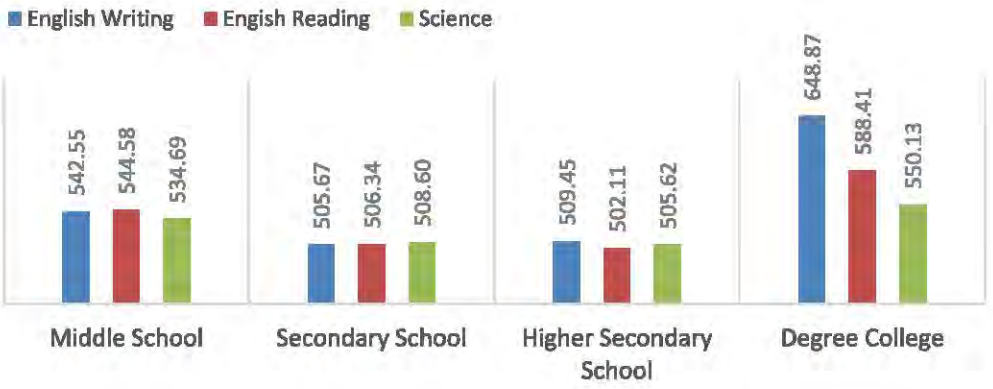


Figure 6.7: Relationship of School Level and Achievement

The performance of students in degree colleges is found far better in all three subjects compared to all other school levels (i.e. middle, secondary and higher secondary school). However, performances of students in "secondary" and those in "higher secondary" school levels were poor than that of students in "middle" school level.

The secondary level showed the worst performance among all level

School Location

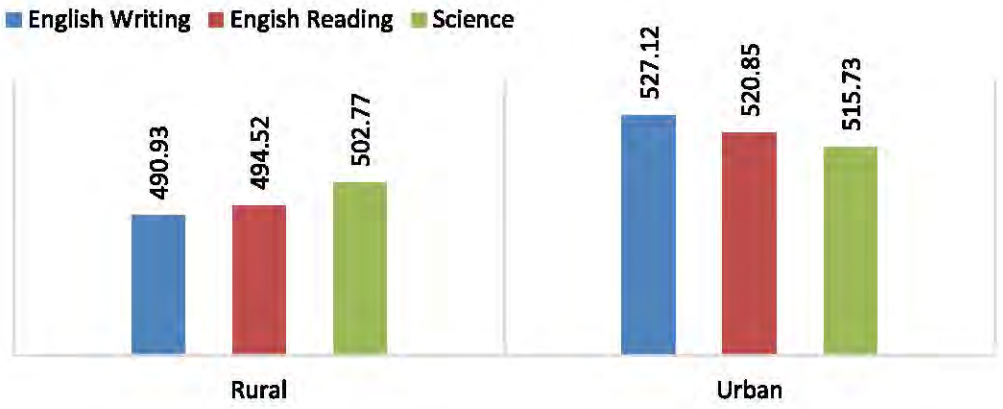


Figure 6.8: Relationship of School Location and Achievement

Student attending school located in urban areas performed better in all the three subjects at grade eight than student attending schools located in rural areas.

Administrative Gender of School

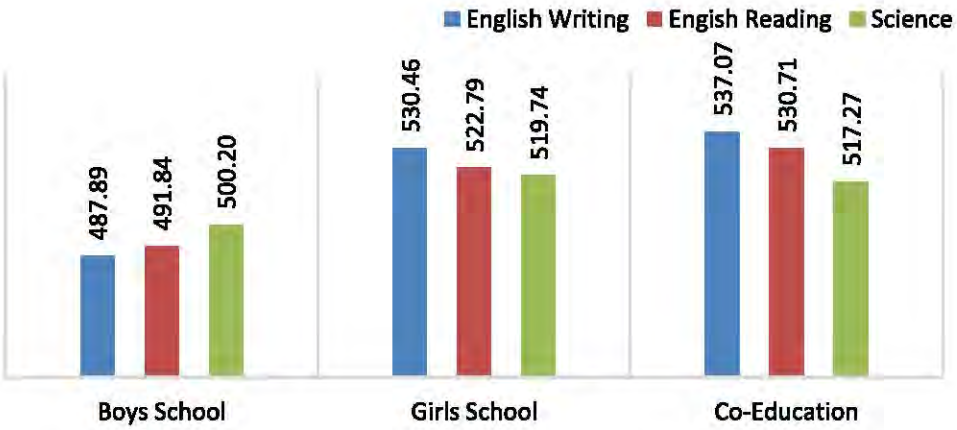


Figure 6.9: Relationship of School Gender and Achievement

Co-Education schools performed better than boys girls schools

Students in Co-education schools performed better in all subjects than the students in boys' schools. Likewise, the students in co-education schools in the subject of English reading and writing performed better than student in girls' schools. It is found that at elementary level co-education schools are private schools. This result affirms the general concept that private schools perform better than the government schools and girls are performing better than boys' schools.

Head Teacher Experience

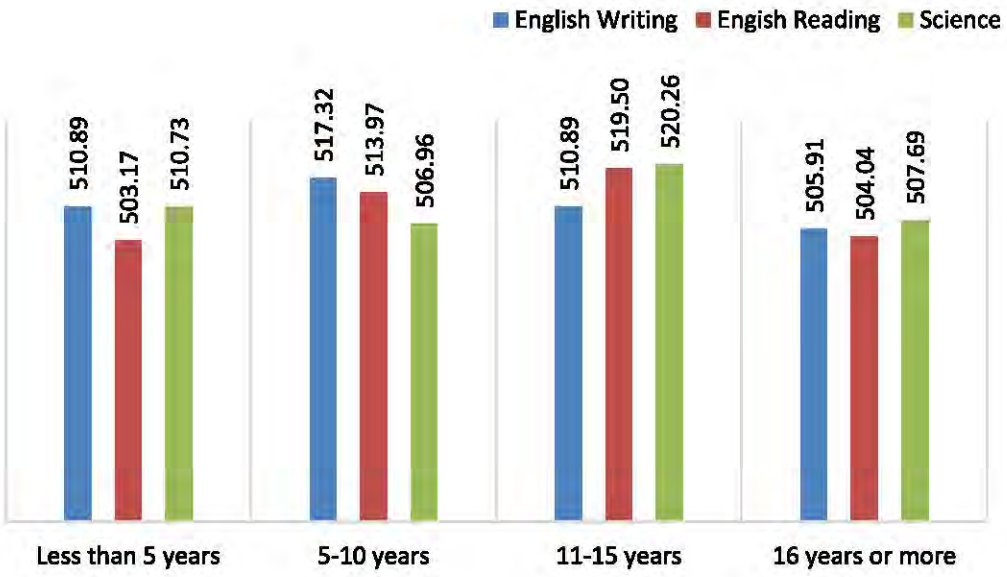


Figure 6.10: Relationships of Head Teacher Experience and Achievement

Results show that working experience of head teachers is inversely proportional to the performance of the students in all three subjects. The higher the working experience of head teachers the lower will be the performance of students. The result might be due to the reason that mostly senior teachers lose interest in school activities.

Higher teachers performance is inversely proportional to their experience

School Type

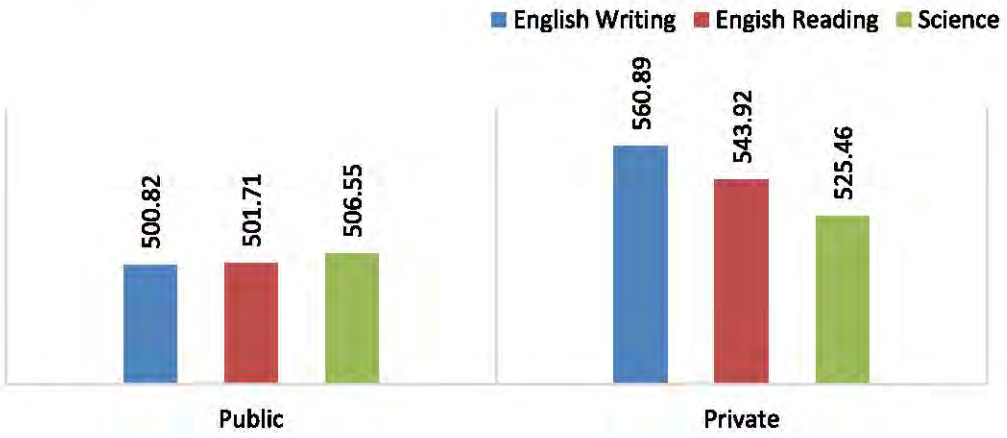


Figure 6.11: Relationship of School Type and Achievement

Student in private schools significantly outperformed their counterparts in public schools in all three subjects.

Right Age of Admission and Achievement

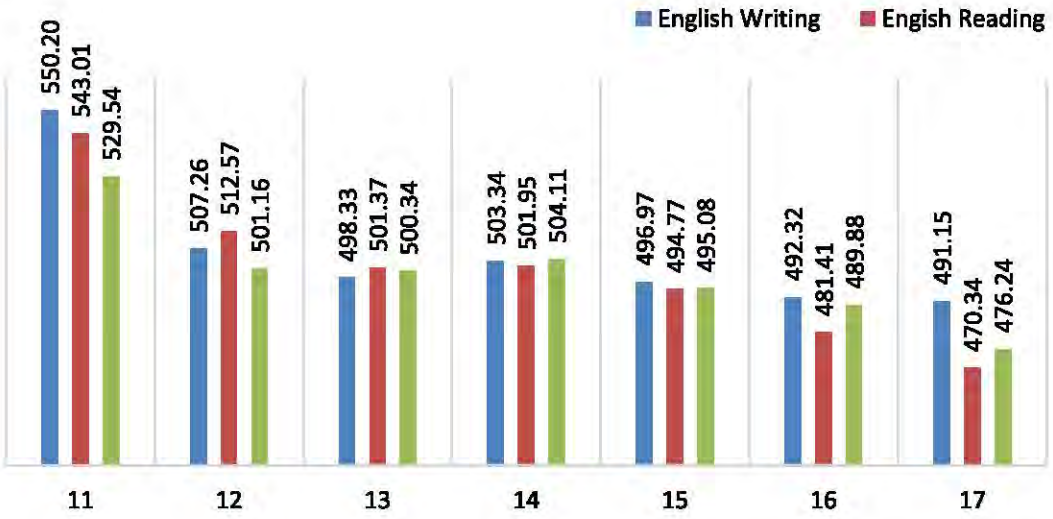


Figure 6.12: Relationship of Student Age and Achievement

Younger student performed better than older students in all the three subjects. The right age of students for grade eight can be assured by minimizing dropout and late entrant cases.

The more younger are students better they perform

Checking homework by Teachers

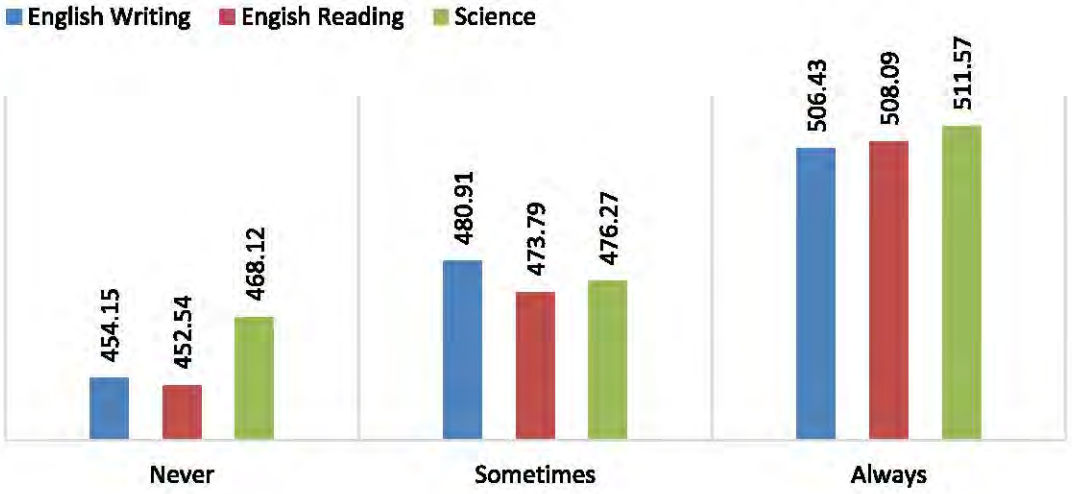


Figure 6.13: Relationship between Achievement and Homework Checking by Teachers

Students who had their homework checked by their teachers more frequently did better in all subjects than those who had homework rarely or never checked by their teachers.

