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NATIONAL ASSESSMENT REPORT

NAT
ASSESSMENT
STUDY
2014

Government of Pakistan
Ministry of Federal Education
and Professional Training
National Education Assessment System
Islamabad

NATIONAL ASSESSMENT RESULTS

National Achievement Test – 2014 (NAT- 2014)

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

NEAS accomplished NAT-2014 Assessment Report with the technical and logistic support of all Provincial and Area Assessment Centers, Federal Directorate of Education, Curriculum and Text Book Wing Islamabad.

In addition the financial support of the UNICEF helped out NEAS in the report publication and dissemination.

DESIGNED BY:
Affan Ummar Mirza
(Office Secretary, NEAS)

Government of Pakistan
Ministry of Federal Education & Professional Training
National Education Assessment System (NEAS)
Islamabad.
www.neas.gov.pk

MESSAGE FROM THE MINISTER


Muhammad
Baligh ur Rehman

Provision of quality education is the ethical, moral and constitutional responsibility of the Federal Government and all the provincial governments. The challenge is not only to provide for the means and ways to ensure that all children are in school but more importantly to see to the fact that whatever is taught is of substance and is properly absorbed by the students. Unless we focus on what is taught i.e. curriculum and the methodology which is used and looked at learning outcomes, quality cannot be ensured.

For the first part, I am pleased to inform you that in the wake of 18th constitutional amendment, as a result of which most of the aspects of education were devolved to the provinces including curriculum, we were able to bring all the provinces together under *"Inter Provincial Education Ministers' Conference (IPEMC)"*, a suitable forum available for this purpose. Under this forum a very important and historic decision has been taken to formulate National Curriculum Council (NCC) which gives provinces an option to become part of designing and implementing minimum common curriculum decided by consensus.

For the second part, I am also pleased to inform you that we had decided to carry out the national assessment under National Education Assessment System (NEAS) after a gap of 8 years. I have also directed that in future this important assessment be carried out every two years and we should consider going for an international assessment by PISA or TIMMS within next four years.

This comprehensive assessment has given us insight into our strengths and weaknesses. It is imperative to know about the quality of education, curriculum, environment in which education activity is taking place, quality and standards of teaching staff and impact of cognitive learning and absorption by the students.

I appreciate the efforts of the concerned Ministry officials and especially incharge and staff of the National Education Assessment System (NEAS) for the commendable work. Of course, there certainly is a big need for improvement. I am sure that, as we continue to carry out more National Education Assessments, our quality will improve as well.

This assessment, in-shaa ALLAH, will go a long way in improving our educational system and planning.

Pakistan Paindabad

Engr. Muhammad Baligh ur Rehman
Minister of State,
Ministry of Federal Education & Professional Training,
Government of Pakistan,
Islamabad.

Assessment

Gives

roots

to Education

MESSAGE FROM THE SECRETARY

Muhammad
Imtiaz Tajwar

Education has always played a pivotal role in the lives of individuals and nations alike. Today's world is education driven world. No nation can think of progress in today's world without standard education. Keeping this important need of the nation in view, the government is trying its best not only to make education accessible to all but also raise its standard. To do this, the government is spending a huge amount of money on giving free books to the students. We have also made education free up to matriculation level by withdrawing all fees that were collected from students. New schools and colleges are opened and the old ones are renovated through extensive repair work. The government is intent on doing away with discrimination in education by introducing uniform curriculum for all and abolishing the gap between Urdu-Medium and English-Medium systems thus bringing all at par. Last year we launched a drive called the "Prime Minister Scheme" under which millions of children that were not going to schools were admitted. To create conducive conditions for the teaching learning process, highly educated teachers are being appointed. Teachers are given attractive salaries and other incentives.

We cannot improve our standard of education if we do not attempt to purge it of the ills plaguing it for decades. It requires a thorough research as to what the problems are and how they can be obviated. For this purpose, the government has set up an independent institution by the name of National Education Assessment System (NEAS). This institution is doing a great job by highlighting and pinpointing the flaws and weaknesses of the prevailing system of education and introducing new ways to improve the standard of education. This report is latest effort of NEAS, which besides other things, has suggestions for the stakeholders how to improve things in the system of education.

Let me emphasize once more that the government is committed to do everything for the improvement of education, so that our future generations get quality education.

Muhammad Imtiaz Tajwar
Federal Secretary,
Ministry of Federal Education & Professional Training,
Government of Pakistan,
Islamabad.


NEAS
Education + Assessment
=
Career in Future

MESSAGE FROM THE ADDITIONAL SECRETARY

Dr. Allah Bakhsh Malik

Education is the noblest human activity that builds nations on solid foundations; by training individuals and preparing them to meet the demands and emerging challenges of the contemporary world and the future. The posterity of man and more so of nations, depends on their education of today. 'Quality' plays a pivotal role in the entire process of education. By quality is meant that the education imparted brings due benefits to the educated. Hence, it is not only education but quality education that matters. That is why the current Govt. is doing its best to ensure not only universal education but also quality education.

National Education Assessment System (NEAS) is one of the important educational organizations of Pakistan that is doing a great job in enhancing the quality of education by undertaking extensive research in the field of students' learning achievement. We, on our part, have always supported NEAS in every possible way. The inconveniences created as a result of devolution were cleared in consultation with the provinces. This removed the impediments in the way of NEAS.

Financial constraints are the problems that adversely affect performance of research institutions such as NEAS. We made it sure that NEAS did not suffer from paucity of funds for which services of development partners were sought. These were needed to meet the expenditure incurred on printing the report of National Achievement Test (NAT) 2014. Moreover, NEAS were given all the encouragement and moral support that enabled them undertake exclusive and successful NAT-2014. The maverick efforts put in by Mr. Jaffar Mansoor Abbassi, National Coordinator, NEAS and his team are worthy of appreciation.

We do hope this research in the field of students' learning achievement continues and goes a long way in raising quality of education in Pakistan. Let us aim at joining international assessments like PISA and TIMSS and become part of international erudite community for standard assessments.

Dr. Allah Bakhsh Malik PhD, PAS
UNESCO Confucius Laureate
Federal Additional Secretary
Ministry of Federal Education &
Professional Training,
Government of Pakistan,
Islamabad.

"Learners need endless feedback more than they need endless teaching."

DEDICATION

This National Assessment Report is dedicated to:

Malala Yousafzai

The youngest Nobel Peace Prize Winner

Arfa Kareem Randhawa (late)

World's youngest Microsoft Certified Professional

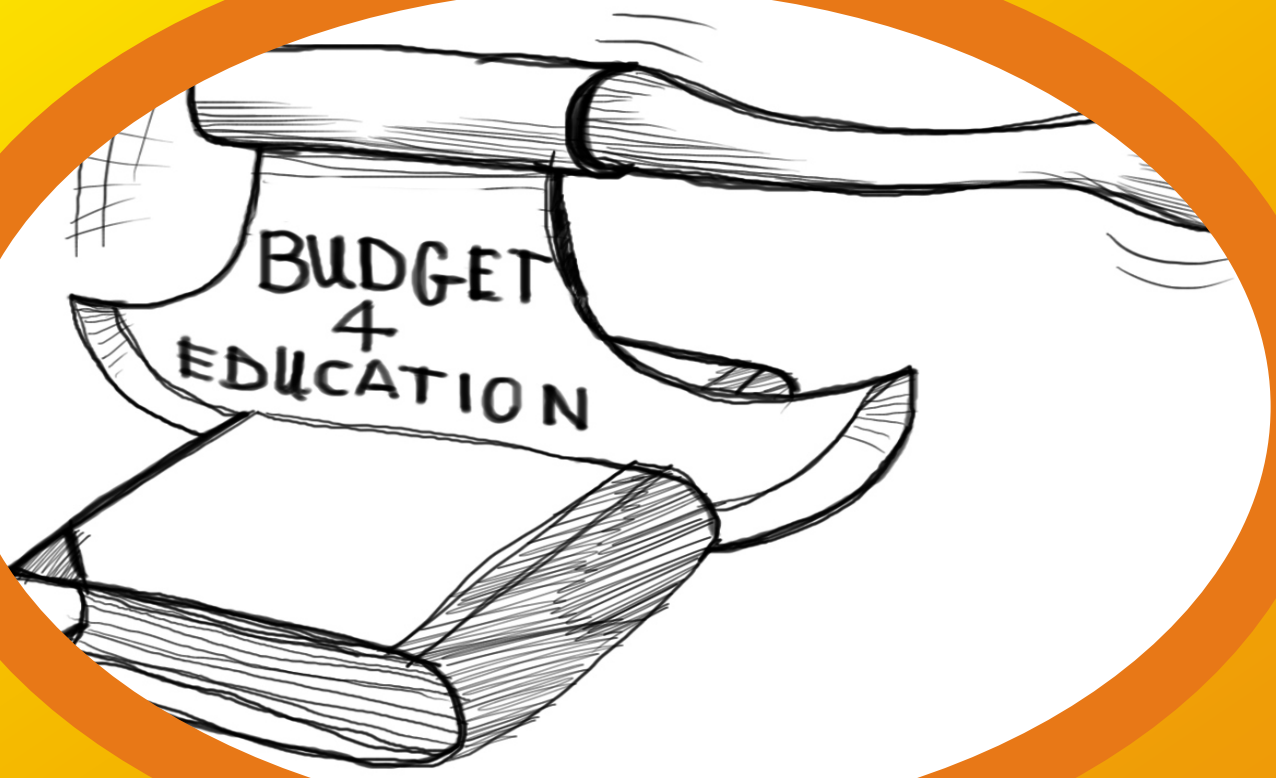
Aitzaz Hasan (late)

Sacrificed his life while preventing a suicide bomber

and;

The martyrs of Army Public School, Peshawar

for their contribution and sacrifices for the cause of education and Pakistan.



Pakistan's FUTURE depends on budget rise

ACKNOWLEDGMENT

National Education Assessment System (NEAS), Ministry of Federal Education & Professional Training (MFEPT), Islamabad, is highly obliged and proud to acknowledge the technical and administrative support they received from the experts of Punjab Examination Commission (PEC), Provincial & Area Education Assessment Centers (PEACEs /AEACEs), Federal Directorate of Education (FDE), and Curriculum & Textbook Wing, Islamabad. It would be ungrateful on the part of NEAS if thanks are not extended to the following whose efforts made it possible to have the findings of the national assessment for optimum utilization and sharing the same with all stakeholders for benefitting from the results and recommendations of the report:

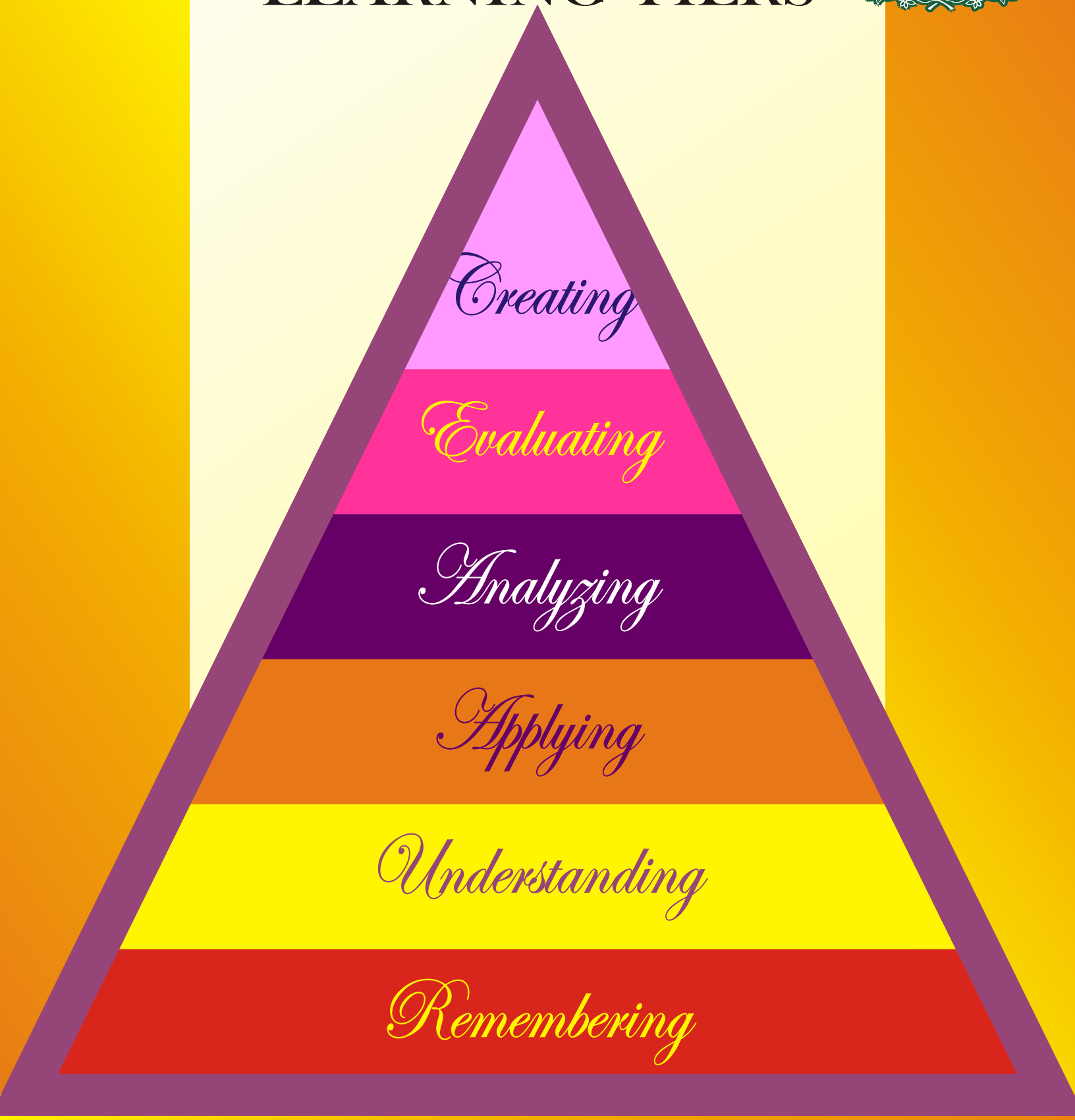
Jaffar Mansoor Abbasi

1) Engr. Muhammad Baligh Ur Rehman, Minister of State for Education, Govt. of Pakistan.
2) Mr. Muhammad Imtiaz Tajwar, Federal Secretary, MFEPT.
3) Dr. Allah Bakhsh Malik, Additional Secretary, MFEPT.
4) All Provincial & Area Education Secretaries and Directors.

Last but not the least, thanks are due to all those who made untiring efforts to produce this good piece of work in hand, especially the team of NEAS, PEC, PEACEs, AEACEs, FDE, C&TW, Director Schools and Curriculum, Executive District Officers (EDOs), Lead Master Trainers (LMTs), Test Administrators, Subject Specialists (SS), Head Teachers, Working Teachers and specially students for giving their precious time to participate in this research work for determining the effectiveness of education system at work under the administrative control of Federal, Provincial and Area Governments. NEAS is thankful to all those who remained involved at the front or in the background during the process of National Achievement Test (NAT) 2014, spreading over two years.

Jaffar Mansoor Abbasi
National Coordinator
National Education Assessment System (NEAS)
Ministry of Federal Education &
Professional Training,
Government of Pakistan,
Islamabad.

LEARNING TIERS



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ACRONYMS

AEACE	Area Education Assessment Centre
AEPAM	Academy of Educational Planning and Management
AJK	Azad Jammu & Kashmir
CT	Certificate of Teaching
CTW	Curriculum & Textbook Wing
DfID	Department for International Development
FATA	Federally Administered Tribal Area
FCE	Federal College of Education
FDE	Federal Directorate of Education
ICT	Islamabad Capital Territory
IRT	Item Response Theory
MCQs	Multiple Choice Questions
MFEPT	Ministry of Federal Education & Professional Training
NAT	National Achievement Test
NC	National Curriculum
NEAS	National Education Assessment System
NEMIS	National Education Management Information System
PEACE	Provincial Education Assessment Centre
PEC	Punjab Examination Commission
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
PPS	Probability Proportionate to Size
PTC	Primary Teaching Certificate
RNT	Random Number Table
SD	Standard Deviation
SLOs	Students Learning Outcomes
SMS	Scaled Mean Score
SPSS	Statistical Package of Social Sciences
TIMSS	Trends in International Mathematics and Science Study
TOEFL	Test of English as Foreign Language

EXECUTIVE SUMMARY

Pakistan is striving hard for the provision of good, quality learning to its citizens under the available resources alongwith meeting the commitments made at international level in the education sector. How well our students, teachers and the overall education system are performing can be judged through measuring the learning achievements of students. The establishment of National Education Assessment System (NEAS) is a milestone in the education sector of Pakistan, which is responsible for conducting curriculum and sample based national assessments on periodic basis.