Checking of homework put positive impact on performance

Feedback on homework by Teachers

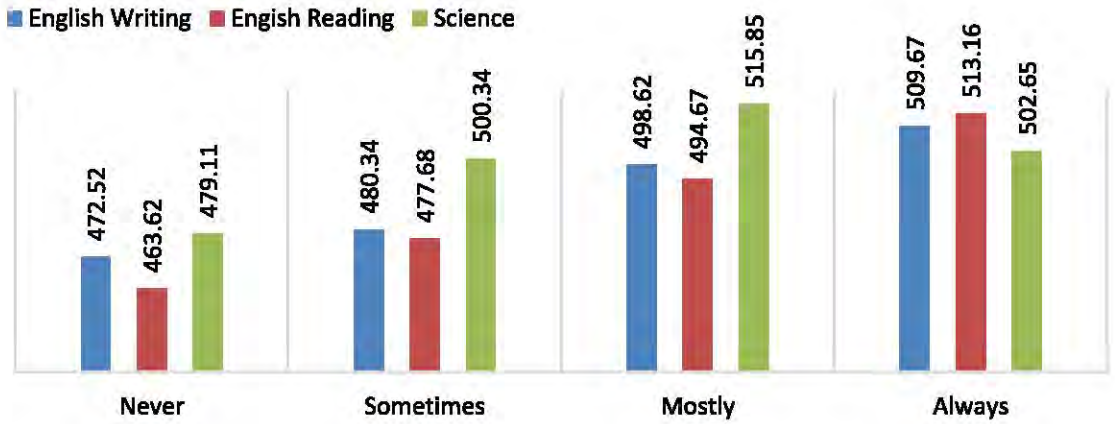


Figure 6.14: Relationship between Achievement and Homework Checking by Teachers

Students who had homework mistakes pointed out by their teachers more frequently did better in all the three subjects than those who had homework mistakes rarely or never pointed out by their teachers. This shows the interest of teacher in student actual learning improves them and maintain their interest in study.

Teachers individual attention improves learning of students

Qualification of Parents

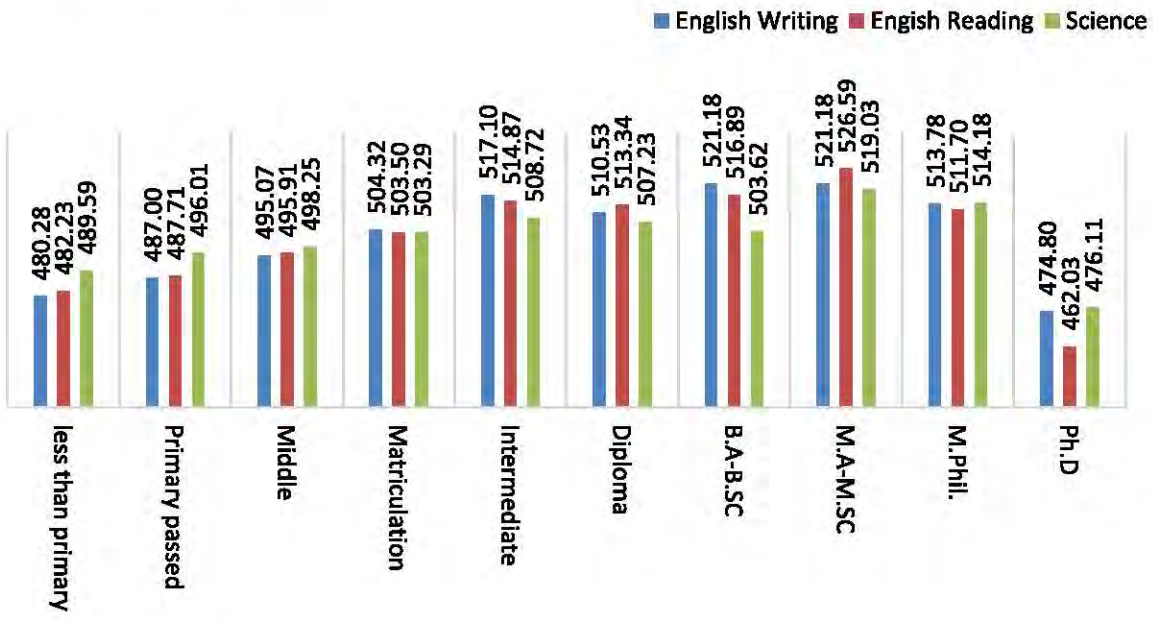


Figure 6.15: Relationship between Achievement and Qualification of Parents

Students whose parents were highly educated did better in all the three subjects than the students whose parents were illiterate, or have completed middle level education. However, variance towards

Parents higher education help student perform better

low performance of students' can be observed whose parents have done PhD. The findings might be due to the least commitment of parents for the academic activities of their kids.

Achievement by Gender

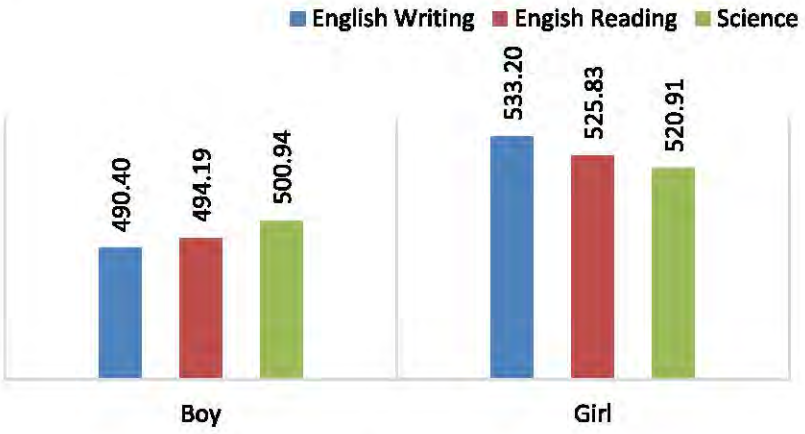


Figure 6.16: Relationship between Achievement and Gender of Student

Girls significantly performed better than boys in all subjects. The result affirms general understanding about this notion.

Girls perform better than boys

Accessibility of School

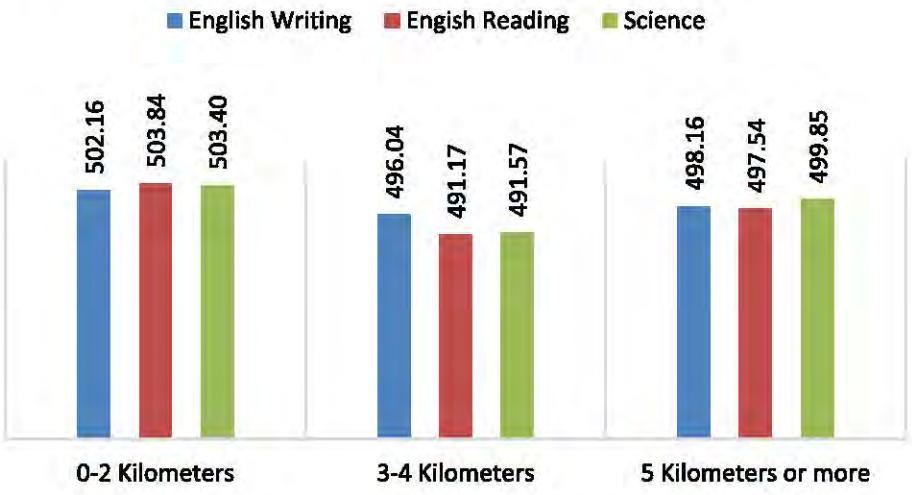


Figure 6.17: Relationship between Achievement and Distance of School from Home

Students with shorter home to school distance performed better than students who travel long distance to school in all three subjects at grade eight.

Use of Local Language in Classroom

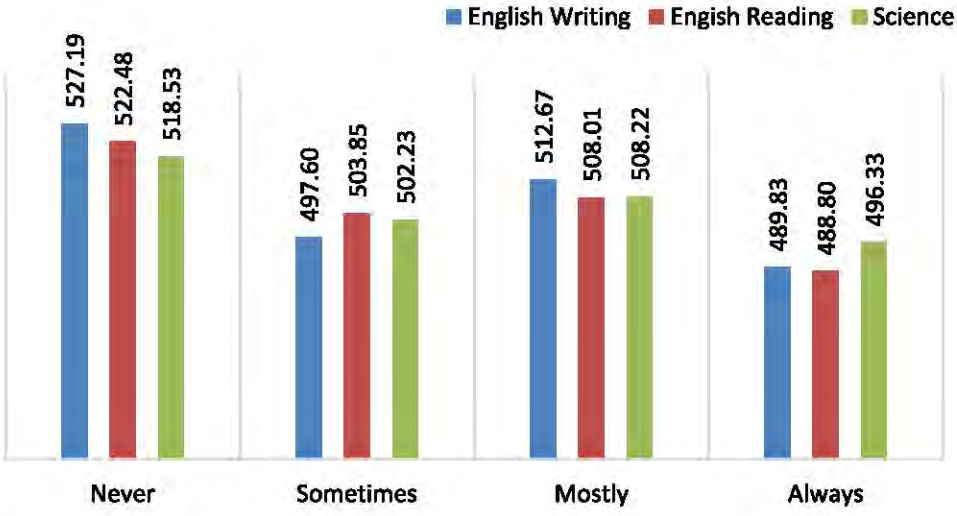


Figure 6.18: Relationship between Achievement and Use of Locale Language in Class

Teaching in local language showed poor result

Students who were taught by teachers frequently using local language to explain things during science or reading lessons did significantly worse than students who rarely or never used local language to explain things during such lessons. The possible reason of this finding might be that usually teachers use local language to explain the concept while in our culture students usually prefer to learn by rote memorization due to which it is more feasible for students to use the textbooks or materials in whatever the language it has been available to them instead of using or understanding the content in their local language.

Additional Help for Students

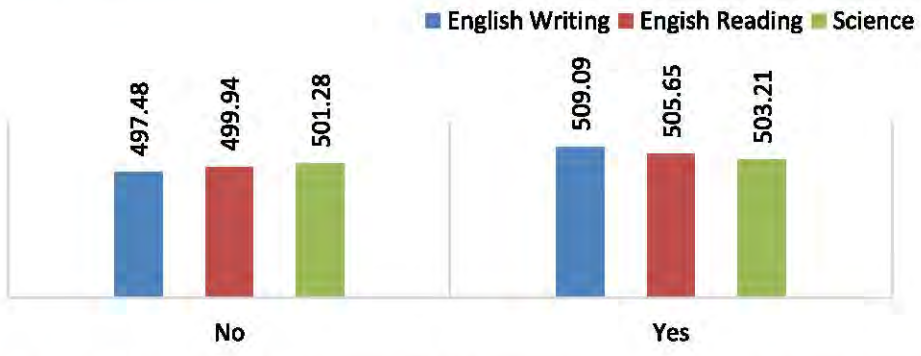


Figure 6.19: Relationship between Achievement and Paid help at home

Extra tuition help in better performance

Students who took paid extra tuition did better than those who did not take such tuition. However, the difference among students was not very significant

Section 4: Factors Influencing Achievement in Fourth-Grade

The factors contributing significantly in the achievement of students at student and school level are identified to conduct subsequent analysis as following.

Experienced Head Teachers

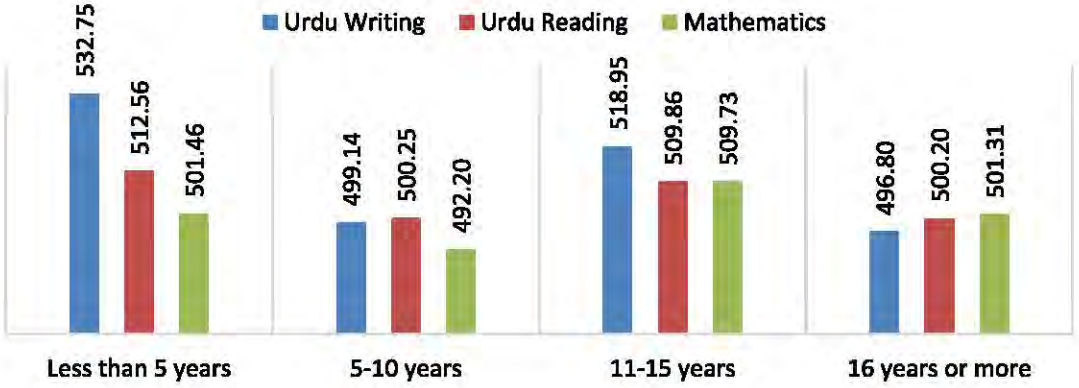


Figure 6.20: Relationship between Achievement and Experienced Head Teacher

The performance of head teacher with higher experience

Students in school, which had newly appointed head teachers performed better than the rest of the students in other schools running under the administration of experienced heads teachers promoted through traditional promotion system in schools. Surprisingly, the most experienced head teachers showed the lowest performance. This inverse proportion of teaching experience and student performance may be due to the fact the teachers with more experience have old professional degrees and less qualified or motivated than the newly recruited young and highly qualified teachers.

Absenteeism and Achievement

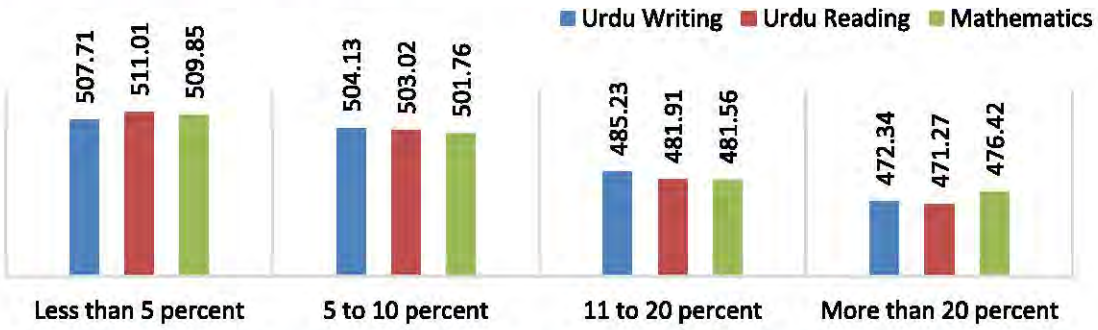


Figure 6.21: Relationship between Achievement and Absenteeism in Schools

Less absentees have better effect on performance

Students in schools with less student absenteeism did better in all the three subjects (i.e. mathematics, Urdu/Sindhi reading and Urdu/Sindhi writing) than those in schools were absenteeism was common among students.

Locale of Schools and Achievement

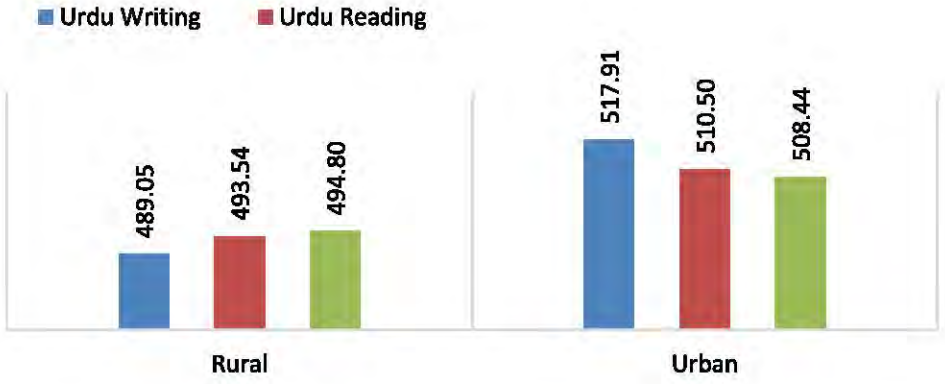


Figure 6.22: Relationship between Achievement and Local of School

Student attending school located in urban areas did significantly better in all subjects than student attending schools located in rural areas.

Urban school students performed better than rural school

Type of School

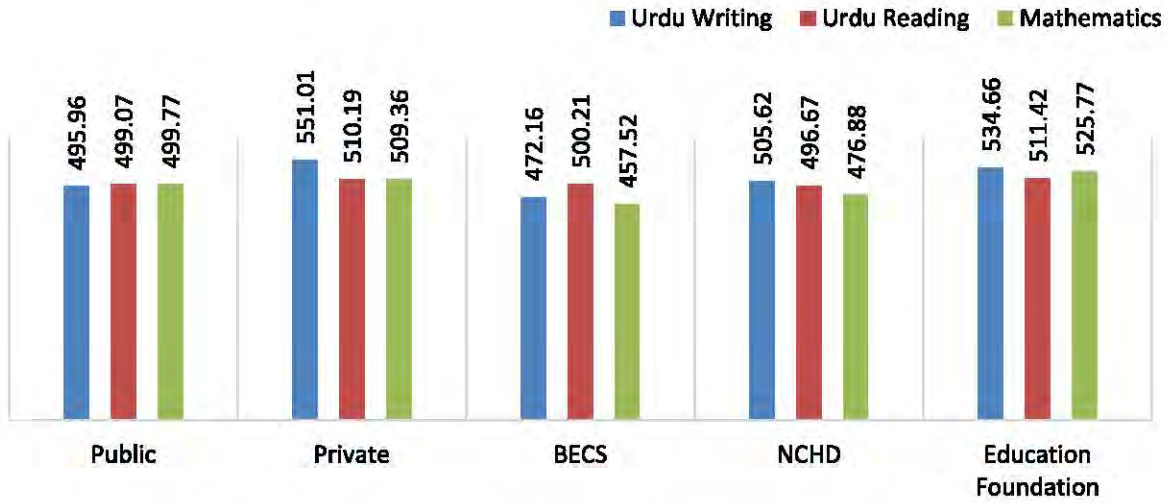


Figure 6.23: Relationship between Achievement and Type of School

Students in private schools performed better than their counterparts at public schools. Students in foundation schools outperformed students in public schools as well. The performance of students in BECS is lowest as compared to students in other type of schools. Community Schools enroll students who fail to enroll in formal schools and they are taught through accelerated program in one-room school in multi-grade teaching environment by teacher hired form within community.

Students enrolled in private schools have performed better than students in other type of schools

Availability of Additional Books at Home

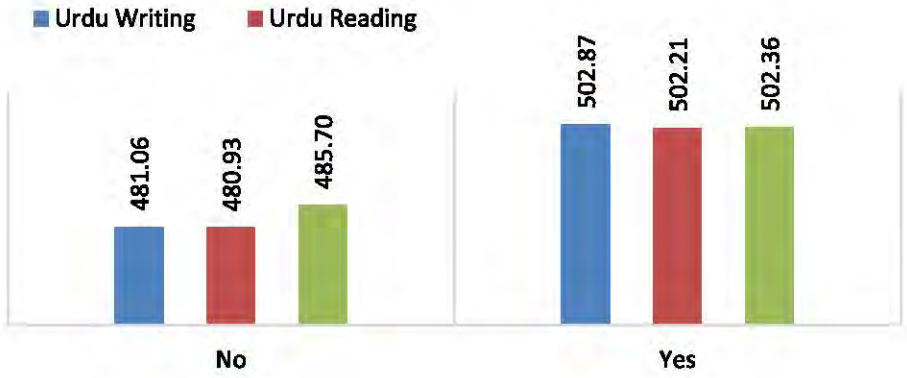


Figure 6.24: Relationship between Achievement and Availability of Books at Home

Students who had books for use at home did significantly better than those who had no books available at home.

Completion of Course book in Classroom

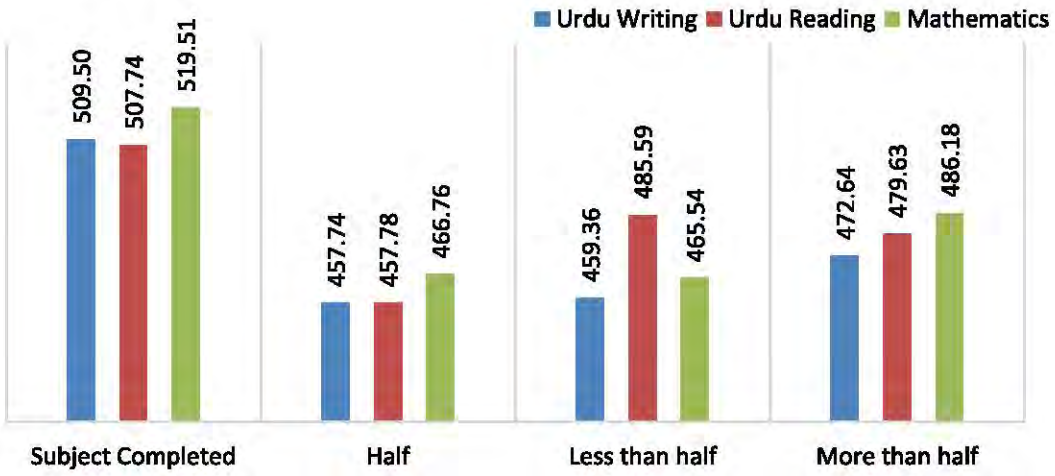


Figure 6.25: Relationship between Achievement and coverage of Course book

Students who reported that they had completed all (or nearly all) of the course book did better in all the three subjects (mathematics, Urdu/Sindhi reading and Urdu/ Sindhi Writing) than their counterparts who said they had not completed the course book.

Students who completed course work performed better

Right age of Admission in School

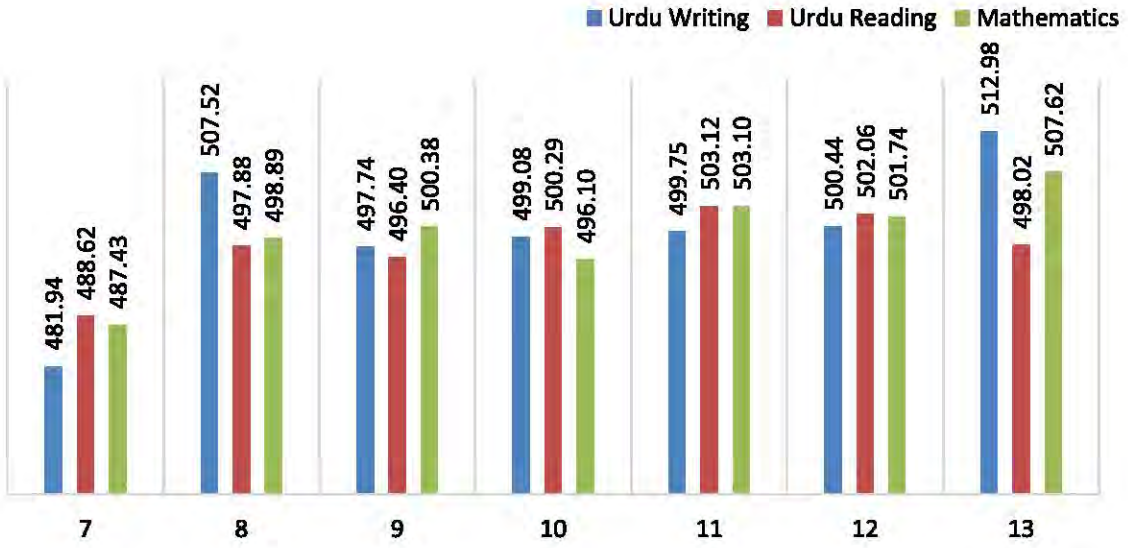


Figure 6.26: Relationship between Achievement and Age of Students

The results in the graph do not appear to establish any relationship between age and performance of students at grade four in all three subjects.