The report is about the results of National Achievement Test (NAT)-2014 conducted by NEAS with the assistance of Provincial/ Area Education Assessment Centres (PEACEs / AEACEs) on stratified random sample representing all explicit strata (gender, location, province etc.) on Probability Proportionate to Size (PPS). The sample has vast coverage in the north from Hunza valley to the extreme south, the shorelines of Gwadar. In the east the extreme interiors of Badeen to the west remote villages of the Khyber Agency. NEAS has tried its level best to maintain minimum standards in all sub segments of the assessment like tool development, piloting, sampling, test administration, data collection & monitoring, data coding, marking, and analysis, reporting, dissemination etc.

The assessment tools for the national assessment were prepared in the light of national curriculum and the assessment frameworks at NEAS with technical assistance of experts from PEACEs / AEACEs, Punjab Examination Commission (PEC) and Federal Directorate of Education (FDE). The assessment tools underwent multiple reviews, piloted and the tests were finalized after having consensus of all stakeholders. The pilot data of April 2013 was used for the selection and rejection of 'best-fit' and 'misfit' items for nation-wide large scale assessment.

The students were assessed in six subjects, three each for grade-8 and grade-4. The test booklets in the subjects of Urdu(Reading), Urdu (writing), Mathematics for Grade-8 and English(Reading), English (writing), Science for Grade-4 were administered in NAT-2014 over a sample of 11200 students from 448 schools , half of the students and teachers sample for each grade with measures of validity, reliability and Students Learning Outcomes (SLOs) given in the national curriculum. The learning achievements of the students were correlated with background information gathered through separate questionnaires for students, parents, teachers and head teachers contained questions to identify the association of variables such as home, personal, school, teaching and community variables with student achievement. This included inputs from home and community, students' attitude towards school and teachers, the teachers' qualification and teaching practices, multi-grade teaching etc. The background data was used to identify needs for improvement and factors associated with achievement. The assessment focus was to bring out the performance of students in selected sub-domains to point out strengths and weaknesses of different components of education system like policy, curriculum, teacher training, instruction at class room, examination, textbooks etc. The students' assessment is the only reliable programme to point out problems, remove them and put the system on the right rail. NEAS has been able to facilitate improvements in the education system by providing feedback in the form of recommendations to all stakeholders.

The standardized assessment procedures were carried out for NAT-2014. A comprehensive test administration manual was developed to minimize chances of mistakes in test administration. The serving teachers were given test administration training to meet the requirements of proposed planned samples for the area. The collected data was marked and coded by the markers and coders who were given a comprehensive training how to go about their work. Randomly 25% marked and

coded scripts were verified by the third persons. Both classical and Item Response Theory (IRT) Rasch model calibration analysis were made. The scaled score used in NAT was ranged from 0 to 1000 with scaled mean score of 500 and 100 as Standard Deviation (SD). The same scale is used in international assessments like TIMSS, PIRLS and TOEFL etc. The significance difference in achievement was determined at probability of $P < 0.05$, it means that the difference has occurred in just 5 out of 100 cases.

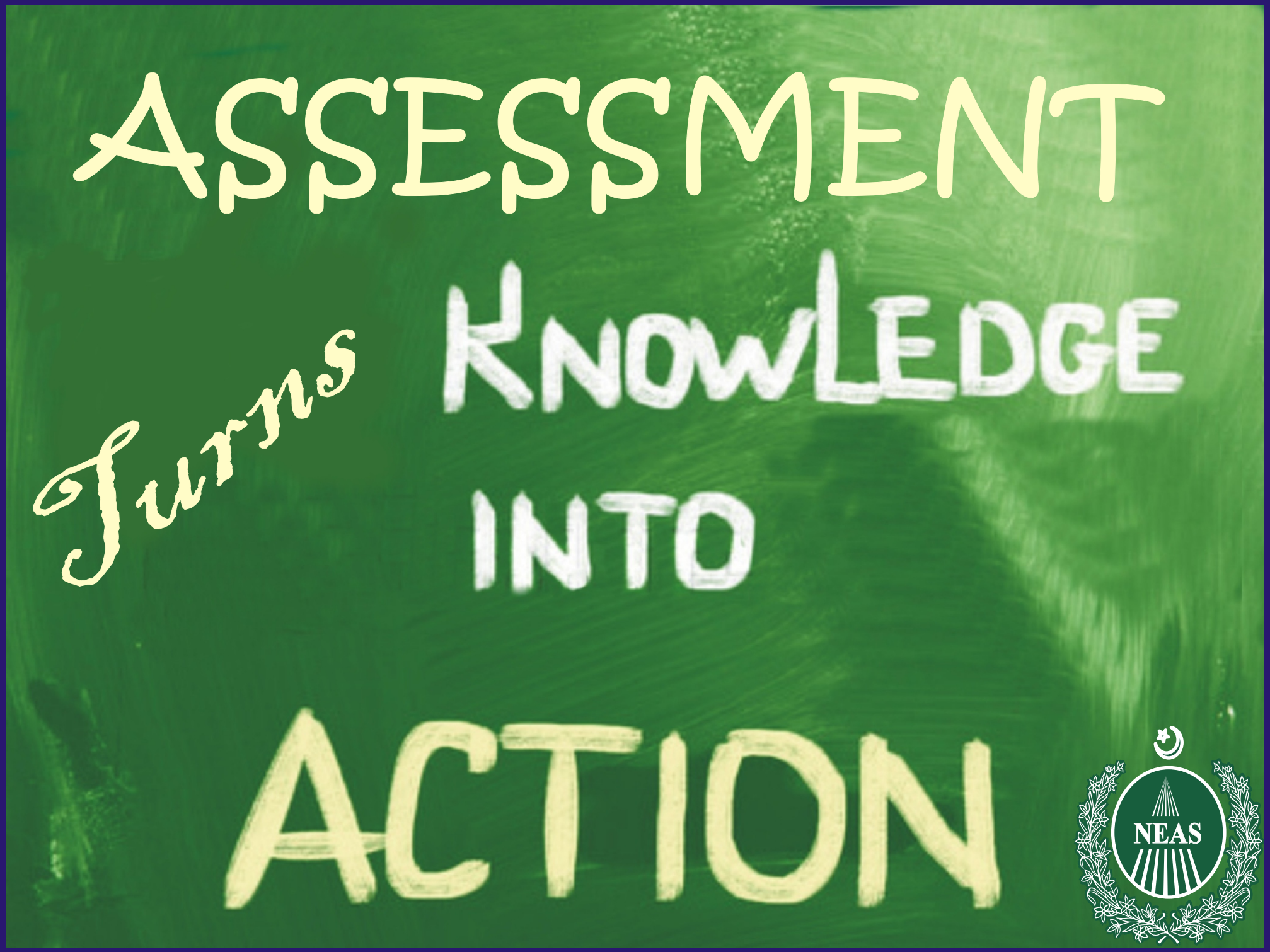
The NAT- 2014 learning achievement of students was interestingly significant for some variables and insignificant for the others as for some variables where there should have been significant difference in achievement give insignificance. Some variables used in the questionnaires were to determine the provision of physical facilities to schools. The report reveals disparity in facilities like electricity, drinking water, buildings, teaching aids, boundary wall etc. The provision of free text books to students is the policy of all governments but lacuna was found as for many of the students could not receive free textbook from the schools.

Scores of NAT-2014 were measured over a scale of 0-1000 with a standard deviation of 100 and mean score of 500. The average mean score obtained remained below the set mean of 500 for two subjects of Grade-8 and for three subjects of Grade-4. Only the score in Urdu (Reading) was 526 slightly above the set mean of 500. Overall the NAT results gave a mix picture as the performance of boys was found better in two subjects of Grade-8 and girls were ahead of boys in achievement in Grade-4. As usual the scores of urban students were high in NAT. The summary of the findings of NAT revealed that the working efficiency of the education system in the country is not up to the mark. Immediate interventions, at the level of all concerned stakeholders, are required to be introduced in the light of recommendations being made in this report by the panel of experts from all relevant fields of the education system. Secondly, in future all innovations being under taken and projects launched should be in the light of findings of this report. NEAS has drawn an overall conclusion from the studies over the years that for utilizing human and financial resources in the right direction, close working relationship and coordination among different stakeholders are the requirements of the time.

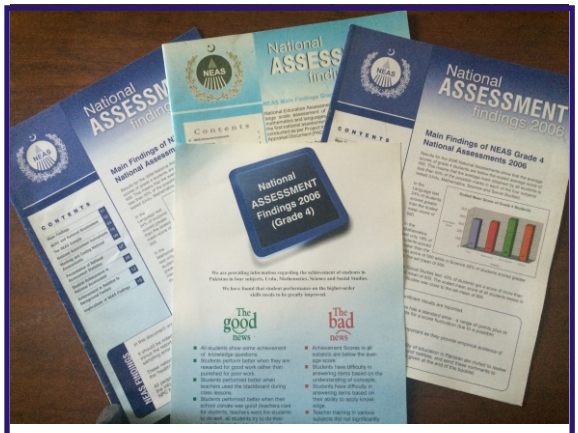
Is there any end to SCARY TEACHING?

NEAS

Section - I


ASSESSMENT
Turns
KNOWLEDGE
INTO
ACTION
NEAS

NATIONAL ASSESSMENT IN PAKISTAN



Previous Assessment Publications

National assessment is an initiative of the Government of Pakistan to identify the gaps, and to diagnose the strengths and weaknesses of the education system through measuring the learning achievement of the students for appropriate decision making for promoting the access, equity and quality in education system. National assessment is conducted across the country in five subjects each for Grade - 4 & 8 on sample basis after every four years. This report is meant to reflect the health of the education system for better understanding of the stakeholders. The report also aims at pointing out the pluses and minuses of the education system and the facts about students' learning achievements alongwith recommendations on the findings for effective implementation. This practice is not peculiar to Pakistan, as the last decade has seen many ups and downs affecting national assessment at various subjects and grade levels.

Briefly, initiative taken in primary and elementary education through the assessment system, named as National Education Assessment System (NEAS) in Pakistan, is given for the audience in this report. NEAS has been institutionalized in Pakistan at national level with the cooperation of Provincial and Area Assessment Centers. Initially NEAS and its sister provincial and area education assessment organizations were established as five years development project with the financial assistance of the World Bank and Department for International Development (DfID) in year 2003. Realizing its significance in the education system, NEAS was made a regular feature of the education system before the closure of its project life. So far, NEAS has published four national level assessment reports on two grades each with four subjects. National Achievement Test (NAT) 2014 is a step ahead of previous studies as the subject of English is introduced for the first time and performance of the students is being analyzed on the proficiency benchmark.

The process of national assessment can be subdivided into a number of segments for better understanding. An overview of processes of national assessment is discussed here and separate detail of each significant process would be given in the respective chapters. The initial step of the national assessment is to prepare valid and reliable assessment tools based on the assessment framework and educational standards given in the national curriculum. The validity and reliability of tools is not compromised at any stage as every single assessment item undergoes multiple reviews and is locked after being reviewed by the language experts. All items are then piloted over a reasonable sample of students for the enhancement of their reliability and validity with five different dimensions of statistics.

National Assessment uses sample of students who take test instruments which cover measure of achievement in key curriculum areas. The sample is closely representative of the whole population as it is Probability Proportionate to Size (PPS). The assessment brings out the performance of students in selected sub-domains to point out strengths and weaknesses. It also shows how well the national curricula are taught and implemented in schools. It generally uses two data sets, one concerning

factors that affect students, teachers and the school background. The other is student achievement data which reflects the impact of background variables on students' learning. This practice enables us pin-point the areas in education, which require attention for improvement. Hence, it results in a document, which makes it easier for the planners to introduce new factors and put the system aright.

Usually the assessment tools are administered over the sample students by the trained staff from the provincial and area education departments and duly monitored by the senior officers of the Ministry and Education Departments. The Test Administrators and Monitors are required to submit their structured report about their field observation and experiences during the test administration. The assessment data is organized in such a way that it could be easily handled during marking coding and its verification process. The data is further analyzed on various softwares by the Psychometrician. The findings are shared with the experts from every single component of education system like curriculum experts, teacher trainers, textbook writers, working teachers etc for having practicable recommendations from them on the findings.

It is a practice in the entire world, especially in Pakistan now, to provide quality schooling to their children to build the nation. The Government of Pakistan is simultaneously working on access, equity and to improve the quality of education. These aspects present quite a bit of challenges to the planners. However, less attention was paid to assessment of quality of student learning. The reason was that the practice was not followed by the policy makers for the desired improvement.

This necessitated the introduction of a well-planned and properly executed national assessment in Pakistan. Increasing enrollment has put adverse effect on the quality of education, which needs to be addressed timely for saving financial and human resources and hence the future of the nation. This aims at judging maintenance, progress or decline in education system. This practice is in vogue at national, provincial and areas level to establish objective, valid and reliable baselines of students' learning achievement, which provides a periodical evaluation. These analyses also touch home and school background and their influence on students' learning achievements. These assessments are different from the routine school exams and periodical tests with regard to both objectives and methodology. National and international assessments are sample based periodic and specific to grade-level while the common school or public exams lack many of the above aspects. One of the significant features of the national assessment is that it is low stake for the students as compared to the public examination which are high stake for them because the basis of the results decides students' promotion to the next grade or their detention in the same grade to acquire requisite mastery in the defined curriculum standards.

During the last two decades some projects conducted student assessment studies which were abandoned when the projects came to an end. NEAS has the responsibility from the Ministry of Federal Education & Professional Training to establish a system of its own in collaboration with other stakeholders in provinces and areas. NEAS has, so far, conducted four cycles of national assessment while this report is about the fifth round.

NEAS establishes a national and cross-national baseline of student achievement as measured in line with the national curriculum. NEAS has been able to facilitate improvements in the education system by providing feedback to all concerned stakeholders.

With the growing challenges in the field of education the donor agencies and Non-Governmental Organizations (NGOs) have done a lot of good towards improving quality of education in Pakistan. At the state level the Ministry of Federal Education & Professional Training is providing financial and technical support for various components of education across the country. It is intending to do

more for building capacity of curriculum developers, textbook writers, teacher trainers, teachers, and instruction at classroom level. NEAS conducted the assessment on students' learning achievement in Urdu, Mathematics for Grade-8 and English and Science for Grade-4 levels over a sample of 11200 students from 448 schools throughout Pakistan in the month of May 2014 to gauge the performance of different components of education. The most significant aspect of the national assessment is that this is the only way of identifying educational problems on scientific basis, solution of the problems, and ultimately puts the system on the right rail without waste of time, human and financial resources.

The Young Learners are happy to be the part of National Assessments

ASSESSMENT FRAMEWORKS

The assessment frameworks being used by NEAS for NAT 2014 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
- Reading for Information
- Reading to Perform a Task

Aspect of Reading
- Forming a General Understanding
- Developing Interpretation
- Making Reader Text Connections
- Examining Structure and Content
- Knowledge of Language and Vocabulary

WRITING

Narrative Writing
Informative Writing
Persuasive Writing

ASSESSMENT INSTRUMENTS


Assessment Material for NAT-2014

Reliable and valid instruments are the backbone of assessment study. NEAS has established a very sound mechanism for developing assessment instruments based on subject tests and variety of questionnaires. Very comprehensive assessment frameworks have been developed for each subject in which learning achievement of students is measured as required to be measured. The frameworks are closely aligned with the national curriculum of the respective subjects. These assessment frameworks are reviewed as and when deemed necessary in line with national requirements. The development and review of assessment frameworks are done mostly by a team comprising of subject experts from NEAS, PEACEs, BoCs, Education Departments and working teachers. Over the years potential item writers for various subjects have been identified who are supposed to develop good creative items at par with international standards. Due care is given to the process of item writing to enable an item to measure what it is supposed to measure as required by the assessment frameworks and national curriculum. The item writing is a continuous process at NEAS. The items with good statistics become part of the NEAS Item Bank. The Item Bank gives a detail account of each item and assessment studies undertaken. Usually the items are reviewed by the subject experts who have not been involved in the development of items at any stage. After multiple content reviews the items are finalized after the language review and subsequently placed in the booklet on the professional judgment of the subject expert. A number of booklets are prepared covering every single Students Learning Outcome (SLOs). The number of items piloted is five times of the items required for the large scale assessment.

The piloted items are analyzed with specific objective and only the best fit items are retained after analyzing them on five different dimensions of statistics. These dimensions are:

- Difficulty Level of Items
- Discrimination Indices
- Point Bi-Serial
- MNSQ
- Students Responses on Item

Great care is taken to enhance the reliability and validity of the assessment instruments. For the purpose, sometimes two or more than two parallel booklets are developed for the large scale assessment to ensure the complete coverage of curriculum and to minimize the impact of cheating and guessing impact on the findings of assessment. The establishment of benchmarks for the students at national and cross-national levels, curriculum and sample based assessments are used. NEAS used these assessments in 448 schools from four provinces and four areas of Pakistan. NEAS also added some specific questions to these assessments, to find learning achievements of the students and teachers. The four subjects, alongwith background questionnaires for students, parents, teachers and

head teachers, were used in National Achievement Test (NAT) 2014. They were based on assessment frameworks currently being used by the NEAS.

i) Achievement tests in Urdu, Mathematics, English and Science.
ii) Student, parents, teacher, and head teachers background questionnaires.
iii) These tests were based on the National Curriculum 2002-2006.