Student Achievement by Gender

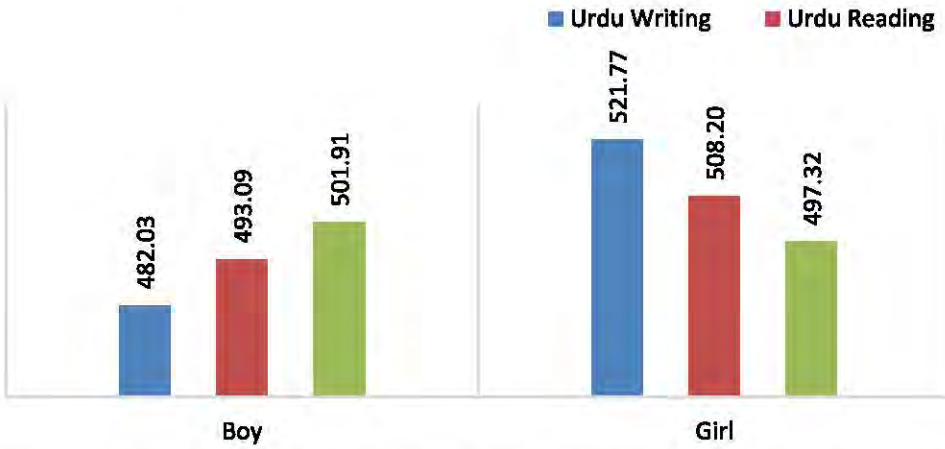


Figure 6.27: Relationship between Achievement and Gender of Student

Girls performed far better than boys in Urdu/ Sindhi reading and Urdu/ Sindhi writing but there was no significant difference of boys and girls performance in the subject of mathematics.

Overall girls performed better

Getting Homework

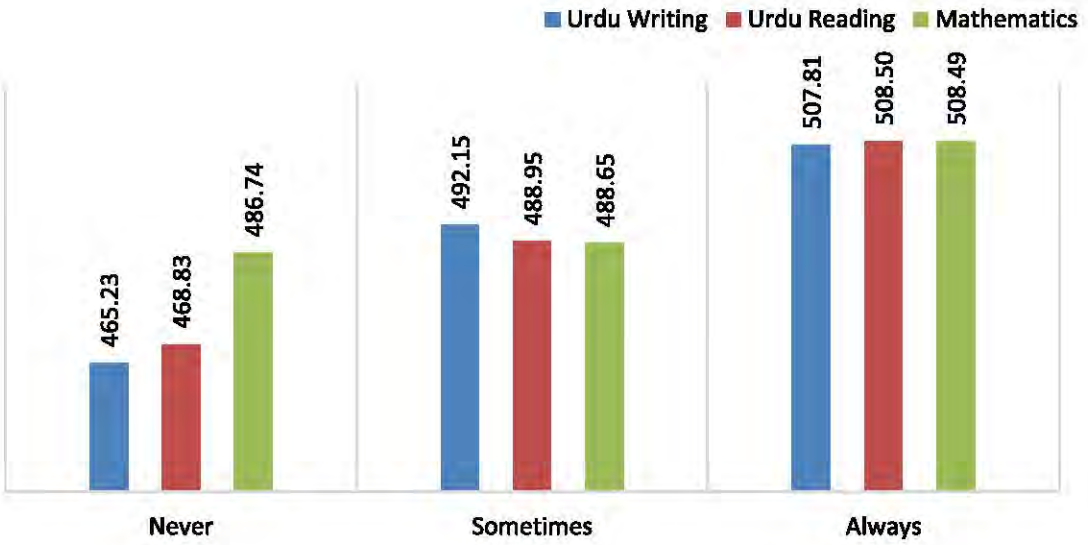


Figure 6.28: Relationship between Achievement and Homework

Students who were given homework frequently did significantly better in Urdu/ Sindhi reading (at 10% level), Urdu/Sindhi writing and mathematics (at 5% level) than students who were given homework less frequently or not given homework at all.

Giving homework help performance better

Checking Homework

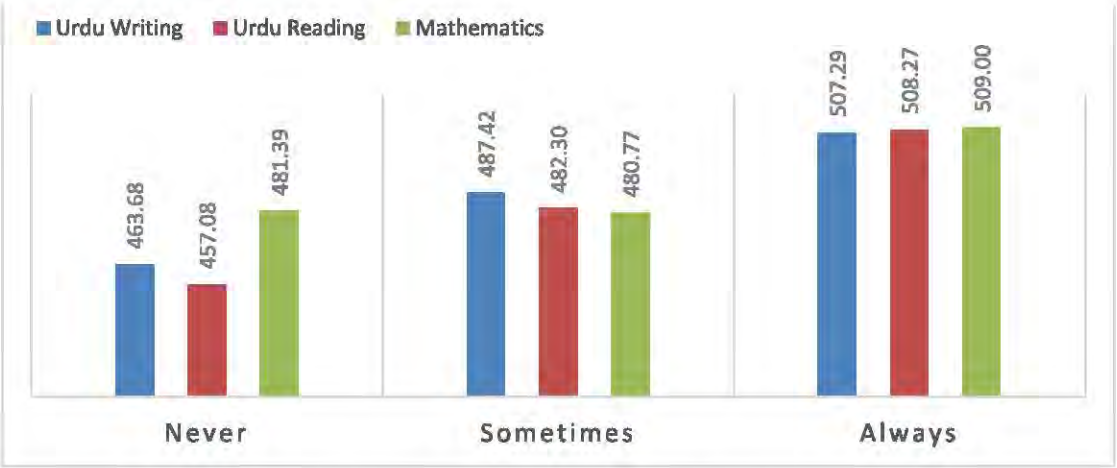


Figure 6.26: *Relationship between Achievement and Checking of Homework*

Student who had their homework checked by their teachers more frequently did better in all the three subjects than those who had homework rarely or never checked by their teachers.

Feedback on Homework

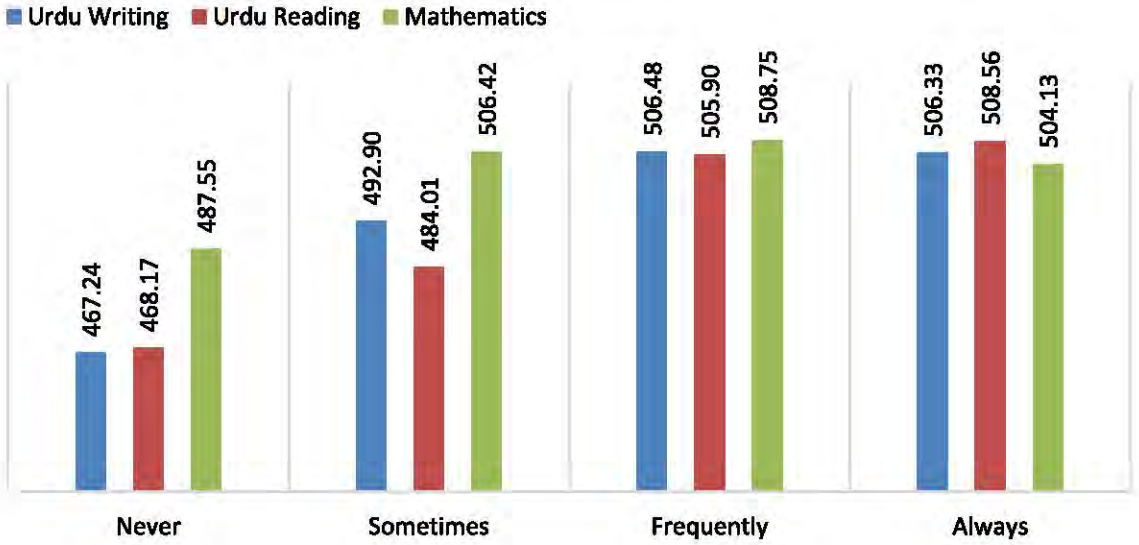


Figure 6.29: Relationship between Achievement and Feedback on Homework

Student who had homework mistakes pointed out by their teachers more frequently did better in mathematics than students who had homework mistakes rarely or never pointed out by their teachers.

Pointing out mistakes in homework shows better results

Additional Help for Students

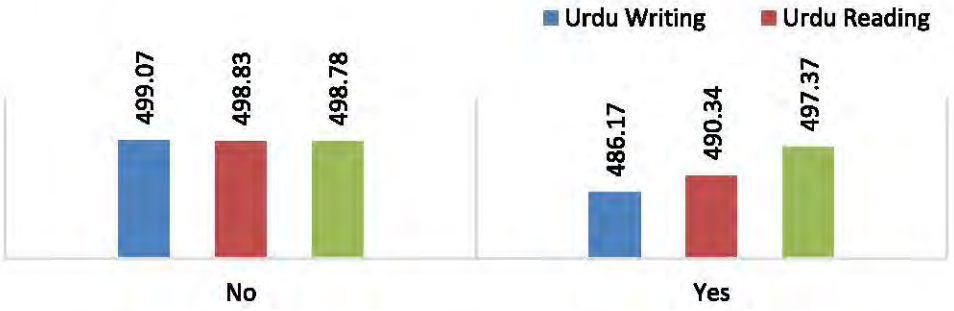


Figure 6.30: Relationship between Achievement and Help in doing Homework

Students receiving help of others in completing their homework showed relatively low achievement in Urdu writing and Urdu reading. This can be explained in different ways. It can be assumed that only poor performing students seek help from others or students good in studies can do their homework independently without help of others.

Week performers in studies need assistance from others in completing their homework

Qualification of Parents

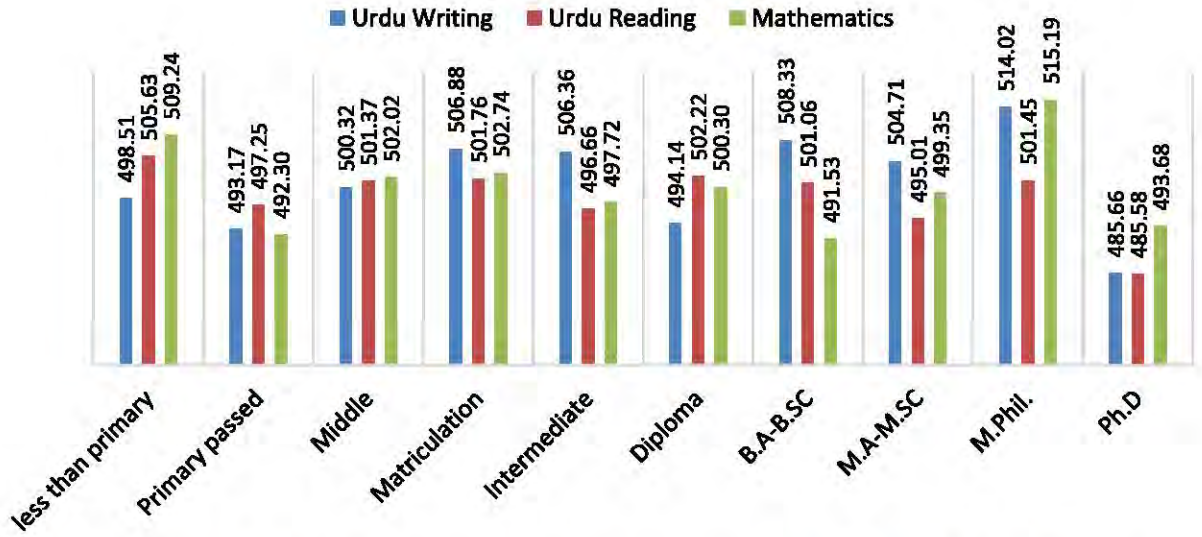


Figure 6.31: Relationship between Achievement and Qualification of Parents

There is no consistent pattern in student performance with respect to parent's level of education for students in fourth grade. The data has no evidence to determine the help actual help given by the parents to their children in studies which could be a direct indicator of extent and nature of parental support. It can be assumed that content to be taught in fourth grade is basic enough for parents of any qualification to handle, it is the time given to students by parents which matters in student achievement.

Parents' level of education cannot be used as determinant of student performance in fourth grade.

Use of Local Language in Classroom

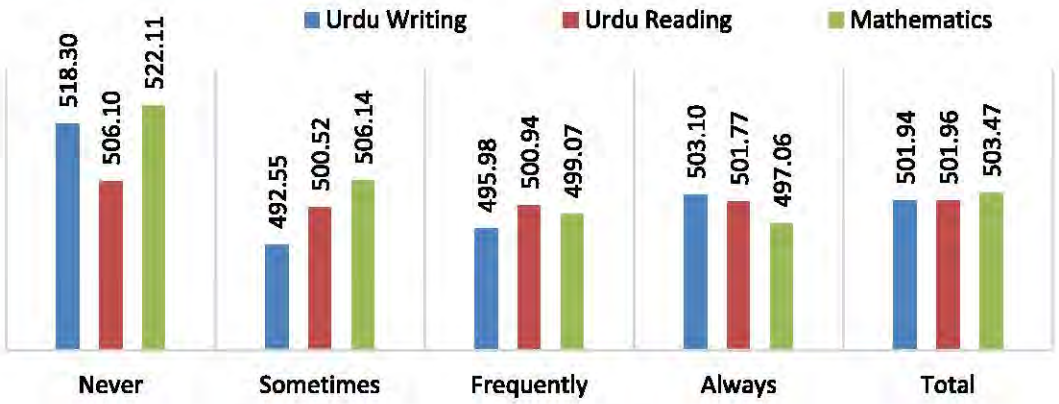


Figure 6.32: Relationship between Achievement and Use of Local Language in Classroom

Teaching students in local language is prevalent in rural areas. The data shows that students taught in local language could not perform as well as students taught in other medium of instruction (Urdu or English). This is contrary to general assumption that teaching in

student's first language contributes positively in student learning. The official medium of instruction is Urdu in all schools except schools in Sindh. The assessment of students' performance is in Urdu (medium of examination) irrespective of language of instruction which makes it difficult for students taught in local language to switch medium while doing examination.

Paid Additional Help for Students

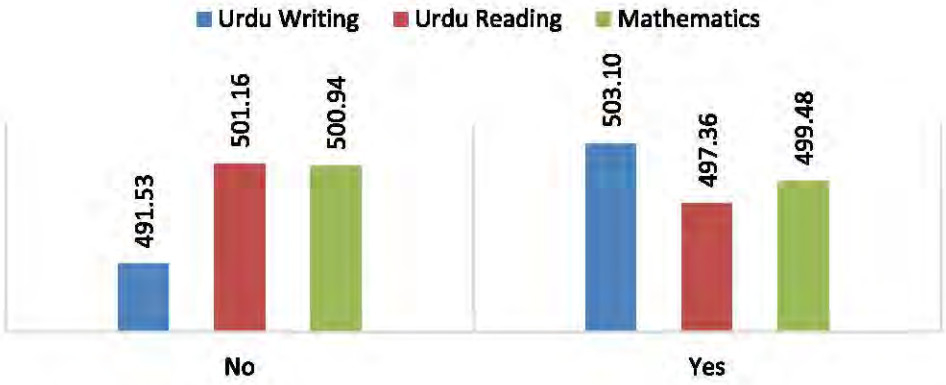


Figure 6.33: Relationship between Achievement and Paid Tuition at Home

Extra tuition helps in performance

Parents who can afford arrange for private tutors at home to help their children in studies. This additional coaching facility is used to help students in completing their homework, studying course content ahead of other students, supervised practice etc. The data chows that students who received tuition performed better than those who did not take such tuition.

Conclusions

The strong association in teaching performance of teachers and students' achievement for each subject at both levels of education may be concluded as investing in teachers is parallel to improving the students' performance. Additionally, the absence of basic infrastructure and academic facilities especially in AJK, FATA GB and Sindh need more attention to improve the achievement of students. The teaching experience of teachers does not provide a fruitful basis. The better performance of eight grade students in co-education system is because co-education schools at this level are private. Moreover, the factors that contribute in the performance of students are the appropriate age of students with their grade level, school to home distance, parents' qualification and involvement in school activities and students' regularity.

Appendices

Appendices

Appendix-A

National Assessment Frameworks

The assessment frameworks being used by NEAS for NAT – 2016 for the following subjects are based on two strands, content strand and ability strand. An overview of the frameworks is given below:

Mathematics

Mathematical Content
Number sense, properties and operations
Measurement, geometry, spatial sense
Information Handling
Algebra and functions
Mathematical Abilities
Conceptual Understanding
Procedural Knowledge
Problem solving

Science

Content Domain
Life Sciences
Physical Sciences
Chemical Sciences
Earth Sciences
Cognitive Domain
Conceptual Understanding
Scientific Investigation
Practical Reasoning

Urdu & English Language

READING
Context for Reading
Reading for literary experience, information, and to perform a task

Aspect of Reading
Forming a general understanding, developing interpretation, making reader text connections, and examining structure and content, knowledge of language and vocabulary

WRITING

Narrative writing
Informative Writing
Persuasive Writing

Appendix-B

TORs of National Planning and Coordination Committee (NPCC)

- To develop an overall strategy for the national and international (TIMSS) assessments, and submit it for approval to the National Steering Committee (NSC) headed by federal Secretary, M/o Federal Education and Professional Training.
- To develop and regularly update the overall implementation plan for the national assessment.
- To prepare rolling annual work plans for national assessment activity.
- To prepare regular evaluative reports on assessment activities and progress, for submission to the NSC.
- To develop a policy and format for defining subject competencies based on the existing curriculum, any new curricula to be introduced in Pakistan, and internationally-agreed goals for basic education.
- To develop a standard format for the subject specification documents to be produced by the subject committees.
- To develop standard procedures and forms for submitting assessment items.
- To develop standard procedures for the administration and scoring of the assessment, and express these in manuals for administration and scoring.
- To assure the quality of all NEAS products and activities, including their conformity with the standards and policies laid down.
- To inform decision-makers and others about NEAS plans and activities, and build national and provincial consensus in support of the NEAS.
- To made decisions on consensus basis rather on 2/3 majority.

Appendix-C

List of Participants in First Meeting of NPCC

Following were the participants of the meeting:

1.	Dr. Syed Kamal ud Din	Director	NEAS Islamabad
2.	Mr. Nasir Iqbal Malik	CEO	PEC Lahore
3.	Mr. Mushtaque Ahmed Shahani	EOC	PEACE Sind
4.	Prof; Saadullah Tokhi	CEO	BEAC Quetta
5.	Mr. Abdul Hakim	DE	Gilgit-Baltistan
6.	Dr. Nasir Mehmood	Coordinator	PEC Lahore
7.	Mr. Mukhtiar Muhammad	Deputy Director	PEACE KP
8.	Mr. Muhammad Shafique	DY Director	KP
9.	Mr. Muhammad Kashif Khan	AD	FATA
10.	Mr. Aftab Ali	Coordinator	PEACE Sind
11.	Mr. Abdul Razzaque	Coordinator	BEAC Quetta
12.	Mr. Javed Iqbal Khwaja	Coordinator	KEACE AJK
13.	Raja Maqbool Ahmed Khan	DCRD	AJK

Appendix-D

List of Participants in Second Meeting of NPCC

Following were the participants of the meeting:

1.	Mr. Muhammad Taimur Khan	Joint Secretary	Ministry of Federal Education and Professional Training
2.	Prof. Saadullah Khan Thokhai	Chief Executive Officer	Balochistan Examination and Assessment Examination Commission (BEAC).
3.	Mr. Mushtaque Ahmad Shahani	Director	Bureau of Curriculum and Extension Wing, Sindh Education Department.
4.	Mr. Faizullah Khan Lone	Director (Schools)	Gilgit-Baltistan Education Department.
5.	Mr. Hanifur Rehman	Additional Director	Directorate of Education, FATA.
6.	Mr. Zulfiqar Khan	Additional Director	Education Department, KP.
7.	Dr. Syed Kamal -Ud-Din	Director	National Education Assessment System
8.	Mr. Aftab Ali	Deputy Director	Bureau of Curriculum and Extension Wing, Sindh Education Department.
9.	Dr. Nasir Mehmood	Coordinator	Punjab Examination Commission.
10.	Dr. Muhammad Azeem	Psychometrician	Punjab Examination Commission.
11.	Mr. Abdul Razzaq	Coordinator	Balochistan Assessment and Examination Commission.
12.	Mr. Muhammad Shafique	Coordinator	Education Department, KP.
13.	Mr. Faisal Shakir	Asstt. Controller	Gilgit-Baltistan Education Assessment System
14.	Mr. Saleh Shah	Coordinator	Education Department, FATA.

CHARACTERISTICS OF THE VARIABLES USED IN NATIONAL ASSESSMENT 2016

Table 3.1: Student's Age Reported by Test Administrator

	Fourth-grade			Eighth-grade	
Age	N	%	Age	N	%
7	64	0.5	11	45	0.3
8	495	3.9	12	608	4.4
9	2911	23	13	5289	37.9
10	3751	29.7	14	4623	33.1
11	2729	21.6	15	2635	18.9
12	1571	12.4	16	700	5
13	735	5.8	17	45	0.3
14	295	2.3	18	7	0.1
15	73	0.6	19	7	0.1
Total	13197		Total	13959	

Table 3.2: Gender Reported by Student

Gender	Fourth-grade		Eighth-grade	
	N	%	N	%
Boy	7250	54.9	8738	61.2
Girl	5947	45.1	5549	38.8
Total	13197	100	14287	100

Table 3.3: Academic Qualification of Parents (Self-Reported)

Academic Qualification	Fourth-grade		Eighth-grade	
	N	%	N	%
Less than primary	2833	23.3	2086	15.3
Primary passed	2362	19.4	1555	11.4
Middle	1645	13.5	2149	15.8
Matriculation	2679	22	3671	27
Intermediate	1037	8.5	1666	12.3
Diploma	193	1.6	342	2.5
B.A-B.SC	681	5.6	1031	7.6
M.A-M.SC	365	3	704	5.2
M.Phil.	132	1.1	173	1.3
Ph.D.	250	2.1	215	1.6
Total	12177	100	13592	100

Table 3.4: Profession of Parents (Self-Reported)

Professions	Fourth-grade				Eighth-grade			
	Public		Private		Public		Private	
	N	%	N	%	N	%	N	%
Farmer	2250	20.2	89	14.1	1997	16.9	205	13.5
Skilled worker	1240	11.1	38	6.0	973	8.2	99	6.5
Small business	1412	12.7	67	10.7	1583	13.4	196	12.9
Government service	1661	14.9	124	19.7	2412	20.4	367	24.1
Private job	1092	9.8	111	17.6	1095	9.3	218	14.3
Housewife	1506	13.5	89	14.1	2318	19.6	249	16.4
Jobless	941	8.5	33	5.2				
Imam Masjid	235	2.1	13	2.1	185	1.6	17	1.1
Retired employee	305	2.7	27	4.3	498	4.2	67	4.4
Other	490	4.4	38	6.0	742	6.3	104	6.8
Total	11132	100.0	629	100.0	11803	100.0	1522	100.0