The following processes were adopted:

Items were based on conceptual understanding; procedural knowledge and problem solving in Mathematics. The items of Urdu & English were based on literary experience, information, and performing a task for the domain of context of reading. On the other hand for the domain of aspect of reading, the items were based on general understanding, interpretation, making reader-text connection, examining content & structure and grammar & vocabulary. The content domain of Science was tested through the items based on conceptual understanding, scientific investigation, and practical reasoning. Questionnaires of separate backgrounds contained questions to identify the association of variables such as home, personal, school, teaching and community variables with student achievement. This included inputs from home and community, students' attitude towards school and teachers, the teachers' qualification and teaching practices, multi-grade teaching etc. The background data was used to identify needs for improvement and factors associated with achievement.

The background data instruments were developed in line with Craig Heneveld Framework Model. It was based on:

- The Students
- Supporting Inputs from Outside the School
- Technical Learning Process
- Enabling Conditions
- School Climate

Various seen and unseen variables that can affect students' learning achievement were used in the background questionnaires. These questionnaires were also piloted. They were so designed as to make them useful for policy planners, curriculum developers, textbook writers, teacher trainers, teacher instructions and overall teaching-learning process.

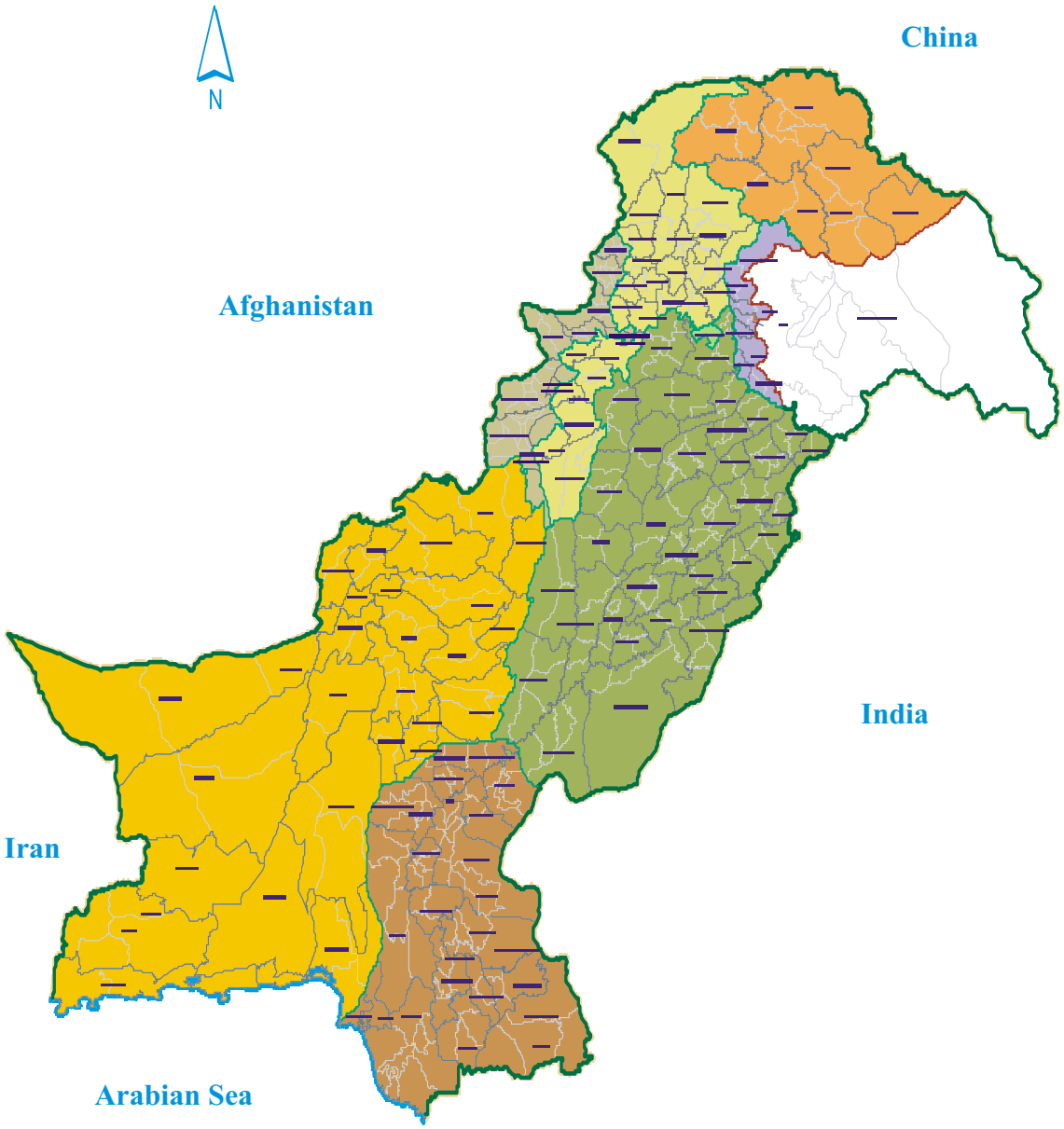
The information resulting from this process was to be more meaningful. The teachers were also given learning achievement tests, but their performance is not being reported here specifically as the sample drawn did not have 'teacher' as a stratum but a fraction of total teachers had less scaled mean sores than the segment of a student sample. On the other hand, variable related to teacher and head teacher have been reported in terms of their role in teaching learning process. It had to be filled in overall instructional and school management context to determine the impact of those variables on students' learning achievement.

NEAS, Provincial and Area Education Assessment Centers collaborated to develop the tests based on National Curriculum 2002 & 2006. These tests were first piloted and then used in NAT 2014, as piloting is an integral part of the assessment process that makes the tests error-free to a great extent. These instruments were administered in 2013 to 50 sample schools from ICT, Swabi and Abbottabad on a sample of 1000 students, with the aim to have them valid and reliable, both on the basis of statistics and professional judgment of the panel of experts. These tests were for grade 8 & 4 students

in the subjects of Urdu, Mathematics, English and Science. The responses were based on MCQs (Multiple Choice Questions) to save both time and money. The tests of Urdu and English both contained subjective items according to need and nature of the subjects. English as a subject was tested in NEAS for the first time. Great care was taken to mark, code and score the test by experts. The items included difficulty, discrimination indices and point bi-serial and were prepared by Subject Specialists with multiple reviews.

Item Development NAT-2014

NEAS engaged both local experts and experts from Provinces and Areas Education Assessment Centers to ensure that the tests were flawless. They were guided by the NEAS Subject Specialists. The results of piloted tests were analyzed and reviewed to ensure their content relevance, ability coverage and reliability. The tests aimed at equating assessment results of instruments and contained different items of various cognitive abilities in different orders. This helped in bringing out real learning achievement of the students.



Map of Pakistan

THE NATIONAL SAMPLE

Different assessment processes like development of assessment instruments, sampling, test administration, data analysis and its reporting are very important in validity and reliability of assessment results. That is why sampling designing requires special care. For this purpose the National Education Management Information System (NEMIS) data base was used as sample frames. The sample of NAT 2014 was used with the following agreed explicit strata:

- **Gender:** Boys or Girls
- **Location:** Rural or Urban
- **Provinces:** Baluchistan, Khyber Pakhtunkhwa, Punjab and Sindh
- **Areas:** Azad Jammu & Kashmir, FATA, Gilgit-Baltistan, Islamabad Capital Territory)

The two-stage stratified random cluster sample used by NEAS for the NAT -2014 thus known as stratified random sample based on Probability Proportionate to Size (PPS). The sample designed for NAT -2014 is from 448 schools, 224 schools each from Grade 4 and Grade 8 were taken. Where the number of students was more than 25, a structured Random Number Table (RNT) purposely designed was used in the selection of students for each grade. In such sample, the sample frames are separated from the NEMIS database initially on the province / area, then on location and finally on gender basis. The schools with low enrollment were deleted from the sampling frames and subsequently applied the principle of PPS. The planned samples are usually not achieved 100% due to uncontrollable circumstances emerging during scheduled assessment dates. The school and student sample was half of the total sample for each grade. The planned school and student samples for Grade-8 and Grade-4 are discussed in detail here.

Table 1. School Planned and Achieved Sample Grade-8

Province	Planned Schools	Achieved Schools	Achieved Percentage
AJK	9	9	100
Balochistan	23	23	100
FATA	9	9	100
Gilgit-Baltistan	9	9	100
ICT	11	11	100
KPK	38	37	97
Punjab	85	82	96
Sindh	40	39	98
Total	224	219	98

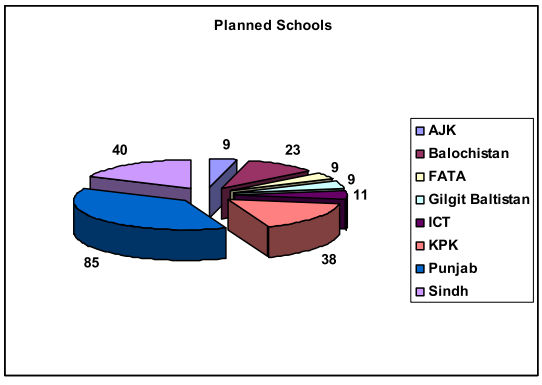


Figure No.1 National Planned School Sample Grade-8

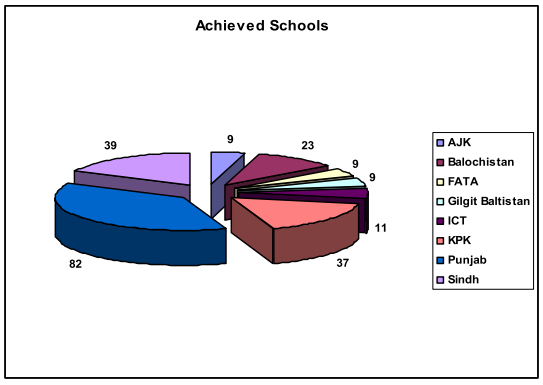


Figure No.2 National Achieved School Sample Grade-8

A sample of 224 schools was taken for Grade 8; with a maximum number of 5600 students were targeted to reach for NAT 2014 in the subject of English (Reading & Writing) and Science. Out of 224 schools NEAS could reach 219 schools, which were 98% of the total sample. The remaining 2% schools were found closed due to curfew in some of the districts of Khyber Pakhtunkhwa and some of the remote schools of Sindh province were found closed before the start of summer vacation announced by the Education Department, Sindh.

Likewise a student sample of 5600 was designed for 224 schools out of which 5219 students were actually assessed, which was 93% of the sample students. The difference in percentage of reached schools and reached students involved a few more factors like some schools did not have number of students 25 as minimum requirement and in some cases the students appearing on day one could not appear in the rest of the subjects due to their absence on the next scheduled dates of national assessment.

Table 2. Students Planned and Achieved Sample Grade-8

Province	Planned Students	Achieved Students	Achieved Percentage
AJK	225	213	95
Balochistan	575	509	89
FATA	225	220	98
Gilgit-Baltistan	225	208	92
ICT	275	267	97
KPK	950	889	94
Punjab	2125	2014	95
Sindh	1000	899	90
Total	5600	5219	93

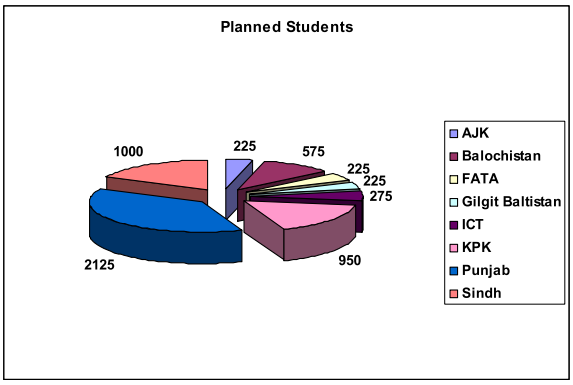


Figure No.3 National Planned Student Sample Grade-8

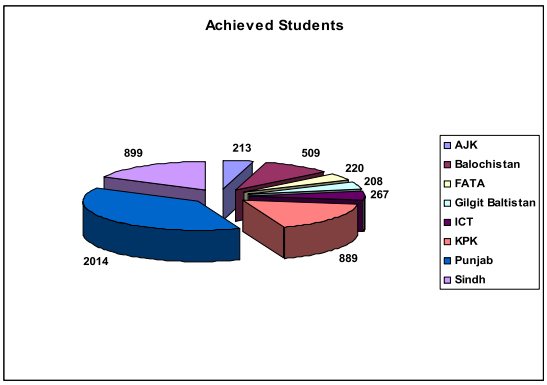


Figure No.4 National Achieved Student Sample Grade-8

Since the sample design of NAT 2014 is stratified random and PPS in nature, therefore, the sample planned is representing the explicit strata of the whole population. In total 5600 students were planned for four provinces and four areas. The highest student sample was taken from the province of Punjab where the population size of students was accordingly big.

The lowest student sample is 225 from AJK, FATA and Gilgit Baltistan. Although there exists marginal difference in percentage for the school sample for these three areas but in actual practice NEAS took round of percent in terms of school sample so as to avoid greater difference in the student sample. During the NAT 2014 test administration, the actual number of students assessed in all three subjects Urdu (Reading), Urdu (Writing) and Mathematics of Grade 8 were 5219, which were 93% of

the total student sample. The highest student sample achieved was 98% from FATA and lowest student sample achievement was from Baluchistan with 89% students of the planned sample size. The student sample achievement below 100% was due to various reasons such as:

1) Closure of schools due to curfew in Khyber Pakhtunkhwa
2) Unofficial closure of schools before official notification of summer vacation in the province of Sindh
3) Enrollment less than 25 student in the sample schools

Table 3. School Planned and Achieved Sample Grade-4

Province	Planned Schools	Achieved Schools	Achieved Percentage
AJK	9	9	100
Balochistan	21	21	100
FATA	9	9	100
Gilgit-Baltistan	11	11	100
ICT	11	11	100
KPK	36	32	89
Punjab	91	88	97
Sindh	36	30	83
Total	224	211	94

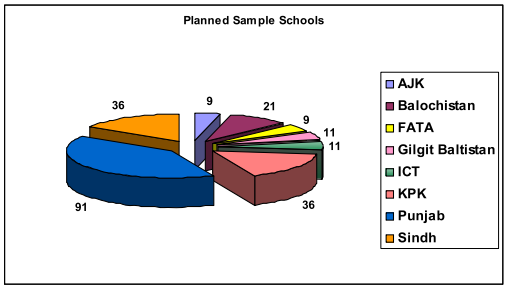


Figure No.5 National Planned School Sample Grade-4

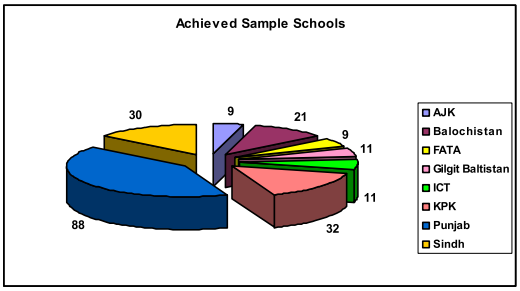


Figure No.6 National Achieved School Sample Grade-4

The overall target schools reached during NAT-2014 were 211 (94%) out of 224 proposed sample schools of Grade-4. The whole country was split into eight provinces. 100 % schools were reached in five of the provinces whereas 3 to 17% schools in three provinces could not be reached due to various unavoidable reasons.

The Grdae-4 sample planned for NAT-2014 comprised of 224 schools. The students appeared from 211 schools, which was 94% of the total school sample. The 100% achievement of school sample was obtained from AJK, Balochistan, FATA, Gilgit Baltistan, ICT, while the school achievement from KPK 89%, Punjab 97% and Sindh 83%. The sample schools which could not be reached due to curfew in some of the districts of KPK and some of the schools were closed due to unofficial closures of schools.

Table 4. Students Planned and Achieved Sample Grade 4

Province	Planned Students	Achieved Students	Achieved Percentage
AJK	225	197	88
Balochistan	525	359	68
FATA	225	113	50
Gilgit-Baltistan	275	248	90
ICT	275	228	83
KPK	900	772	86
Punjab	2275	1889	83
Sindh	900	481	53
Total	5600	4287	77

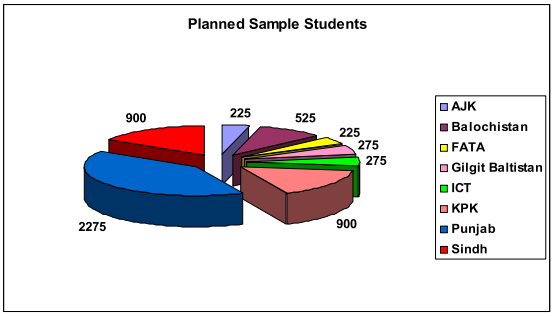


Figure No.7 National Planned Student Sample Grade-4

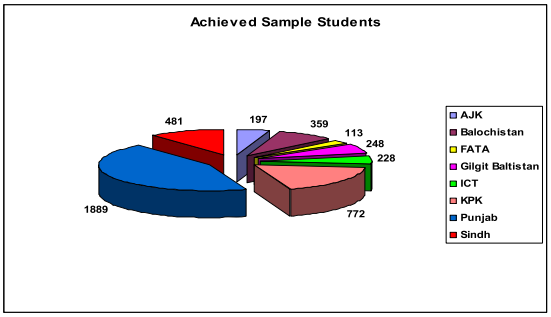


Figure No.7-b National Achieved Student Sample Grade-4

The Grade-4 student sample was planned by identifying 32 explicit strata. The second important feature of the sample was that it based on Probability Proportionate to Size (PPS). Due weightage was given to the strata in sample as per actual population of enrolled students. A sample of 25 students was selected from a school. In case of students' strength being more than 25, the sample selection of students was made through a structured "random number" table purposely designed and provided to the test administrators by NEAS. Overall 77% student sample was assessed from all over Pakistan. The highest 90% students sample was assessed from Gilgit Baltistan and the lowest 50% student sample that was reached was from Federal Administered Tribal Areas (FATA).

The students sample planned for Grade-4 out of 224 schools was 5600. A maximum number of 25 students were taken from the sample schools, where the students' enrollment in Grade 4 was more than 25 students, a random number table purposely designed for picking up 25 students without the will of the test administrator. Almost 77% students sample was achieved, which in number is 4287 students. The highest student sample achieved is 90% from Gilgit Baltistan and lowest sample achieved is 50% from FATA. The sample achieved less than required number of 25 students from a school may be due to less number of enrollments, absentee of the students during the NAT schedule etc. The remaining provinces and areas' student achievement in NAT is between 50 to 90 percent.

TEST ADMINISTRATION TRAINING & DATA COLLECTION

To maintain uniformity in the test administration and to reduce the individual differences of the test administrators, NEAS trained master trainers from the provinces and areas in the light of test administration training manual. The master trainers were supposed to impart the same trainings to the test administrators at their respective province / area. The whole exercise helped NEAS to collect data in a similar way free of errors committed due to individual differences of the test administrators.

The NAT 2014 data from the field was collected with the help of in-service teachers from all over Pakistan. A comprehensive test administration manual was also developed to minimize chances of mistakes in test administration. As the number of schools in the NAT 2014 was only 448; the number of Test Administrators was fixed at 448, one test administrator for each sample school. The serving teachers were also given test administration training to meet the requirements of planned sample for the area.

NAT Assessment 2014

It was the duty of test administrators to administer the test of NAT 2014 to be held on May 26-29, 2014 in four Provinces and four Areas of Pakistan over a student sample of 11200 from 448 schools. The test administrators were supposed to submit the assessment material back to NEAS well in time without any damage of data through courier service. Local test administrators were at liberty to submit assessment data at NEAS office by hand. The assessment material was sent to the respective Provincial and Area Coordinators and distributed from there as per planned sample. To ensure the quality of the assessment, the process was vigilantly monitored by the senior officers of the Ministry of Federal Education & Professional Training. The team of monitors comprised of the master trainers, subject specialists, coordinators of assessment centers, directors of education departments, and other stakeholders from education department. The monitors monitored the tests vigilantly and submitted their structured reports of the proceedings to the NEAS.

Test Administration Training NAT-2014

DATA HANDLING

The fair, valid and free of prejudices assessment requires transparency at every single stage. In case of data handling, normally the schools are allocated a unique NEAS identification code which makes clear distinction even among the provinces as well as areas. The data was separately organized for each province area on the basis of these codes. The lists prepared for the allotment of scripts of a particular sample schools are based on NEAS ID. The booklets are already arranged in order of their unique code.

Assessment Material NAT-2014

Marking and coding scheme was prepared by the Test Administrator of NEAS. The team comprising of 5 subject experts for each subject from NEAS and Federal Directorate of Education (FDE) were involved in the efforts of marking and coding. The marking and coding team, being new to the job, was guided. Each marker and coder was trained on the similar methodology of marking and coding, inclusive of rubrics in the subjects of Urdu & English. Each answer was specified with a code number. The markers and coders were given a comprehensive training how to mark and code a question in the light of rubrics. The aim 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 supportive examples helped markers and coders an additional facilitation how to allocate each mark.

The markers and coders were given training, but it cannot be ensured that it was adequate because the process requires extensive training to enable them to work on the standards and norms required internationally. However, the training given enabled the markers and coders develop a general consensus regarding mark allocation. The process of marking and coding took more than a month to mark and code approximately 44000 booklets.

Marking & Coding NAT-2014

An efficient team of markers and coders was an important component of the process but, as human beings, their work might not be error free even after training. The maintenance of authenticity in the marking & coding needed monitoring of the process by third person to make the markers and coders more vigilant in their work. The monitors were assigned to verify at random a minimum of 25% of the marked scripts. The practice purged the assessment of many mistakes as they were referred back to the markers and coders for rectification. An effort was made to make NAT-2014 assessment study, by and large, free of mistakes. On the similar pattern the data entry team comprising of the students of Bachelor of Science Education (BS Ed.) from Federal College of Education (FCE), Islamabad was trained for data entry direct on SPSS files. The careful approach for execution of every single assessment activity can help NEAS authorities to have relatively good quality assessment report.

AN UNDERSTANDING OF NAT FINDINGS

The data collected from four provinces and four areas is referred as national data for Pakistan. The response of sample students who undertook national assessment tools were analyzed on different software like SPSS, ConQuest, and WinStep. The findings emerged as a result were discussed among the experts from NEAS, Curriculum & Textbook Wing (C&TW), National Advisory Council on Education and FDE.

The tests, based on National Curriculum (NC) 2002 and 2006, were prepared by the team of NEAS and subject experts from C&TW and FDE. These tests aimed at assessing students' learning achievement for which the yardstick of their score on the achievement tests was used. The scores were to be indicative of the fact as to what extent the students could achieve the objectives of the NC. To analyze performance of students in learning achievement, the theory used was 'Item Response Theory (IRT)' and the parameter was Rasch model calibrations. Scaled score ranging from 0-1000, with scaled mean score of 500, were used to minimize the possibility of answers based on guessing.

The scaled score used in this study was the same as practiced in international assessment studies such as TIMSS, PIRLS and TOEFL. It was so designed that a student getting 50% marks had a scaled score of 500. The standards deviation was fixed at 100. This is the scale that will be used to report scores in future whenever the assessment study is conducted by NEAS so that the process is uniformed and performance of different groups of students is ascertained. This scaled mean score can also be used by the respective provincial and area level detailed exclusive reporting to set benchmark for improvement of learning achievement. NEAS carried out classical and IRT analysis on NAT- 2014 data. Usually the figure of 'ITEM MAPS' are obtained through IRT analysis. The item map gives information about the performance of students in terms of their achievement on a test with reference to each item. The item map gives distribution of students and their achievement on the test into two parallel halves separated by a dotted line generally known as 'Logit Scale'. On the left of the Logit Scale of an item map the half represents the distribution of the students and right half on the Logit Scale shows the difficulty of the items. The position of the Logit Scale is vertical on the item map which is marked with '0' in the middle describing mean on the item map. The students around mean are of average ability and the corresponding distribution of items is treated as 'moderate'. The other marks above and below the mean on an item map describe the high and low ability of students as well as state the difficult and easy items on the test respectively.

For deeper understanding it can be said that the item map of a subject gives information that interprets performance of students in a given subject in terms of the skills and content with further breakup of performance into three main categories under the title 'Difficult', 'Moderate', and 'Easy'. The item numbers are shown at their calibrations alongwith the person distribution on the item map generated for any particular subject. Around the Logit Scale, “M” stands for the location of mean measure on the item side as well on the person distribution side respectively. Similarly, “S” and “T” markers are placed two and three sample standard deviation away from the mean both for items and person distribution respectively. Upward markers from the mean are positive, and the distribution of students indicate their high ability but the corresponding items on the top of item map are difficult for the high ability students. Below the mean markers are negative and indicate the low ability of students and the corresponding distribution of items at the bottom of item map are stated to be easier even for the low ability students. The items between the 'difficult' and 'easy' items are called 'moderate' items. Likewise at the bottom of item map each 'number sign (#)' indicates number of students such as at the bottom of each test one '#' stands for number of students. In general, the item map shows the relationship how students' ability corresponds to the items of different contents and cognitive levels. The detail of the items and their codes can be seen in the given annexure at the end of the report.

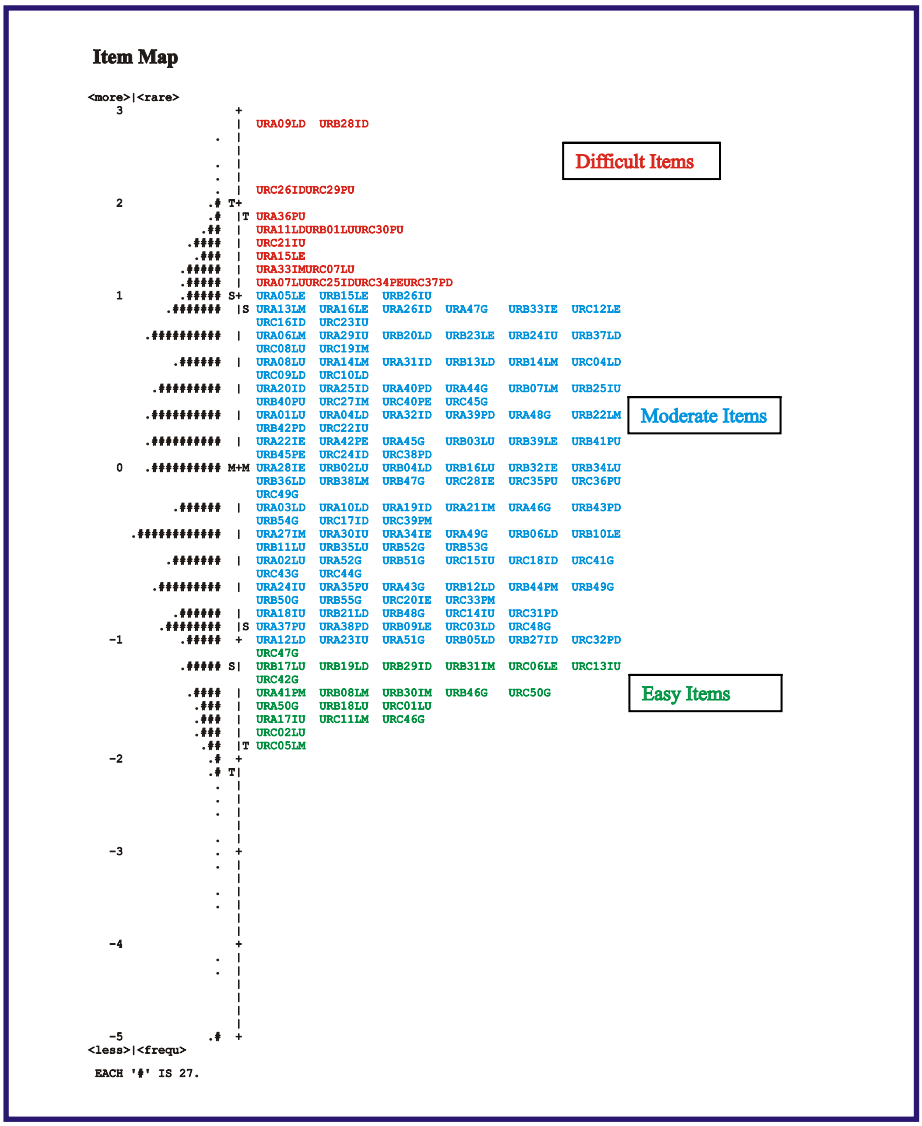


Figure No.8 Item Map-Urdu (Reading) Grade-8

A description of the item map, as given above, is for the understanding of the audience. The item Map of Urdu (Reading) is elaborated here. The item map is divided by a dotted line usually called as Logit Scale. The item distribution reveals about the nature of items. The items (URA15LE, URA11LD, URB01LU, URB28ID, URC25ID, URA33IM, URC34PET, URA36PU, URC37PD) in red colour at the top of item map were difficult even for the high ability students. The items (URA05LE, URB14LM, URC10LD, URC08LU, URA28IE, URB32IE, URC17ID, URA21IM, URB25IU, URC24ID, URA51G, URB55G, URC45G) in blue colour spread at the middle of the item map around the "M" marker were found moderate as the average ability students were able to solve them. Similarly items (URB17LU, URB19LD, URC06LE, URC11LM, URA17IU, URB30IM, URA41PM, URB46G, URC42G, URA50G) in green colour located at the bottom were considered easy items even for the low ability students. The items shown as the most difficult, moderate and easy in the text were just an example. The item detail is available at the end of the report in the annexure.

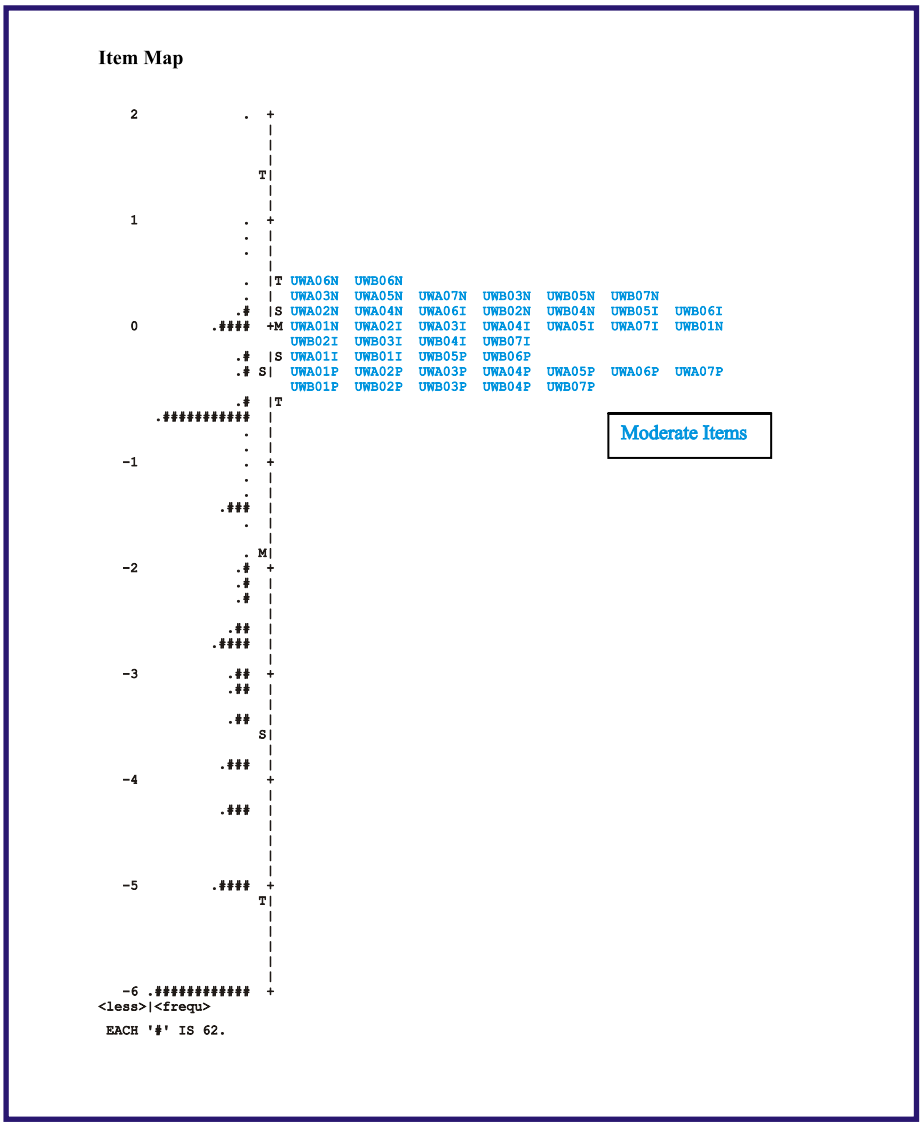


Figure No.9 Item Map-Urdu (Writing) Grade-8

The item map for Urdu (Writing) provides an understanding to the audience with reference to the ability of students and difficulty level of each item. The item Map of Urdu (Reading) is elaborated here. The item map is divided by a dotted line usually called as Logit Scale. The item distribution reveals the nature of items. The item map distinguishes between the most difficult items, moderate, and easy on the basis of their distribution around the Logit Scale.