Table 3.5: Books at Home (reported by Parents)

Number of Books	Fourth-grade		Eighth-grade	
	N	%	N	%
One to 50	8935	86.8	9848	81.4
51 to 100	672	6.5	1196	9.9
101 to 150	266	2.6	396	3.3
151 or more	426	4.1	656	5.4
Total	10299	100	12096	100

Table 3.6: Means of Transport (reported by student)

Means of Transport	Fourth-grade		Eighth-grade	
	N	%	N	%
On foot	11290	88.1	9868	71
By personal Transport	838	6.5	2202	15.8
By school bus	268	2.1	399	2.9
Public Transport	417	3.3	1435	10.3
Total	12813	100	13904	100

Table 3.7: Time Consumed to Reach School Every Day (reported by students)

Travel Time	Fourth-grade		Eighth-grade	
	N	%	N	%
Less than 30 minutes	11135	86.9	11525	82.3
Thirty minutes to one hour	1269	9.9	1831	13.1
More than an hour	409	3.2	649	4.6
Total	12813	100	14005	100

Table 3.8: Number of Visits by Health Department at Home for Polio

Number of Visits	Fourth-grade		Eighth-grade	
	N	%	N	%
Never	560	4.5	1008	7.3
Once	1133	9	1359	9.8
Twice	1791	14.3	2270	16.4
Three times or more	9073	72.3	9215	66.5
Total	12557	100	13852	100

Table 3.9: Help Received at Home in Study

Help Received at Home by		Fourth-grade		Eighth-grade	
	%	N	%	N	%
Father helps the child in doing his/her homework	No	8762	69.6	10049	73
	Yes	3833	30.4	3722	27
	Total	12595	100	13771	100
Mother helps the child in doing his/her homework	No	9905	78.7	11765	86
	Yes	2676	21.3	1923	14
	Total	12581	100	13688	100
Guardians helps the child in doing his/her homework	No	10989	87.5	11995	87.6
	Yes	1572	12.5	1702	12.4
	Total	12561	100	13697	100
Tutor/teacher helps the child in doing his/her homework	No	10124	80.2	10821	79
	Yes	2498	19.8	2872	21
	Total	12622	100	13693	100
No one in helping child in doing his/her homework	No	9517	85.2	9444	76.6
	Yes	1655	14.8	2880	23.4
	Total	11172	100	12324	100

Table 3.10: Time Spent at Home for Studying

Study Time	Fourth-grade		Eighth-grade	
	N	%	N	%
Not study at all	521	4.1	280	2
Up to one hour	5729	45	3827	27.3
Up to two hours	3238	25.5	4273	30.5
Up to three hours	1729	13.6	2626	18.8
More than three hours	1502	11.8	2997	21.4
Total	12719	100	14003	100

Table 4.1: Cross-tabulation between Teachers Age and Gender

Teacher Age (reported by Teacher)	Fourth-grade			Eighth-grade		
	Gender of Teacher (Reported by Teacher)					
	Male	Female	Total	Male	Female	Total
Less than 25 years	58	88	146	32	46	78
25-35 years	172	212	384	150	184	334
36-45 years	193	137	330	144	101	245
46-55 years	141	99	240	171	89	260
More than 55 years	26	20	46	21	6	27
Total	590	556	1146	518	426	944

Table 4.2: Cross-tabulation between Academic and Professional Qualification

Teachers' Academic and Professional Training	Academic Qualification													
	Fourth-grade							Eighth-grade						
	Matriculation	Intermediate	BA	M.A	M.Phil	Ph.D	Total	Matriculation	Intermediate	BA	M.A	M.Phil	Ph.D	Total
PTC	83	72	109	37	0	0	301	0	2	2	3	0	0	7
CT	0	33	41	16	0	0	90	0	7	29	10	2	0	48
Diploma of Education	2	4	7	2	0	0	15	1	4	6	4	2	0	17
Ed-BS.Ed	2	2	141	254	13	0	412	1	1	142	300	28	1	473
MEd-MSEd-MAEdu	0	0	23	149	6	2	180	0	0	22	299	14	0	335
M.Phil	0	0	0	4	6	0	10	0	0	0	6	7	0	13
Ph.D	0	0	0	2	0	0	2							
Total	87	111	321	464	25	2	1010	2	14	201	622	53	1	893

Table 4.3: Trainings Attended in Last two years

Training Attended	Fourth-grade		Eighth-grade	
	Math		Science	
	N	%	N	%
No	534	58.5	569	76.5
Yes	379	41.5	175	23.5
Total	913	100	744	100

Table 4.4: Total Teaching Experience of Teachers

Teaching Experience	Fourth-grade		Eighth-grade	
	N	%	N	%
Less than 5 years	291	26	244	26.1
5-10 years	202	18.1	179	19.1
11-15 years	158	14.1	97	10.4
16 years and more	467	41.8	416	44.4
Total	1118	100	936	100

Table 4.5: Availability of textbooks and teaching kit

Availability of Textbook & Teaching		Fourth-grade				Eighth-grade	
		N	%			N	%
Do you have Math Text Books?	No	86	8.3	Do you have Science Text Books?	No	125	15
	Yes	946	91.7		Yes	709	85
	Total	1032	100		Total	834	100
Do you have Math Teaching Guides?	No	345	36.7	Do you have Science Teaching Guides?	No	440	57.4
	Yes	595	63.3		Yes	326	42.6
	Total	940	100		Total	766	100
Do you have Urdu/Sindhi Text Books?	No	108	11.3	Do you have English Text Books?	No	225	31.9
	Yes	845	88.7		Yes	481	68.1
	Total	953	100		Total	706	100
Do you have Urdu/Sindhi Teaching Guides?	No	362	43.3	Do you have English Teaching Guides?	No	432	67.3
	Yes	474	56.7		Yes	210	32.7
	Total	836	100		Total	642	100
Does your school have any Education kit/Math kit for class VIII?	No	681	65.3	Does your school have any Education kit/ Science kit for class VIII?	No	521	56.9
	Yes	362	34.7		Yes	395	43.1
	Total	1043	100		Total	916	100

Table 4.6: Frequency of Parent Teacher Meetings

Parent-Teacher Meeting	Variable Description	Fourth-grade		Eighth-grade	
		N	%	N	%
Absence of the child	Never	130	11.5	148	15.8
	Rarely	334	29.7	395	42.2
	Weekly	322	28.6	210	22.5
	Fortnightly	86	7.6	42	4.5
	Monthly	220	19.5	125	13.4
	Yearly	34	3	15	1.6
	Total	1126	100	935	100
Regarding co-curricular activities	Never	205	18.8	243	26.9
	Rarely	318	29.1	313	34.6
	Weekly	120	11	50	5.5
	Fortnightly	141	12.9	83	9.2
	Monthly	233	21.3	148	16.4
	Yearly	75	6.9	68	7.5
	Total	1092	100	905	100
Regarding academic performance	Never	104	9.4	122	13.3
	Rarely	308	27.8	311	33.9
	Weekly	195	17.6	93	10.1
	Fortnightly	90	8.1	79	8.6
	Monthly	313	28.2	255	27.8
	Yearly	99	8.9	57	6.2
	Total	1109	100	917	100
Regarding the discipline at the school	Never	186	17	213	23.4
	Rarely	353	32.2	313	34.4
	Weekly	211	19.3	124	13.6
	Fortnightly	92	8.4	55	6
	Monthly	215	19.6	151	16.6
	Yearly	39	3.6	54	5.9
	Total	1096	100	910	100

Table 4.7: Multi-grade teaching and teachers Satisfaction

Teachers' Satisfaction	Variable Description	Fourth-grade		Eighth-grade	
		N	%	N	%
Do you teach two or more classes at one time in any period? (Multi-grade Teaching)	No	521	47.3	737	78.9
	Yes	581	52.7	197	21.1
	Total	1102	100	934	100
If you teach two or more, how is the teaching process?	Unsatisfactory	160	27.9	45	23.2
	Satisfactory	246	42.9	81	41.8
	Good	119	20.8	45	23.2
	Very Good	48	8.4	23	11.9
	Total	573	100.0	194	100.0

Table 5.1: Cross-tabulation of Head Teacher Age and Gender

Age of HT	Fourth-grade			Eighth-grade		
	HT Gender					
	Female	Male	Total	Female	Male	Total
Less than 25 years	1	11	12	4	0	4
25-35 years	40	77	117	39	36	75
36-45 years	96	82	178	70	63	133
46-55 years	193	98	291	126	218	344
More than 55 years	63	44	107	71	109	180
Total	393	312	705	310	426	736

Table 5.2: Academic Qualification of Head Teachers

Academic Qualification of Head Teacher	Fourth-grade		Eighth-grade	
	N	%	N	%
Matriculation	31	4.4	0	0
Intermediate	78	11.1	7	1
Bachelor degree (B.A, B.Sc., B.Com)	220	31.4	86	11.8
M.A- M.Sc.	355	50.7	587	80.4
M.Phil.	14	2	37	5.1
Ph.D.	2	0.3	13	1.8
Total	700	100	730	100

Table 5.3: Professional Qualification of Head Teachers (HT)

Professional Qualification of HT	Fourth-grade		Eighth-grade	
	N	%	N	%
PTC	150	22.9	5	0.7
CT	42	6.4	7	1
Diploma in Education	4	0.6	8	1.1
B.Ed BS.Ed	238	36.3	245	34.7
M.Ed MS.Ed/MA (Edu)	214	32.7	420	59.5
M.Phil	4	0.6	18	2.5
Ph.D	3	0.5	3	0.4
Total	655	100	706	100

Table 5.4: Head teacher (HT) Total Teaching Experience

HT teaching Experience	Fourth-grade		Eighth-grade	
	N	%	N	%
Less than 5 years	37	5.4	20	2.8
5-10 years	78	11.3	62	8.6
11-15 years	69	10	70	9.7
16 years or more	507	73.4	572	79
Total	691	100	724	100

Table 5.5: School Building Ownership Status

School Building Status	Eighth-grade		Fourth-grade	
	N	%	N	%
School owned building	669	91.8	632	90.8
Another school building	11	1.5	22	3.2
Rented building	49	6.7	42	6
Total	729	100	696	100

Table 5.6: Administrative Gender of School

School Gender	Fourth-grade		Eighth-grade	
	N	%	N	%
boys school	249	35.2	403	54.5
girls school	199	28.1	242	32.7
co-education school	257	36.3	93	12.6
Total	708	100	738	100

Table 5.7: Percentage of Daily Absentees in the School

Percentage of Absentees	Fourth-grade		Eighth-grade	
	N	%	N	%
Less than 5 percent	282	40.5	219	29.9
5 to 10 percent	274	39.4	363	49.5
11 to 20 percent	75	10.8	73	10
More than 20 percent	65	9.3	78	10.6
Total	696	100	733	100