The performance of students in terms of scaled score in Urdu (Writing) was much lower than the set mean of 500. The items distribution on the map reveals that all items on the test of Urdu (Writing) were corresponding to the average ability students of the sample and declared as moderate items. No single 'difficult' and 'easy' item was found corresponding to the high and low ability students. The items (UWA06N, UWA07N, UWB06I, UWA04I, UWB01P, UWA07P, UWB05N, UWA07I, UWA02P) were declared as 'moderate'.

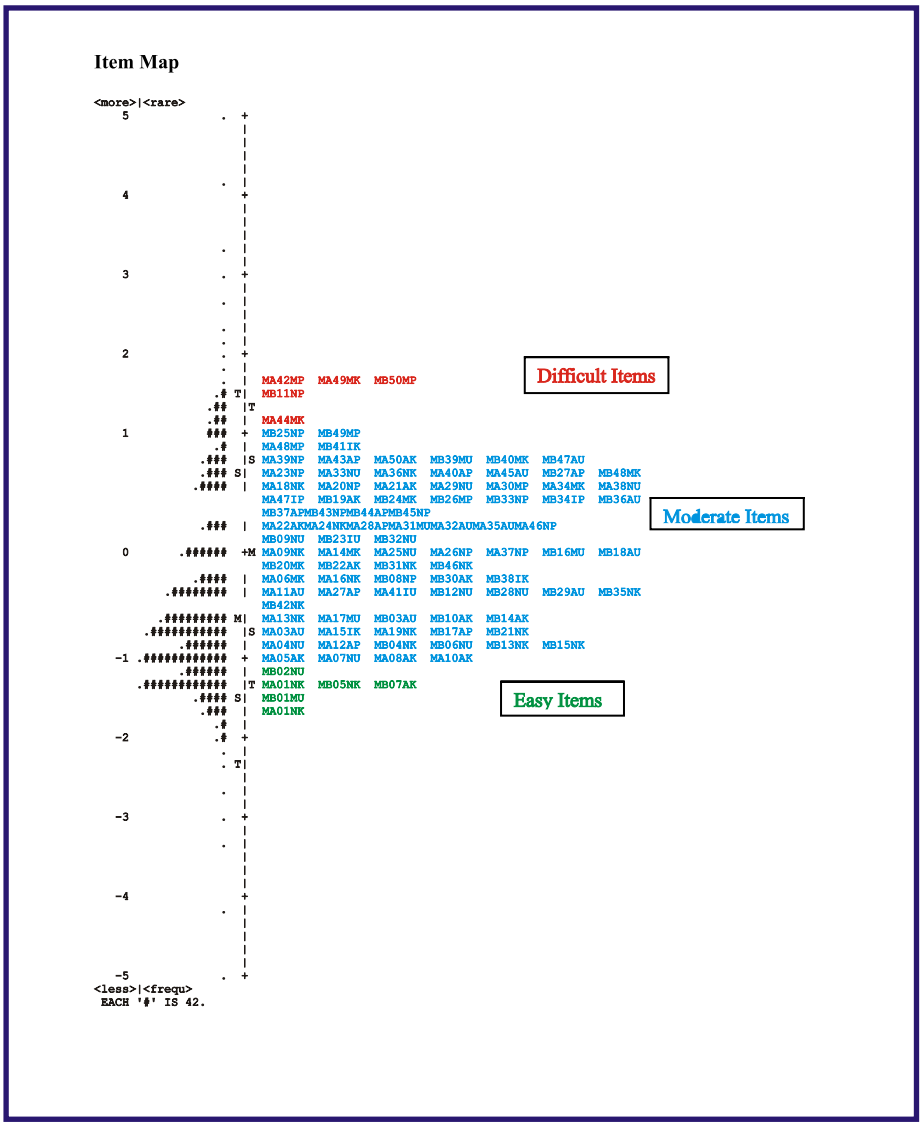


Figure No.10 Item Map-Mathematics Grade-8

In the subject of Mathematics, two versions of the booklets were administered to the students. A detailed description of the item map of Mathematics is given above for the understanding of the audience. The items (MA42MP, MA49MK, MB50MP, MB11NP, and MA44MK) in red colour at the top of item map were difficult even for the high ability students. On the other hand items around the mean marker were moderate. These items were MB33IU, MB32NU, MA09NK, MA14MK, and MB46NK. The items which were assembled at the bottom of the item map were 'easy' for the students with low ability. The details of those items are at MB02NU, MA01NK, MB05NK, MB01MU, MA01NK and MB07AK.

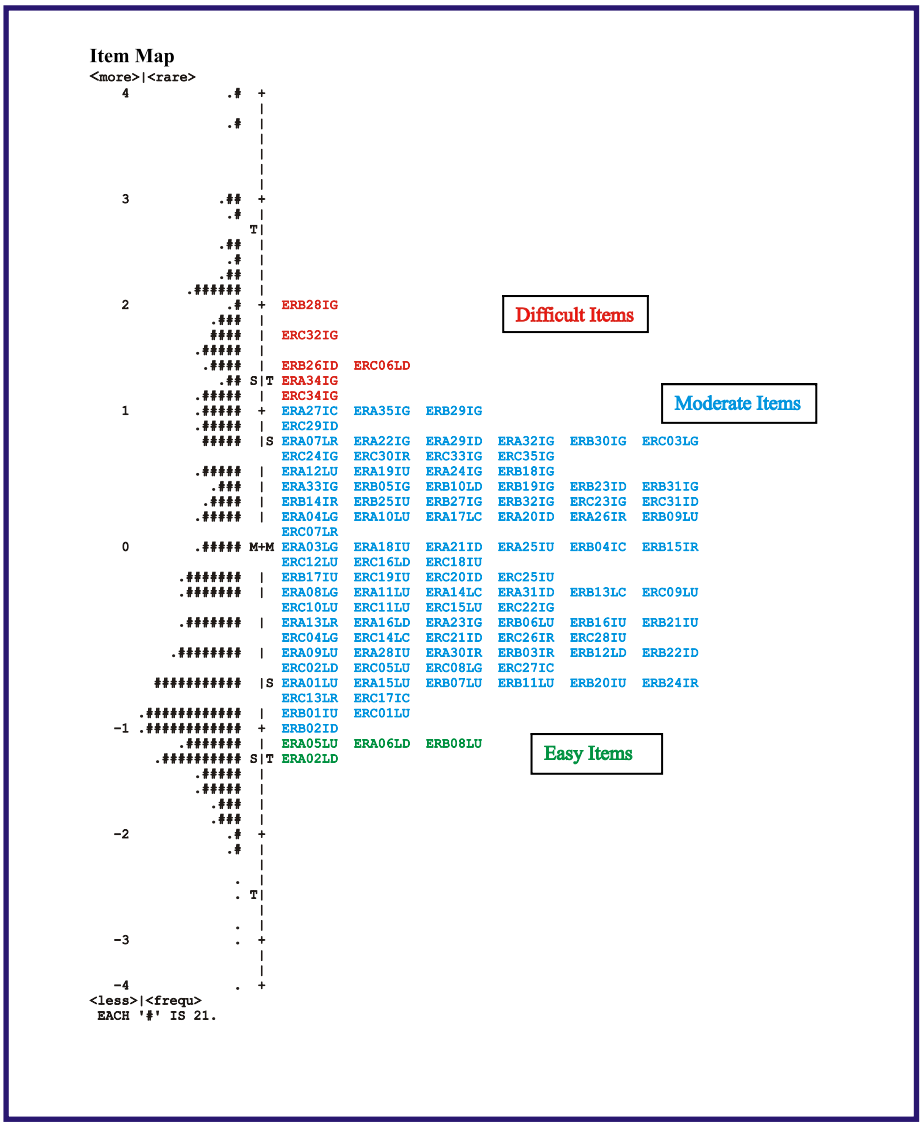


Figure No.11 Item Map-English (Reading) Grade-4

The subject of English (Reading) was introduced in the national assessment for the first time. The performance on the average scaled score was comparatively low. The item distribution described the test nature corresponding to the ability of the students taking part in the national assessment. The items considered difficult for the high ability students were ERB28IG, ERC32IG, ERB26ID, and ERC06LD pointed out through an illustration marked as “Difficult Items” at the top of item map, and were found even difficult for the high ability students. The items (ERA03LG, ERA18IU, ERB04IC and ERB15IR) in blue colour spread at the middle of the item map around the “M” marker were found moderate as the average ability students were able to solve them. Similarly items (ERA05LU, ERB08LU, ERA02LD and ERA06LD) in green colour located at the bottom were considered 'easy' even for the low ability students. The item map illustration can help us to look into detail why certain items appeared 'difficult', 'moderate' and 'easy' for the students of different abilities. On the basis of these an effective teaching training can be designed.

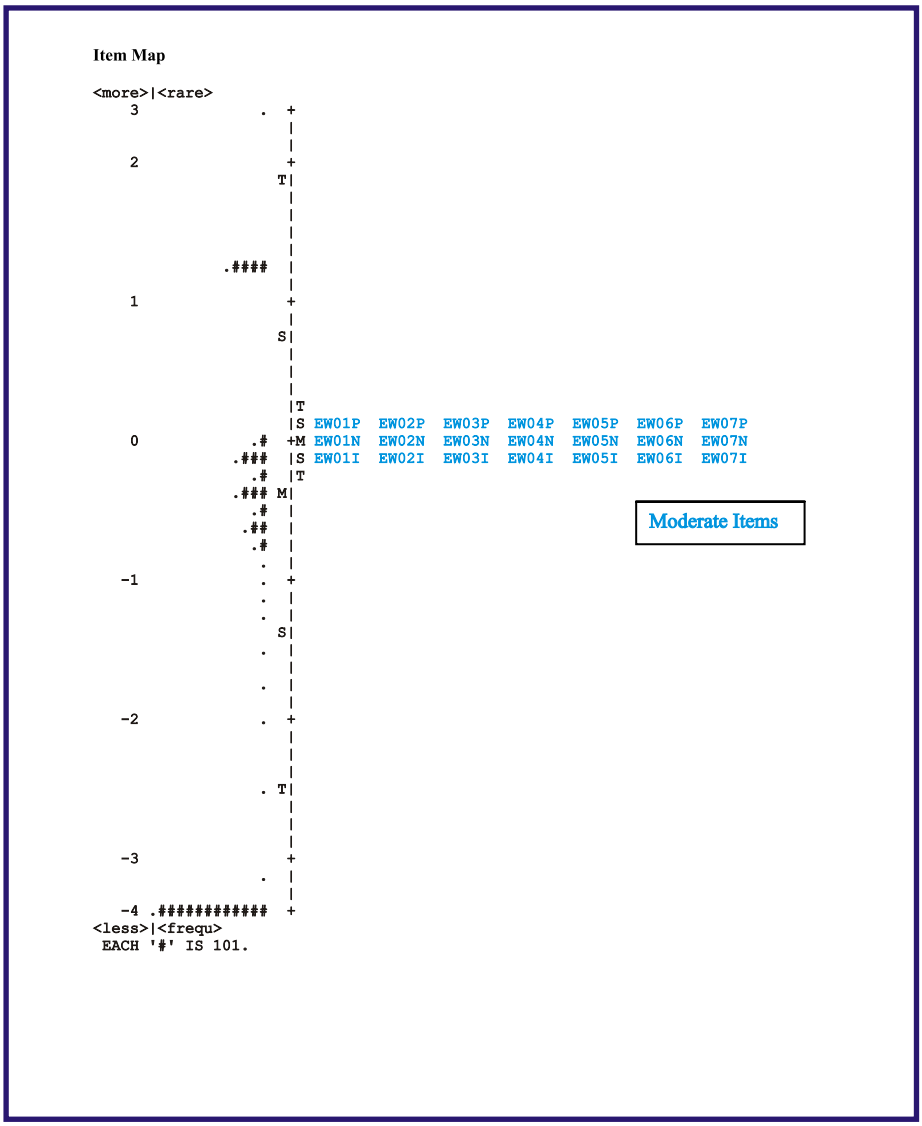


Figure No.12 Item Map-English (Writing) Grade-4

The subject of English (Writing) was the most difficult one among all subjects tested during the national assessment as the mean scaled scores obtained by the students were far below the set mean of 500. The item map distribution of students and items reveals that the students do not have high ability for solving the test of English (Writing). Majority of students were of average ability concerning the test which is evident from the distribution of items around the mean marker on the Logit Scale. The students on the whole had average ability and the items were declared as 'moderate'. The few 'moderate' items are EW01P, EW02P, EW03P, EW04P, EW05P, EW06P, EW07P,EW01N, EW02N, EW03N, EW04N, EW05N, EW06N, EW07N, EW01I, EW02I, EW03I, EW04I, EW05I, EW06I, EW07I No single item was found on the top and bottom of the item map which reveals that all the items are 'moderate' on the test of English (Writing).

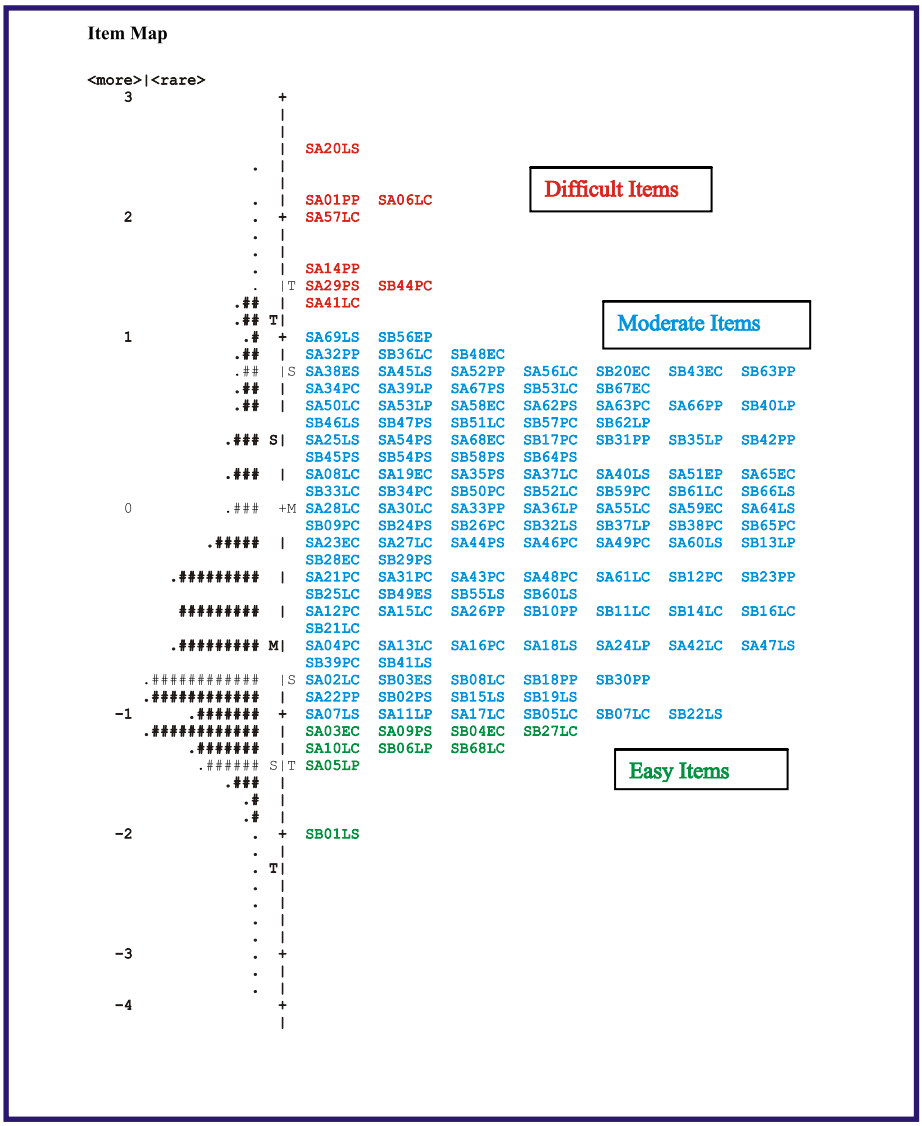


Figure No.13 Item Map-Science Grade-4

The average scaled score obtained in Science in NAT-2014 was low as compared to the score of last national assessment. The items' distribution was found on the top, middle and bottom of the item map which means that the Science test comprised of the 'difficult, 'moderate', and 'easy' items. The most 'difficult' items were (SA20LS, SA01PP, SA06LC, SA14PP, SA57LC, SB44PC), 'moderate' items were (SA28LC, SB09PC, SA23EC, SB28EC, SB29PS, SA59EC, SA64LS), and the 'easy' items were (SA03EC, SB04EC, SB27LC, SB06LP, SA05LP, SB01LS). The performance of the students at the average was not good in Science.

ANALYSIS OF NAT-2014 FINDINGS

Data needs to be analyzed scientifically, so that there is minimal room for mistakes and the resultant wrong direction. NEAS took care to use the widely accepted method in analyzing data. First, the data entry process was completed. It was followed by its conversion into SPSS file format. But, as SPSS is of limited features, the following software's were also used to analyze the data.

- SPSS (Version 15)
- WINSTEPS (IRT analysis)
- AM (for application of tests of significance)
- ConQuest (for IRT analysis)

The data gathered from all over Pakistan sampled schools was passed on to NEAS to be assessed by the psychometrics experts. They analyzed this data in detail to pinpoint the achievement and background variables that were of great value to teaching-learning process in the education system. The report focused on three explicit strata i.e gender, location and provinces /areas. All three strata are of great importance and have an attraction for the stakeholders to know the performance of students in the context of strata.

SIGNIFICANCE LEVELS

In an assessment it is possible that reported scores may occur by chance. To obviate this possibility, significant values were used to see to what extent this could have happened. If there is a probability of $P < 0.05$, it means that the difference has occurred in just 5 out of 100 cases. But if P is < 0.01, it means that the difference has occurred only in 1 out of a 100 cases. Where P was < 0.000, it means that the probability of chance occurrence was zero in 1000 cases (stating the difference highly significant).

REPORTING STATISTICS

After the findings were compiled, it was felt necessary to facilitate the general audience understand the findings. In this respect the NEAS findings were reported and developed, so that the general stakeholders could understand them. Maximum effort was made to present the findings in the easiest possible way. The item maps and probability value enabled the stakeholders make their own judgment on the report. The report was about the results of the NAT-2014 regarding 448 sample schools and 11200 students from all over country.

Section - II


ASSESSMENT
redirects teaching
& learning
NEAS

FINDINGS GRADE-8 NAT - 2014

The achievement tests were administered in the subjects of Urdu (Reading & Writing), Mathematics, English and Science on a representative sample of Grade 8 & 4 schools. The data for the sample used was obtained from the NEMIS established in the AEPAM.

National Scores Grade-8

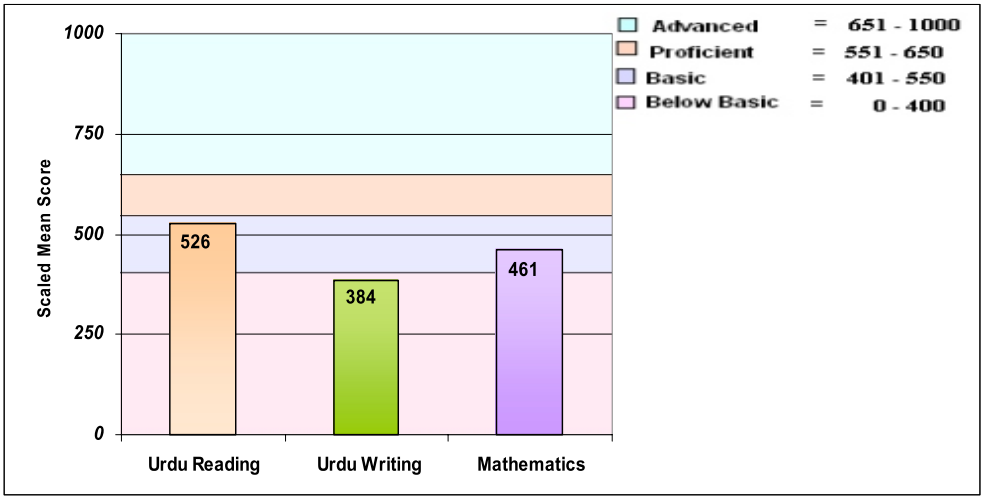


Figure No.14 National Scaled Mean Score Grade-8

The NAT2014 for Grade 8 was conducted in 224 schools over a stratified random sample of 5600 students across the country. 5219 students participated in the achievement tests of Urdu (Reading & Writing) and Mathematics. The students' learning achievement was measured against the scaled score ranging from 0 -1000. The scaled mean score was set at 500 with a standard deviation of 100.

The highest scaled mean score achieved was 526 in the subject of Urdu (Reading) and the lowest scale mean score was 384 in Urdu (Writing). The scaled mean score in Mathematics was 461, which reveals comparatively better performance of the students as the national scaled mean score in Mathematics in the previous assessment studies was low. Alarmingly, the scaled mean score in all three subjects remained below the average scaled mean score of 500 except Urdu (Reading), which speaks of an overall below average performance. An immediate intervention in weak areas would be required to raise the scaled mean score above the average scaled mean score of 500 as it is believed that the average scores obtained should at least be more than the set mean score.

Percentage Below & Above Mean Grade-8

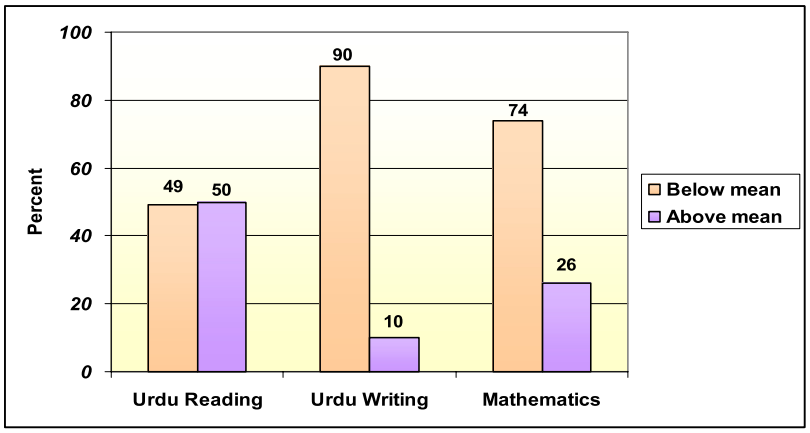


Figure No.15 Performance of Students Below & Above Mean Score-500

The performance of the sample students in terms of percentage obtained below and above the scaled mean score set at 500 was analyzed in all three subjects. In Urdu (Reading) the students below the set mean of 500 were 49% and above were 50%. The situation in Urdu (Writing) was totally reciprocal as 90% students were below the mean of 500 and hardly 10% students were above the mean of 500. The subject of Mathematics had relatively good score as compared to Urdu (Writing). 74% students obtained scaled mean score below the mean of 500 and only 26% students could cross the mean of 500. In general it is concluded that the overall performance of the students in all three subjects was not presenting good picture. The situation draws the attention of all stakeholders to focus on priorities for improvement.

Province-Area Scores Grade-8

Table 5. Provinces & Area Scaled Mean Score with sample percentage

Province/Area		Scaled Mean Score		
		Urdu Reading	Urdu Writing	Mathematics
AJK	4%	518	352	445
Balochistan	10%	360	441	422
FATA	4%	490	154	398
Gilgit-Baltistan	4%	491	298	438
ICT	5%	536	471	466
Khyber Pakhtunkhwa	17%	495	227	423
Punjab	39%	568	173	532
Sindh	17%	393	309	416
Difference		Sig.	Sig.	Sig.

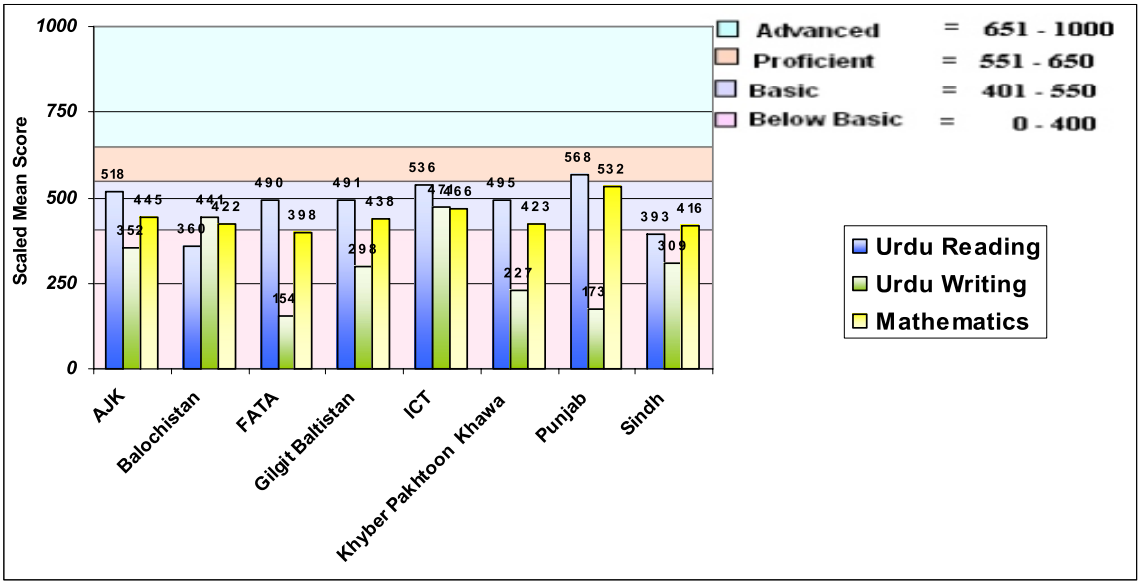


Figure No.16 Provinces & Area Scaled Mean Score

In Urdu (Reading), the position of students of Punjab was on top with scaled mean score of 568 among the 08 provinces / areas. Surprisingly, Baluchistan is at the bottom in order of merit of students' scaled mean score as it achieved 360 as compared to previous assessment studies where the performance of their students was relatively high. Out of four provinces and four areas only one province and two areas could cross the set scaled mean score in Urdu (Reading)

.

The performance of students of Islamabad Capital Territory (ICT) remained the highest in Urdu (Writing) with a scaled mean score of 471 and the lowest achievement was of the students of Federally Administered Tribal Area (FATA) with a scaled mean score of 154. Contrary to the Urdu (Reading) the students of Baluchistan performed exceptionally well in Urdu (Writing) by securing scaled mean score 441. Unfortunately, students from none of the provinces and areas could cross the set scaled mean score of 500.

The subject of Mathematics is usually considered difficult in comparison to national language but the performance of students was relatively satisfactory in Mathematics as compared to Urdu (Writing). The highest scaled mean score achieved in Mathematics was 532 by the students of Punjab and the lowest scaled mean score 398 was achieved by the students of FATA. Credit goes to the students of Punjab who only were able to achieve scaled mean score higher than the set scaled mean score of 500.

Rural-Urban Scores Grade-8

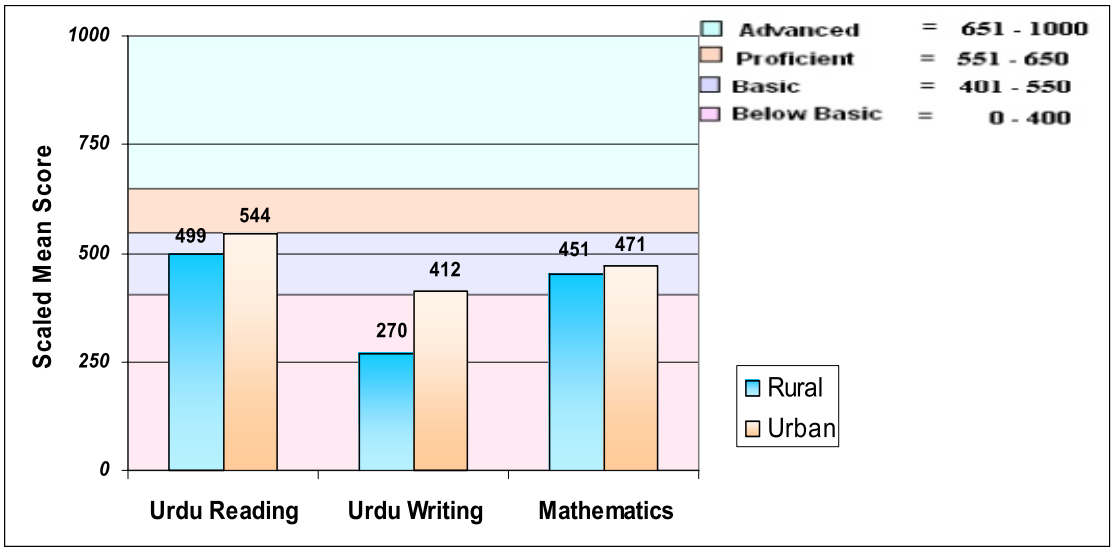


Figure No.17 Rural-Urban Scaled Mean Score Grade-8

Assessing students' performance on the basis of location is an important factor. Surprisingly, the scaled mean score of rural (43%) and urban (57%) students is statistically significant in all three subjects. The province / area wise performance of students was quite encouraging as few of the provinces / areas performed better than the others in terms of scaled mean score. The urban students' scaled mean scores are better than those of rural students in terms of numerical value as well as significant in terms of statistics.

The statistically significant difference in scaled mean score of rural and urban students apparently reveals disparity in provision of facilities to the students of rural and urban schools. All students have equal right to be provided state driven similar education to minimize the gap of learning achievement between the urban and rural students.

Boy-Girl Scores Grade-8

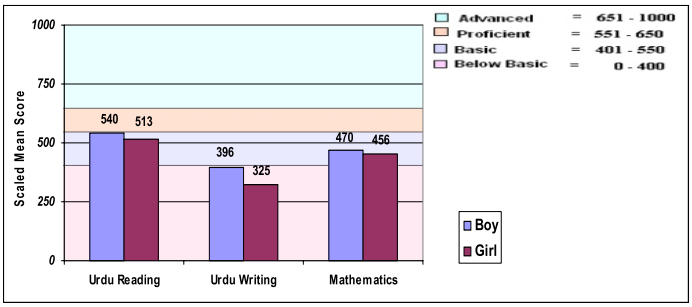


Figure No.18 Boy-Girl Scaled Mean Score Grade-8

As reporting the performance of the students, gender has a significant role in teaching-learning process because both sexes get education separately. The scaled mean scores of boys (58%) are significantly better than those of the girls (42%) in all three subjects; Urdu (Reading), Urdu (Writing) and Mathematics. The performance of the boys in all three subjects remained better for the first time as the performance of the girls remained better in previous assessment studies in the subject of Urdu.

Year-Wise Scores Grade-8

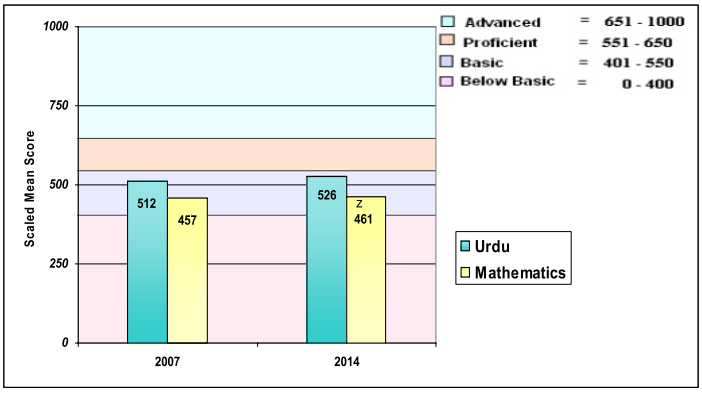


Figure No.19 Year-Wise Comparisons of Student Performance

The subject of Urdu and Mathematics were assessed previously in 2007. The results of 2007 were compared with the results of 2014. In the subject of Urdu the scaled mean score in 2007 was 512 and in 2014 the scaled mean score is 526. Apparently this difference is not big in terms of numeric value but statistically this difference is significant. Likewise in the subject of Mathematics the scaled mean score was 457 in 2007 and when this was compared with the scaled mean score of 2014 the numeric difference found was of 4 digits, but in terms of statistics the difference is significant. Although NEAS has no proof of the interventions made on the basis of its findings, the difference of scores speaks that due to numerous factors there is overall improvement in the education system.

PROFICIENCY LEVEL GRADE-8

The proficiency levels were determined on the basis of Pilot-Study 2013. The breakup of the criteria for proficiency levels is given below for better understanding of the audience:

Table 6. Proficiency Level Criteria

Proficiency Level	Percentage
Below basic	0 - 40%
Basic	41 - 55%
Proficient	56 - 65%
Advance	66 - 100%

One of the most important features of NAT 2014 study is the assessment of students' performance in terms of their proficiency in the subjects. The proficiency was sub-categorized into four different proficiency levels namely 'below basic', 'basic', 'proficient' and 'advance'. The first two tiers of proficiency are considered as low achievement in terms of scaled mean score below the set mean of 500 and the upper two tiers are considered high proficiency with reference to their achievement in obtaining scaled mean scores above 500.