Table 5.8: Activities conducted for the character building of the students

Character Building	Variable Description	Fourth-grade		Eighth-grade	
		N	%	N	%
Organizing meaningful activities in Morning assembly	Never	13	1.9	9	1.2
	Sometimes	98	14	82	11.3
	Often	276	39.5	310	42.6
	Always	311	44.6	327	44.9
	Total	698	100	728	100
Organizing moral development programs	Never	8	1.1	5	0.7
	Sometimes	140	20.1	117	16
	Often	320	46	351	48
	Always	228	32.8	259	35.4
	Total	696	100	732	100
Correcting the mistakes of the students	Never	2	0.3	2	0.3
	Sometimes	24	3.4	26	3.6
	Often	216	31	261	35.7
	Always	455	65.3	443	60.5
	Total	697	100	732	100
Solving the problems of weak students	Never	4	0.6	5	0.7
	Sometimes	35	5	38	5.2
	Often	231	33.2	297	40.5
	Always	425	61.2	394	53.7
	Total	695	100	734	100
Providing chances of co-curricular activities	Never	11	1.6	4	0.5
	Sometimes	129	18.7	91	12.4
	Often	308	44.7	345	47.2
	Always	241	35	291	39.8
	Total	689	100	731	100
Inviting effective and ideal personalities in the school	Never	71	10.3	38	5.2
	Sometimes	305	44.5	322	44.2
	Often	215	31.3	244	33.5
	Always	95	13.8	125	17.1
	Total	686	100	729	100
Checking the corporal punishment	Never	18	2.6	19	2.6
	Sometimes	32	4.6	42	5.8
	Often	146	21.1	173	23.8
	Always	495	71.6	493	67.8
	Total	691	100	727	100
Arranging educational visits for students	Never	272	39.2	181	24.9
	Sometimes	294	42.4	348	47.9
	Often	78	11.3	118	16.2
	Always	49	7.1	80	11
	Total	693	100	727	100

Table 5.9: Duties performed by Head teacher in school

Activities	Categories	Fourth-grade		Eighth-grade	
		N	%	N	%
Discussion on lesson plans prepared by the teachers	Never	4	0.6	14	1.9
	Daily	193	28.5	20	2.8
	Weekly	329	48.5	234	32.3
	Monthly	138	20.4	339	46.8
	Yearly	14	2.1	117	16.2
	Total	678	100	724	100
Inspecting the classroom	Daily	557	80	1	0.1
	Weekly	106	15.2	24	3.3
	Monthly	26	3.7	145	19.9
	Yearly	4	0.6	560	76.7
	Never	3	0.4	0	0
	Total	696	100	730	100
Evaluating the performance of the teachers	Never	1	0.1	2	0.3
	Daily	278	40.6	11	1.5
	Weekly	214	31.3	195	26.8
	Monthly	172	25.1	245	33.7
	Yearly	19	2.8	275	37.8
	Total	684	100	728	100
Effective steps for guidance of teachers and students	Never	5	0.7	1	0.1
	Daily	247	36.1	13	1.8
	Weekly	246	36	226	31.1
	Monthly	171	25	239	32.9
	Yearly	15	2.2	247	34
	Total	684	100	726	100
Holding meeting with parents for the uplift of the school	Never	24	3.5	13	1.8
	Daily	41	6	126	17.5
	Weekly	73	10.7	457	63.5
	Monthly	444	65.2	76	10.6
	Yearly	99	14.5	48	6.7
	Total	681	100	720	100
Speech at the school assembly on various topics	Never	21	3	12	1.7
	Daily	283	41	15	2.1
	Weekly	293	42.5	97	13.4
	Monthly	82	11.9	335	46.2
	Yearly	11	1.6	266	36.7
	Total	690	100	725	100
Taking care of the cleanliness of the school	Never	1	0.1	1	0.1
	Daily	675	96.7		
	Weekly	18	2.6	1	0.1

Activities	Categories	Fourth-grade		Eighth-grade	
		N	%	N	%
	Monthly	3	0.4	33	4.5
	Yearly	1	0.1	694	95.2
	Total	698	100	729	100
Arranging clean eating items for students	Never	91	13.3	47	6.6
	Daily	519	76	21	2.9
	Weekly	39	5.7	22	3.1
	Monthly	20	2.9	37	5.2
	Yearly	14	2	590	82.3
	Total	683	100	717	100
Organizing co-curricular Activities in the school	Never	19	2.8	4	0.6
	Daily	101	14.9	151	21
	Weekly	187	27.5	284	39.6
	Monthly	250	36.8	202	28.1
	Yearly	122	18	77	10.7
	Total	679	100	718	100

Table 5.10: Involvement of Parents in School Activities

Activities	Categories	Fourth-grade		Eighth-grade	
		N	%	N	%
For specific functions (such as sports, debates etc.)	No	132	19	90	12.3
	Yes	564	81	639	87.7
	Total	696	100	729	100
For financial assistance to school	No	451	65	460	63
	Yes	243	35	269	36.8
	Total	694	100	730	100
To participate as volunteer in different matters of the school	No	212	30.8	239	32.8
	Yes	477	69.2	488	67
	Total	689	100	728	100
On violation of school discipline by students	No	52	7.6	32	4.4
	Yes	636	92.4	700	95.6
	Total	688	100	732	100
To inform about academic performance of the students	No	34	4.9	27	3.7
	Yes	666	95.1	707	96.3
	Total	700	100	734	100
To meet with the concerned teachers on result day	No	66	9.4	77	10.5
	Yes	633	90.6	657	89.5
	Total	699	100	734	100

Table 5.11: Common problems faced at school by head teachers

Activities	Categories	Fourth-grade		Eighth-grade	
		N	%	N	%
Lack of teachers in the school	Not at all	181	26	212	28.9
	To some extent	261	37.6	348	47.5
	To great extent	253	36.4	173	23.6
	Total	695	100	733	100
Absence of teachers from school	Not at all	486	70.9	413	56.7
	To some extent	179	26.1	285	39.1
	To great extent	20	2.9	31	4.3
	Total	685	100	729	100
Teachers' lack of interest in teaching	Not at all	446	65.9	368	51.2
	To some extent	184	27.2	300	41.7
	To great extent	47	6.9	51	7.1
	Total	677	100	719	100
Untimely transfer of teachers from the school	Not at all	340	50.4	269	37.3
	To some extent	218	32.3	327	45.4
	To great extent	116	17.2	125	17.3
	Total	674	100	721	100
Long leave of the teachers	Not at all	475	69.6	389	53.5
	To some extent	156	22.9	252	34.7
	To great extent	51	7.5	86	11.8
	Total	682	100	727	100
Lack of subject expertise of the teachers	Not at all	355	52.2	285	39.3
	To some extent	263	38.7	365	50.3
	To great extent	62	9.1	75	10.3
	Total	680	100	725	100
Teacher's lack of professionalism	Not at all	374	55.1	268	36.9
	To some extent	256	37.7	371	51.1
	To great extent	49	7.2	87	12
	Total	679	100	726	100
Lack of professional courses for the teachers	Not at all	203	30.3	144	19.8
	To some extent	316	47.1	337	46.4
	To great extent	152	22.7	245	33.7
	Total	671	100	726	100
Appointment of teachers without professional qualification	Not at all	456	67.7	396	54.5
	To some extent	139	20.6	235	32.4
	To great extent	79	11.7	95	13.1
	Total	674	100	726	100

Unsatisfactory attendance of teachers	Not at all	285	41.7	264	36.3
	To some extent	341	49.9	373	51.2
	To great extent	57	8.3	91	12.5
	Total	683	100	728	100
Lack of AV aids in the school	Not at all	181	26.4	166	22.7
	To some extent	313	45.6	382	52.3
	To great extent	192	28	182	24.9
	Total	686	100	730	100
Lack of cooperation from parents	Not at all	94	13.6	92	12.6
	To some extent	342	49.6	332	45.4
	To great extent	253	36.7	307	42
	Total	689	100	731	100
Lack of cooperation from high-ups	Not at all	259	38.1	261	35.7
	To some extent	320	47.1	349	47.7
	To great extent	101	14.9	122	16.7
	Total	680	100	732	100
Pressure by political and influential people	Not at all	504	73	427	58.7
	To some extent	136	19.7	208	28.6
	To great extent	50	7.2	93	12.8
	Total	690	100	728	100
Lack of required financial resources	Not at all	168	24.3	155	21.3
	To some extent	276	40	339	46.6
	To great extent	246	35.7	234	32.1
	Total	690	100	728	100
Lack of basic facilities	Not at all	205	29.6	231	31.7
	To some extent	266	38.4	336	46.1
	To great extent	221	31.9	162	22.2
	Total	692	100	729	100
Uninteresting textbooks	Not at all	301	43.9	252	34.8
	To some extent	309	45	381	52.6
	To great extent	76	11.1	91	12.6
	Total	686	100	724	100

Table 5.12: Visits of Health Department at School for Vaccination

Categories	Fourth-grade		Eighth-grade	
	N	%	N	%
Never	41	5.9	298	41.3
Once	43	6.2	58	8
Twice	103	14.9	90	12.5
Three times or more	506	73	276	38.2
Total	693	100	722	100

Table 5.13: Cross-tabulation of Head teachers experience and satisfaction with teachers' performance

Total teaching experience	Fourth-grade					Eighth-grade				
	No	To some extent	To great extent	Yes	Total	No	To some extent	To great extent	Yes	Total
Less than 5 years	0	5	19	12	36	0	4	10	6	20
5-10 years	2	12	32	30	76	2	13	31	15	61
11-15 years	3	7	28	30	68	0	19	33	18	70
16 years or more	3	82	184	228	497	10	118	269	168	565
Total	8	106	263	300	677	12	154	343	207	716

Table 6.1: Competency Level of Students and Teachers

Grade	Item Description	Teacher			Student		
		N	M	SD	N	M	SD
Fourth-grade	Urdu Writing (Max=63)	740	48.09	10.89317	12915	29.52	12.29164
	Urdu Reading (Max=36)	692	27.59	5.60501	12890	15.66	7.14972
	Mathematics (Max=40)	688	37.88	9.13351	13007	18.90	9.18834
Eighth-grade	English Writing (Max=63)	861	50.35	17.33604	14026	30.83	14.75686
	English Reading (Max=40)	820	34.14	5.58236	14022	22.49	8.92334
	Science (Max=41)	813	31.78	6.00295	14133	19.32	7.12659

Table 6.2: Achievement of Students in Eighth-grade in Provinces

Provinces/Region	Science		English Reading		English Writing	
	M	SD	M	SD	M	SD
AJK	439.27	80.60	466.28	91.79	510.53	94.21
Balochistan	475.70	82.95	495.42	97.33	471.32	83.14
FATA	476.86	82.46	464.23	94.09	455.74	84.02
GB	452.18	77.85	474.66	84.00	502.58	84.72
ICT	474.30	73.72	520.87	79.56	559.31	95.44
KP	463.41	79.20	458.39	93.12	449.34	76.48
Punjab	565.66	98.01	554.61	83.62	551.89	99.50
Sindh	473.22	87.82	465.96	100.97	458.55	80.90

Table 6.3: Gender wise Achievement of Students in Provinces (Eighth-grade)

Provinces/Region	Gender	Science		English Reading		English Writing	
		M	SD	M	SD	M	SD
AJK	Boy	434.58	79.06	456.78	87.30	492.44	90.16
	Girl	445.06	82.17	478.15	95.89	532.25	94.47
Balochistan	Boy	471.78	85.04	484.94	95.20	467.49	84.35
	Girl	484.07	77.78	518.60	98.11	479.48	79.99
FATA	Boy	469.68	80.63	459.07	92.81	443.30	73.73
	Girl	521.43	80.02	496.56	96.06	530.16	101.94
GB	Boy	461.99	77.16	470.33	84.87	487.80	79.85
	Girl	438.45	76.91	480.79	82.56	523.06	87.16
ICT	Boy	470.67	76.65	509.97	81.67	530.73	100.42
	Girl	477.72	70.79	531.33	76.14	586.71	81.63
KP	Boy	456.14	78.37	450.19	92.80	446.38	71.66
	Girl	478.27	78.85	475.35	91.52	455.64	85.55
Punjab	Boy	557.78	99.14	540.61	90.19	529.77	98.44
	Girl	576.08	95.51	573.03	69.99	581.75	92.93
Sindh	Boy	469.28	90.20	458.26	104.48	450.14	72.28
	Girl	478.86	84.01	476.90	94.73	470.75	90.64

Table 6.4: Level of Skills in Eighth-grade Teachers and Students in Science

Science	Teacher		Student	
	N	%	N	%
Life Sciences	813	70.89	14136	44.73
Physical Sciences		77.31		46.02
Earth Sciences		81.74		55.64