Urdu (Reading) Grade-8

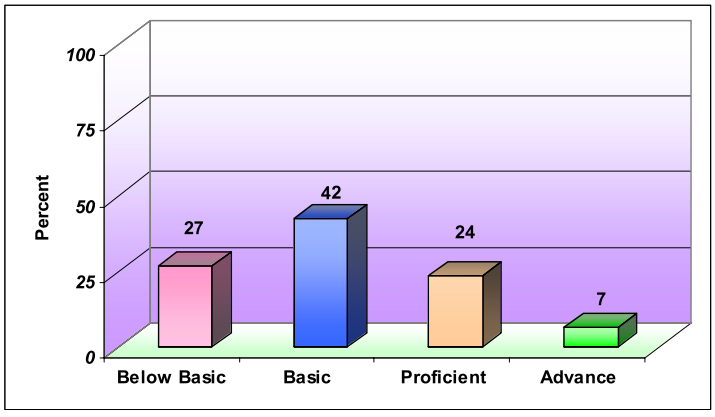


Figure No.20 Proficiency in Urdu (Reading) Grade-8

The graph indicating the proficiency levels achieved by the students of NAT 2014 in the subject of Urdu (Reading) is not much giving good picture of the performance of grade 8 students as hardly 31% students fall in the upper two tiers and out of those in the top tier only 7% students could make their place. The majority 70% of the students were placed in lower two tiers of proficiency. So conclusion could be drawn that the overall performance of the students is not satisfactory in the subject of Urdu (Reading).

Urdu (Writing) Grade-8

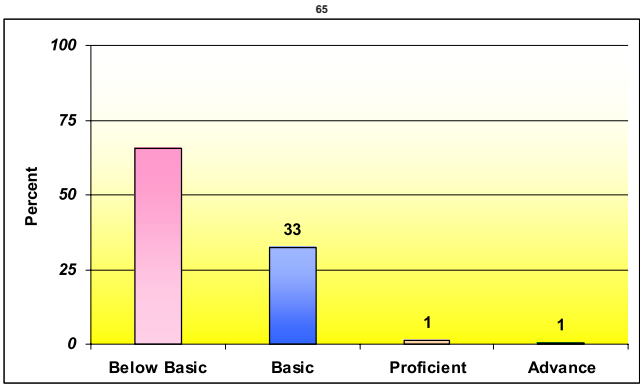


Figure No.21 Proficiency in Urdu (Writing) Grade-8

The students were assessed for the subject of Urdu in terms of assessing their performance in writing separately. The subject of Urdu (Writing) appeared as the most difficult among all three subjects as the overall scaled mean score 384 of students remained much below the set scale mean score of 500. 98% of the assessed students were placed in the basic tiers of proficiency and just 2% students could reach the upper tier of proficiency. Even the students who were good and placed in the upper tier of Urdu (Reading) could not manage to maintain their position in the upper tier of Urdu (Writing). Out of 31% students who were in the upper tier of Urdu (Reading) only 2% students could make their place in the upper tier of Urdu (Writing). The subject of Urdu (Writing) shows an alarming result of students and draws the attention of all stakeholders to find out the reasons in detail.

Mathematics Grade-8

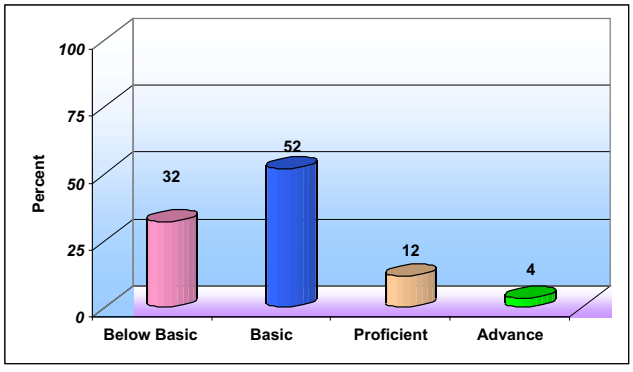


Figure No.22 Proficiency in Mathematics Grade-8

The subject of Mathematics is supposed to be more difficult for students than the subject of Urdu as it is the national language. Surprisingly, students performed better in the subject of Mathematics by attaining overall scaled mean score of 461. But when it was analyzed with reference to proficiency breakup it was revealed that the majority 85% students attained scaled mean score below 550. Only 16% students could reach above the scaled mean score of 550. The proficiency in Mathematics reveals that the subject is much difficult for the students and rigorous efforts are required on the part of all primary stakeholders to address this problem on priority keeping in mind the importance and the application of the subject in daily life.

Content & Cognitive Domain Findings Grade-8

URDU (Reading) Grade-8

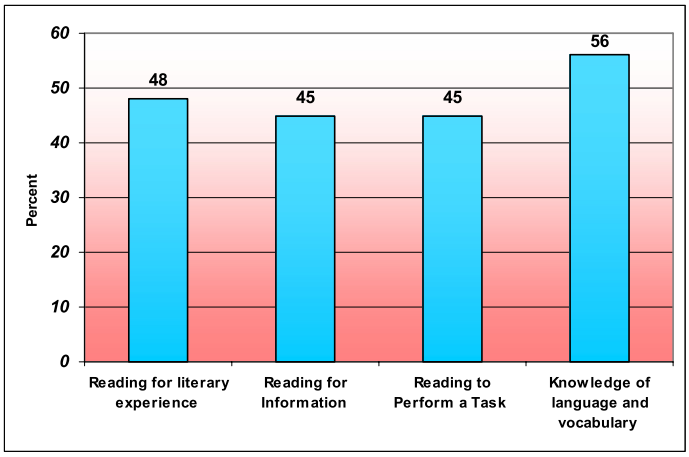


Figure No.23 Context of Urdu (Reading) Grade-8

On the whole, performance of the 8th graders was below 50% for the context of Urdu (Reading) in all sub contexts except 'knowledge of language and vocabulary'. Only 48% students could attempt questions related to 'reading for literary experience', whereas 45% students were able to achieve questions relating to 'reading for information', and 'reading to perform a task'. These two areas of context of reading remained the toughest questions for 8th grade students who participated in the assessment study.

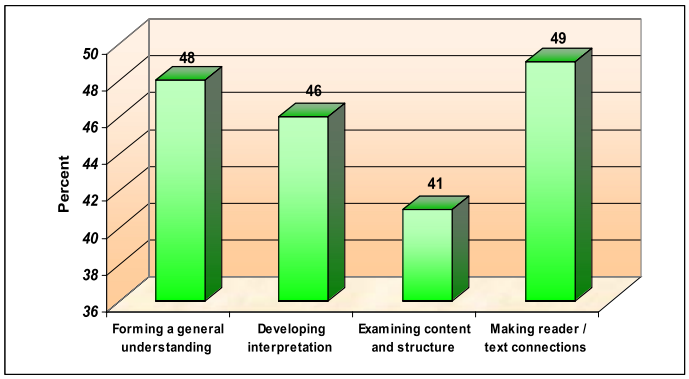


Figure No.24 Aspects of Urdu (Reading) Grade-8

The subject of Urdu (Reading) in terms of its aspects appeared very much difficult for the students as students could not even reach above 50% in achievement in any of the four aspects of Urdu (Reading). The aspect 'making reader-text connections' appeared relatively easier as the highest 49% questions were correctly attempted by the students. On the other side the aspect 'examining content and structure' remained the most difficult as hardly 41% questions in this aspect were correctly achieved. The achievement percentage, 46 and 48, remained for the aspects 'developing interpretation' and 'forming general understanding'.

Urdu (Writing) Grade-8

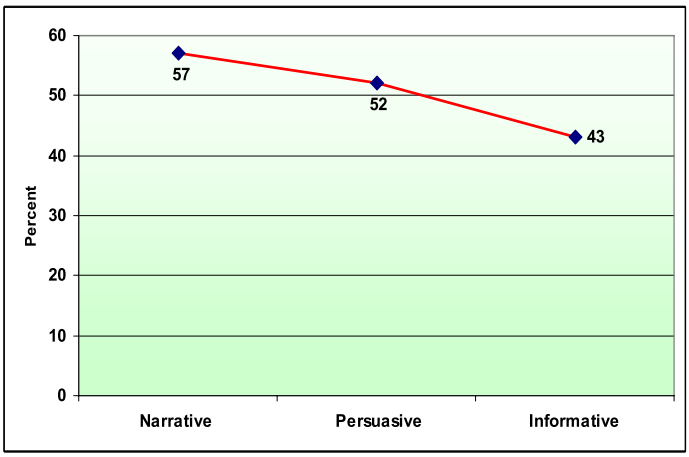


Figure No.25 Purpose of Urdu (Writing) Grade-8

The subject of Urdu (Writing) was assessed on three different purposes, namely narrative, persuasive and informative writing. The narrative purpose appeared to be relatively easier for the students as the highest percentage 57 was obtained in it. The persuasive purpose of writing remained a bit low with an achievement of 52% correct responses. Informative writing remained the most difficult purpose for the students as 57% students were unable to understand requirement of the questions.

Mathematics Content Domain Grade-8

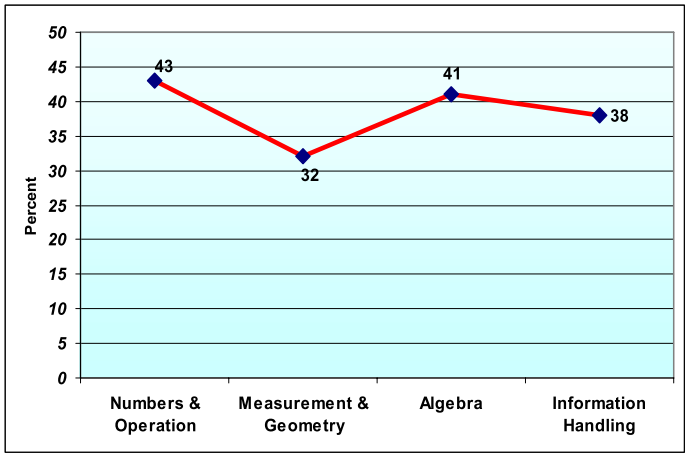


Figure No.26 Mathematics Content Domain Achievement Grade-8

The graph reveals that the content domain, numbers and operation questions appeared to be interesting and easy for the students as this was the only content area where students responded 43% correctly. For the rest of the content domains (measurement & geometry, information handling and algebra) more than half of the students were unable to attempt questions successfully.

Mathematics Cognitive Domain Grade-8

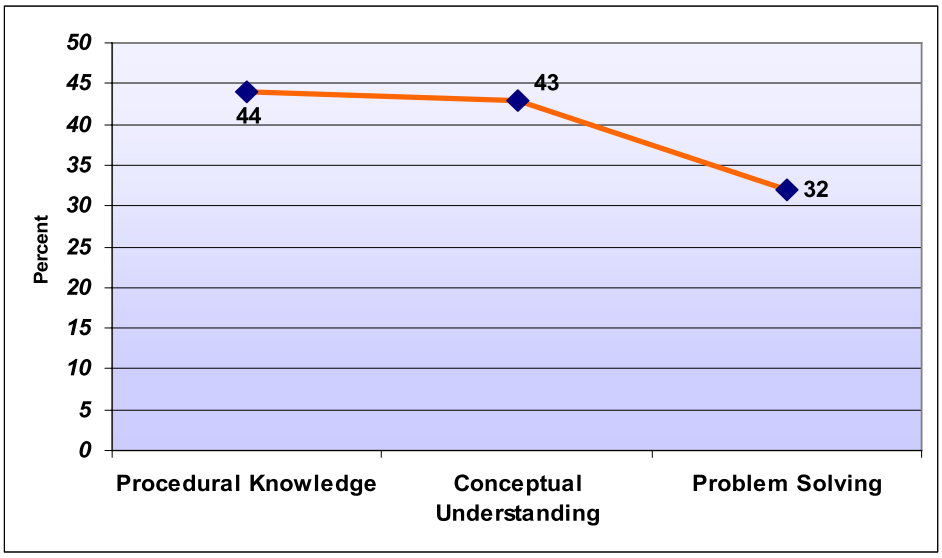


Figure No.27 Mathematics Cognitive Domain Achievement Grade-8

The graph shows that only 43% students could successfully attempt questions of conceptual understanding, 44% that of procedural knowledge, and 32% correctly attempted the questions that involved the cognitive skill known as problem solving. In Mathematics, the cognitive domain, "problem solving" appeared to be difficult for the students. The rate of successful attempt of questions in all three cognitive skills was below 45% which draws attention of all stakeholders to pay special attention to find out the reasons.

Impact of Background Variables on Scores Grade-8

Help in Home-Study Grade-8

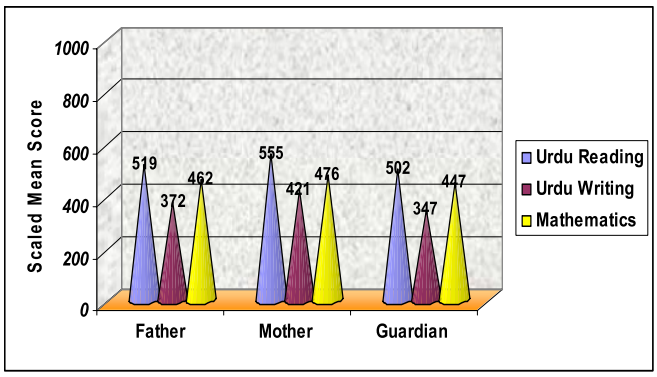


Figure No.28 Academic Help at Home Vs Achievement

A general perception exists that educated parents can guide their children better than the illiterate or less educated parents. To help out children at home in academic matters produced statistically significant difference in achievement. The difference exists in all three categories of guidance in homework at home but the highest scores of students are due to the coaching of mothers at home as in all three subjects the difference existing is significant in terms of statistics. It is rightly perceived that the focus on female education preserves the future of families.

Language Spoken Grade-8

Table 7. Percentage of Language Spoken

Language Spoken at Home	Percentage
National	21%
Regional	79%

The impact of language on learning achievement was seen with reference to its national and regional nature; the regional languages include all major languages of the provinces and areas. The languages spoken across Pakistan have shown their statistically significant impact on the scaled mean score for all three subjects, Urdu Reading, Urdu Writing and Mathematics. Another significant aspect of the languages on the learning achievement of students was that except the subject of Urdu (Reading) students attained scaled mean score below the average scaled mean score of 500.

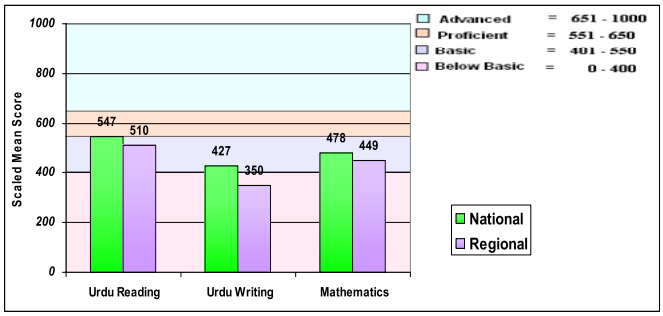


Figure No.29 Language Spoken Vs Achievement

Multi-grade Teaching Grade-8

Table 8. Percentage of Multi-grade Teaching

Do you teach two or more class in any period?	Percentage
Yes	22%
No	78%

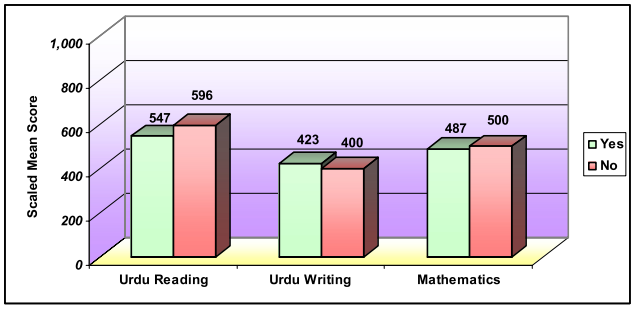


Figure No.30 Multi-grade Teaching Vs Achievement

The dilemma which schools are facing right now is multi-grade teaching by single teacher in the same room. The scaled mean scores reveal that the teachers who do not face the issue of multi-grade teaching are 78% of the total teachers and their results are significantly better than those 22% teachers who still face this problem. This is quite understandable that a teacher cannot handle the classroom situation if having students of different grade levels under the roof of single classroom, so this needs to be eradicated through increase in budget and recruitment of right and dedicated professionals, so that a teacher could be able to pay full attention to his class and students only.

Lesson Plan Grade-8

Table 9. Percentage of Lesson Planning

Pre-planning the lesson	Percentage
Daily	77%
Once a week	19%
Once a month	4%

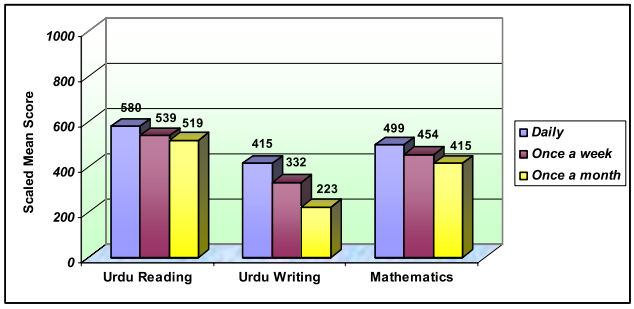


Figure No.31 Lesson Planning Vs Achievement

The process of teaching learning includes a very significant aspect as to how well a teacher is prepared before going into the class for instructions. The teachers who plan their lesson on daily basis in advance are 77% and their students have attained significantly high scores in all three subjects of Urdu (Reading), Urdu (Writing) and Mathematics than those students whose teachers plan their lesson on weekly or monthly basis. The head of the school needs to be more vigilant to ensure that every single teacher must prepare his lesson in advance to be taught next day.