Table 6.5: Level of Skills in Eighth-grade Teachers and Students in English Reading

English Reading	Teacher		Student	
	N	%	N	%
Reading Literacy Experience	874	77.65	14199	55.24
Reading Information		80.58		57.14
Reading Performance Tasks		78.72		52.78
Grammar and Vocabulary		78.52		51.98

Table 6.6: Level of Skills in Fourth-grade Teachers and Students in Mathematics

Mathematics	Teacher		Student	
	N	%	N	%
Numbers and Operations	688	86.42	13048	42.5
Measurements		90.55		46.92
Geometry		68.94		37.45
Information Handling		77.67		43.79

Table 6.7: Level of Skills in Fourth-grade Teachers and Students in Urdu Reading

Urdu Reading	Teacher		Student	
	N	%	N	%
Literacy experience	1185	37.72	13197	38.13
Reading information		42.93		38.30
Grammar		51.65		48.75

Table 6.10: Comparison between Achievement and Distance of School from Home

School Province	Student Distance to School								
	Science			English Reading			English Writing		
	0-2Km	3-4Km	5Km or more	0-2Km	3-4Km	5Km or more	0-2Km	3-4Km	5Km or more
AJK	446.85	429.74	421.97	475.39	456.81	441.45	525.27	504.22	511.92
Balochistan	475.47	471.44	482.22	501.63	481.05	489.00	474.63	470.35	471.65
FATA	477.91	466.47	487.89	464.19	444.58	494.35	451.81	437.44	486.50
GB	462.93	438.07	434.58	487.95	456.47	453.60	518.48	504.20	490.56
ICT	473.03	472.73	479.41	515.66	521.37	533.27	545.19	566.94	576.87
KP	462.26	465.53	465.10	457.52	463.21	454.02	449.62	446.99	438.77
Punjab	567.75	557.16	568.17	556.92	547.34	554.39	552.59	543.91	540.95
Sindh	476.42	466.60	467.80	472.76	452.85	453.22	463.10	459.04	456.90

Table 6.11: Difference between Achievements of Students on basis of Availability of Books at Home

School Province	Student book for use at home					
	Science		English Reading		English Writing	
	Not available	Available	Not available	Available	No available	Available
AJK	423.87	440.32	436.17	468.12	495.80	519.66
Balochistan	464.18	477.01	483.40	496.70	456.52	475.15
FATA	444.90	481.54	418.86	470.80	425.70	457.79
GB	441.00	453.00	462.41	475.60	505.97	511.06
ICT	465.54	474.97	477.32	523.45	548.73	557.70
KP	448.91	464.78	443.83	459.74	436.69	448.61
Punjab	537.65	566.77	529.99	555.56	532.66	549.83
Sindh	455.74	475.12	446.61	467.98	455.64	462.06

Table 6.12: Difference between Achievements of Students on Basis of Availability of Internet at Home

School Province	Student book for use at home					
	Science		English Reading		English Writing	
	Not available	Available	Not available	Available	No available	Available
AJK	432.64	467.59	457.88	501.45	511.04	547.90
Balochistan	476.07	474.51	495.93	493.82	467.28	493.04
FATA	478.93	460.30	465.71	452.22	455.18	441.02
GB	445.49	482.23	471.66	488.58	509.79	514.66
ICT	460.74	491.84	506.57	538.56	546.80	570.45
KP	463.01	465.65	456.76	467.38	446.74	451.92
Punjab	564.78	568.43	552.36	561.73	545.99	559.10
Sindh	471.78	476.45	458.39	482.90	455.96	473.93

Table 6.13: Comparison between High and Low Achievers in Subjects

Grade	Subject	High		Low	
		M	SD	M	SD
Fourth-grade	Urdu Writing	663.65	7.78	286.62	47.83
	Urdu Reading	691.08	13.98	301.94	50.34
	Mathematics	693.70	15.84	275.16	72.77
Eighth-grade	English Writing	691.10	0.00	342.03	29.39
	English Reading	656.03	8.60	295.25	40.13
	Science	711.31	20.33	307.44	50.30

Table 6.14: Availability of Science Laboratory in School and its Impact on Achievement

Provinces/Region	Science		English Reading		English Writing	
	Unavailable/ Unusable	Present	Unavailable/ Unusable	Present	Unavailable/ Unusable	Present
AJK	429.76	448.46	449.12	482.60	498.60	536.97
Balochistan	468.96	482.11	504.46	486.81	465.29	480.74
FATA	484.92	472.07	483.86	452.46	474.47	440.53
GB	445.77	463.57	469.63	483.58	507.03	517.15
ICT	486.45	471.54	536.92	517.39	560.03	556.46
KP	462.64	463.87	458.75	458.17	450.11	446.05
Punjab	559.29	567.27	549.50	555.91	530.99	553.59
Sindh	468.44	477.15	457.33	473.17	449.93	470.67

Table 6.15: Availability of Teaching Kit in School and its Impact on Achievement

Provinces/Region	Science		English Reading		English Writing	
	No	Yes	No	Yes	No	Yes
AJK	440.76	437.56	464.25	468.60	517.70	518.52
Balochistan	462.40	486.40	490.81	499.07	460.87	482.81
FATA	479.72	475.21	472.97	459.23	471.47	443.45
GB	439.64	466.33	463.88	486.56	508.25	513.31
ICT	467.43	479.70	515.52	524.99	543.37	567.88
KP	460.18	465.75	447.22	466.36	449.08	446.42
Punjab	556.71	568.67	544.21	558.13	540.24	551.96
Sindh	483.34	460.32	467.41	464.12	452.30	472.61

Table 6.16: Availability of Teachers guides in School and its Impact on Achievement

Provinces/Region	Science		English Reading		English Writing	
	No	Yes	No	Yes	No	Yes
AJK	430.07	444.52	466.34	466.24	513.14	520.95
Balochistan	469.02	484.34	489.35	503.10	464.58	484.07
FATA	486.92	465.38	470.64	456.98	458.96	447.66
GB	462.79	445.85	504.11	457.31	528.18	500.15
ICT	472.00	475.98	519.92	521.55	558.41	556.15
KP	461.11	467.42	451.42	470.63	445.41	451.52
Punjab	555.68	567.02	545.97	555.80	564.09	547.17
Sindh	479.53	465.00	464.24	468.21	451.45	474.27

Table 6.17: Availability of Charts, models in School and its Impact on Achievement

Provinces/Region	Science		English Reading		English Writing	
	No	Yes	No	Yes	No	Yes
AJK	439.56	439.09	467.47	465.53	503.91	526.91
Balochistan	467.16	478.56	490.70	496.99	439.22	483.78
FATA	489.75	468.73	482.13	452.97	480.58	436.97
GB	447.08	452.39	529.40	472.41	607.28	506.72
ICT	475.33	473.80	521.08	520.77	568.65	551.47
KP	463.68	463.34	452.55	459.89	454.86	445.60
Punjab	553.24	566.54	544.05	555.37	554.10	548.85
Sindh	484.53	464.08	463.46	468.00	455.13	466.63

Table 6.18: Availability of National curriculum booklets in School and its Impact on Achievement

Provinces/Region	Science		English Reading		English Writing	
	No	Yes	No	Yes	No	Yes
AJK	440.30	437.99	468.73	463.14	517.40	518.94
Balochistan	469.74	485.34	484.86	512.14	466.12	484.44
FATA	481.54	469.84	471.43	453.38	459.43	444.89
GB	453.25	451.43	477.77	472.50	513.32	508.75
ICT	474.37	474.25	515.95	524.10	553.10	559.77
KP	456.94	473.26	446.75	476.21	442.17	455.84
Punjab	557.34	569.26	546.45	558.16	535.58	554.82
Sindh	485.68	461.66	465.56	466.34	449.44	472.58

Table 6.19: Achievement of Students on Basis of Medium of Instruction

Provinces/Region	Science			English Reading			English Writing		
	Urdu	Sindhi	English	Urdu	Sindhi	English	Urdu	Sindhi	English
AJK	418.14	.	441.29	429.49	.	469.90	449.05	.	524.90
Balochistan	476.99	.	467.08	494.67	.	500.53	464.87	.	530.25
FATA	481.96	.	465.05	450.72	.	495.25	437.66	.	492.83
GB	458.05	.	451.84	413.12	.	478.26	469.74	.	513.00
ICT	.	.	474.30	.	.	520.87	.	.	557.10
KP	462.88	.	466.61	453.14	.	490.69	441.05	.	488.20
Punjab	564.77	.	566.85	553.10	.	556.64	552.00	.	545.52
Sindh	450.82	477.01	503.79	441.76	463.13	531.77	453.09	452.89	525.46

Table 6.20: Achievement of Students on Basis of School Zone

Provinces/ Regions	Science		English Reading		English Writing	
	Summer	Winter	Summer	Winter	Summer	Winter
AJK	440.10	409.82	467.47	426.20	518.91	490.01
Balochistan	466.70	488.22	496.79	493.49	474.42	471.87
FATA	477.77	475.64	468.25	458.74	457.65	448.68
GB	381.43	455.06	395.29	477.92	390.99	515.50
ICT	474.30	.	520.87	.	557.10	.
KP	466.83	452.74	458.23	458.87	452.05	433.51
Punjab	565.66	.	554.61	.	549.19	.
Sindh	473.22	.	465.96	.	461.37	.

Table 6.21: Achievement of Students on Basis of School Location

Provinces/ Regions	Science		English Reading		English Writing	
	Rural	Urban	Rural	Urban	Rural	Urban
AJK	426.12	469.75	452.58	497.92	507.30	543.31
Balochistan	483.79	472.25	510.06	489.17	466.78	475.99
FATA	476.86	-	464.23	-	453.72	-
GB	452.42	451.72	469.36	484.82	502.11	526.29
ICT	445.97	486.25	476.22	540.03	508.32	577.94
KP	460.72	468.23	452.11	469.53	440.78	459.70
Punjab	559.54	572.35	540.27	570.36	526.83	573.07
Sindh	481.41	467.01	463.69	467.69	457.06	464.75

Table 6.22: Achievement of Students on Basis of School Type

Provinces/ Regions	Science		English Reading		English Writing	
	Public	Private	Public	Private	Public	Private
AJK	427.85	523.20	453.34	560.60	505.41	611.44
Balochistan	476.99	467.08	494.67	500.53	464.87	530.25
FATA	478.40	468.93	459.31	489.25	449.61	477.38
GB	447.05	497.43	467.36	539.94	507.59	536.61
ICT	469.71	511.45	514.13	574.21	551.98	597.73
KP	459.47	495.72	450.71	518.71	441.35	498.34
Punjab	565.80	564.60	553.83	560.61	544.11	586.40
Sindh	469.69	502.68	456.72	544.29	452.28	549.03

Table 6.23: Achievement of Students on Basis of School Administrative Gender

Provinces/ Regions	Science			English Reading			English Writing		
	Boys School	Girls School	Co-Education	Boys School	Girls School	Co-Education	Boys School	Girls School	Co-Education
AJK	425.88	431.97	505.01	447.21	464.67	535.80	486.75	528.83	594.85
Balochistan	469.35	480.67	504.46	478.79	513.49	557.30	466.49	475.67	513.68
FATA	469.64	522.20	0	459.02	497.30	0	439.22	541.43	0
GB	455.00	437.43	469.56	459.81	479.57	497.89	487.40	539.53	513.09
ICT	462.99	475.77	511.45	499.65	527.45	574.21	520.18	581.05	597.73
KP	454.64	475.32	485.46	447.05	470.50	498.56	441.23	448.18	489.08
Punjab	557.54	576.35	567.32	540.66	573.45	554.73	524.92	576.02	584.06
Sindh	464.33	470.04	496.99	448.99	460.66	510.48	449.87	457.94	493.24