Parent-School Contact Grade-8

Table 10. Percentage of Parent contact with School

Do you contact with school regarding your child performance	Percentage
Yes	88%
No	12%

Parents visit the schools to show their concern for their children's education. The impact of parents' contact with the school regarding the performance of their child can be seen in the learning achievement of students in terms of significant difference in the scaled mean scores. Almost 88% parents do contact schools, which is quite healthy sign in order to raise the learning achievement of students. Appropriate necessary measures are need of the hour to create awareness among the parents for raising school-home relation to 100%.

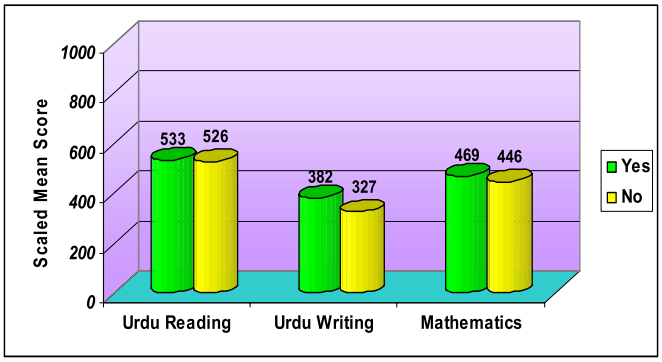


Figure No.32 Parent contact with School Vs Achievement Grade-8

Local Language Instructions Grade-8

Table 11. Percentage of Local Language Instructions

Does your teacher use any local language to teach?	Percentage
Never	18%
Sometimes	32%
Always	50%

Use of local language has shown significant difference in the scaled mean score of Urdu (Reading) and Mathematics. For the subject of Urdu (Writing) unexpectedly the scaled mean score of those students is higher who have not been exposed to local language in classroom instruction. The use of local language appears to be important for making the students understand various concepts, which otherwise could not properly be understood. The use of local language should be encouraged wherever it is deemed necessary during instruction of any concept.

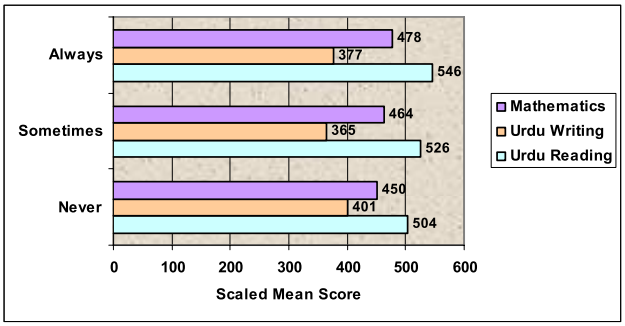


Figure No.33 Local Language Instructions Vs Achievement

Corporal Punishment Grade-8

Table 12. Percentage of Corporal Punishment

Do you get corporal punishment at school?	Percentage
Always	6%
Sometime	57%
Never	37%

Corporal punishment is considered a great hindrance in teaching learning process. The results reveal that 37% students who reported that they had 'never' received corporal punishment at schools achieved statistically significant scaled mean scores in Urdu (Reading) and Mathematics than the students who receive corporal punishment 'sometimes' or 'always'. Scaled mean score for all three subjects are statistically significant.

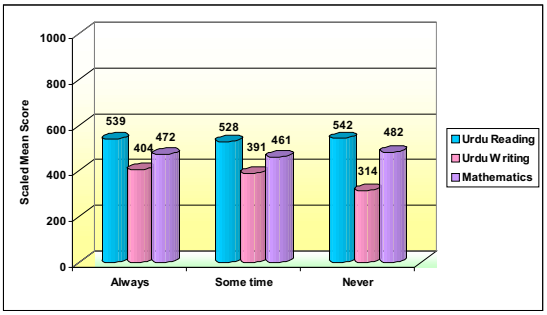


Figure No.34 Corporal Punishment Vs Achievement

Causes of Corporal Punishment Grade-8

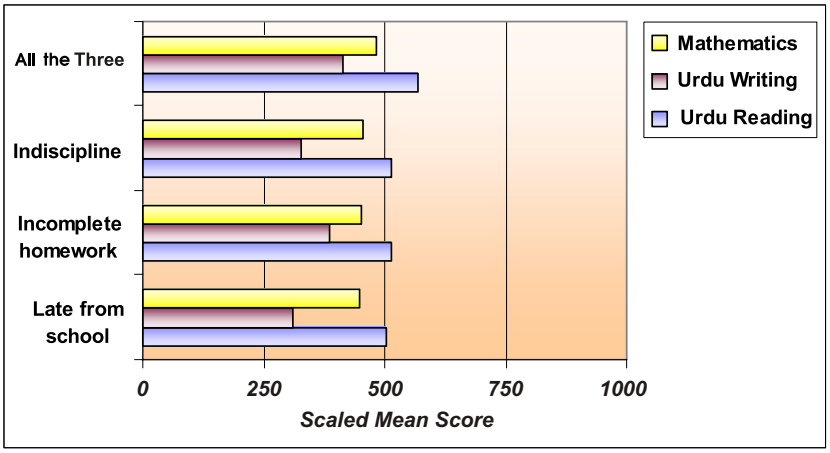


Figure No.35 Cause of Corporal Punishment Vs Achievement

The students were given corporal punishment for various reasons. 31% students reported to receive corporal punishment for being 'late from school'. Majority 33% students got punishment for 'incomplete homework'. For indiscipline 14% students were punished and 22% reported that they received corporal punishment for all three listed reasons.

Homework Correction Grade-8

Table 14. Percentage of Homework Correction

Do your teachers pinpoint the mistakes in homework and also correct them?	Percentage
Never	8%
Sometimes	25%
Always	67%

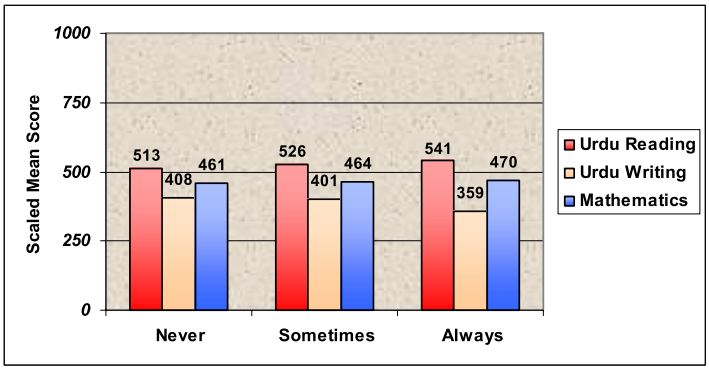


Figure No.36 Homework Correction Vs Achievement

Homework assignment and correction by the teachers plays significant role in the teaching learning process. 8% of the students reported that they were 'never' given feedback on homework, but surprisingly the scaled mean score 408 they attained in Urdu (Writing) is significantly better than those students who got feedback on their homework 'sometimes' and 'always' from their teachers. 67% students reported that their homework was 'always' checked and necessary corrections were conveyed by the teacher is quite healthy sign but this needs to be spread over the whole student population.

The scaled mean score achieved by the students who 'always' get feedback from their teachers is significantly better in the subject of Urdu (Reading) and Mathematics with scaled mean score of 541 and 470 respectively. Except the subject of Urdu (Reading) the impact of homework correction by the teacher has not given boost to the scaled mean score obtained by the student.

An important agent of teaching learning process is the teacher. The performance of students in learning depends squarely on the quality of instruction by the teachers. Guiding students by seeing their home yielded significant difference in the scaled mean score of Urdu (Reading) and Mathematics. The importance of guidance regarding homework quality cannot be set-a-side as scaled mean score attained in the subject of Urdu (Writing) are higher of those students who are not given feedback on their homework by their teachers.

Homework Assignment Grade-8

Table 15. Percentage of Homework Assignment

How many times do you get homework in the Urdu (Reading & Writing) and Maths subject?	Percentage
Less than 15 Min.	23%
15-30 Min	31%
more than half hour	31%
More than One hour	15%

Significant difference in scaled mean score does exist for Urdu (Reading), Urdu (Writing) and Mathematics on the basis that students complete their homework in less than 15 minutes or more than one hour. This reveals that the requirement of time for a certain subject depends upon the nature of the subject and the interest of students in the subject.

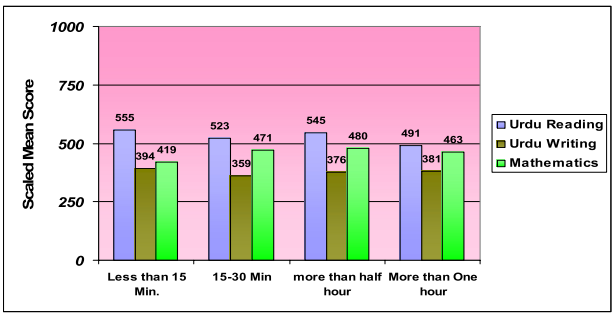


Figure No.37 Homework Assignment Vs Achievement

Homework Prepare for Exam Grade-8

Table 16. Percentage of Homework Prepare for Exam

I don't have to prepare for the exams if I do my homework regularly	Percentage
Never	18%
Sometimes	33%
Always	49%

The regular homework is considered a sort of preparation for the examination. The sample students of NAT were asked whether they prepared or not for examination in case of doing homework regularly. Majority 49% of the sample students were of the view that they did not prepare for examination when they did homework regularly. 33% were of the opinion that they did not prepare for the examination sometimes. 18% were of the view that besides doing homework regularly they were used to prepare themselves for the exams. The significance difference in learning achievement was found for all three categories of students. The students who prepared themselves sometimes had higher scores in Urdu

Parents-Homework Attitude Grade-8

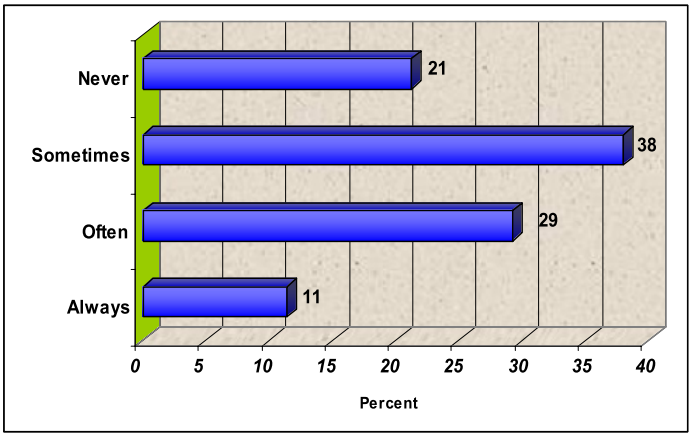


Figure No.39 Percentage of Parents-Homework Attitude

Parents' role in the teaching-learning process becomes inevitable when students pass their time at home. The time at home, if vigilantly watched by the parents, increases efficiency in performance. 38% parents make their children sometimes to complete home-work, 40% parents lay maximum emphasis on the completion of their children's homework and 21% parents never bother whether their children do homework or not.

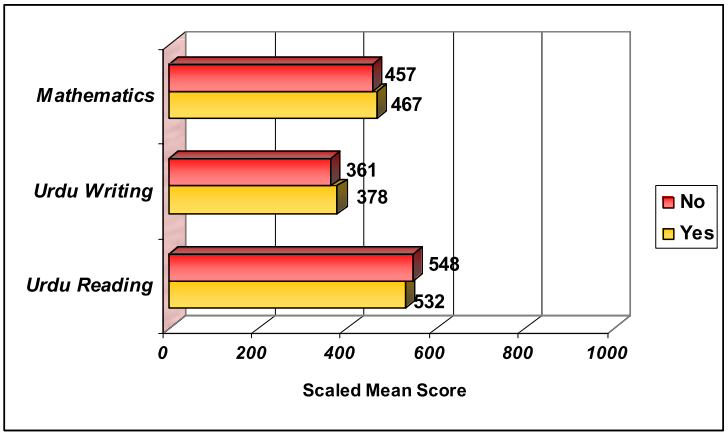


Figure No.40 Impact of Homework on Scaled Scores

A tendency was observed that the parents watch their children regarding completing their home-work as 97% parents reported that their kids do home-work at home and only 3% parents complained that their kids were not found interested in homework. The scaled scores of students doing homework yielded significantly high scores in the Urdu (Writing) and Mathematics and on the other hand the scores of students who were not doing their homework were found good in Urdu (Reading).

Teacher homework Check Grade-8

Table 17. Percentage of Teacher homework Check

How many times do your teachers check your homework ?	Percentage
Never	2%
Sometimes	21%
Always	77%

The checking of the homework of students on 'never', 'sometimes' and 'always' basis by the teachers have put significant difference in achievement of students in terms of students' scaled mean score. The students getting their homework checked could not achieve scaled mean score more than 500 in the subjects of Urdu (Writing) and Mathematics but in case of Urdu (Reading) the scaled mean score attained by the students is higher than the set scaled mean score of 500 for all three options of homework check.

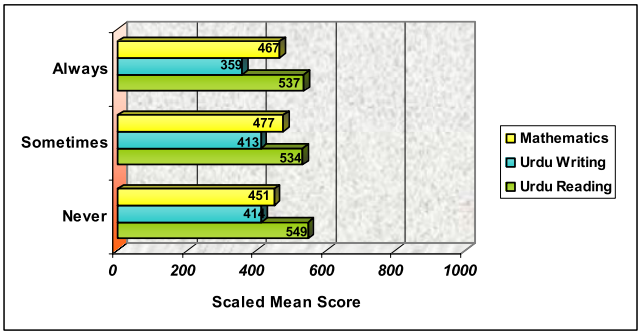


Figure No.41 Teacher homework Check Vs Achievement

Receipt of Regular Homework Grade-8

Table 18. Percentage Receipt of Regular Homework by Students

Do you get regular homework for Urdu and Maths?	Percentage
Never	3%
Sometimes	24%
Always	73%

The impact of homework had been seen on the learning achievement as 73% students reported that they always had homework by their teachers and their performance was significantly better than the other students in the subjects of Urdu (Reading) and Mathematics. In case of Urdu (Writing) the students who got homework sometimes had significant better scaled mean score 418. The head teachers are required to vigilantly monitor the homework assigned by the teachers.

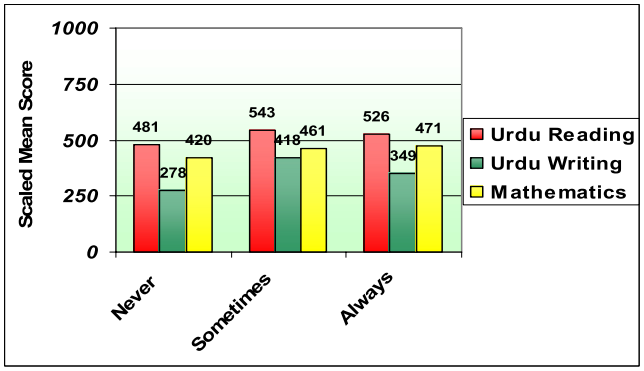


Figure No.42 Receipt of Regular Homework by Students Vs Achievement

Homework Assignment by Teacher Grade-8

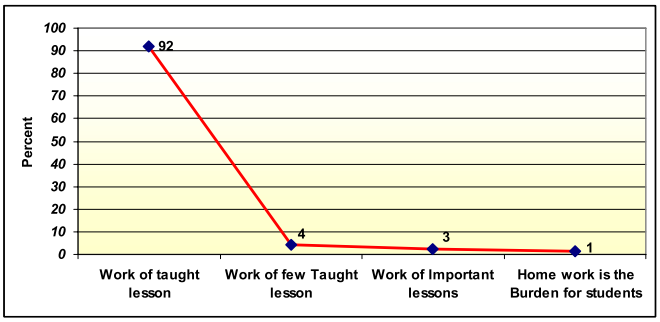


Figure No.43 Percentage of Homework Assignment by Teacher

The homework given to the students by teachers was measured against a relatively different scale. 92% teachers assigned homework to their student for 'every taught lesson', 4% assigned homework for 'few taught lesson', 3% award homework for only 'important lessons' and 1% thought homework as a burden for students.

Table-desk at Home Grade-8

Table 19. . Percentage of Impact of Table-Desk Usage

Do you use table/desk at home?	Percentage
Yes	39%
No	61%

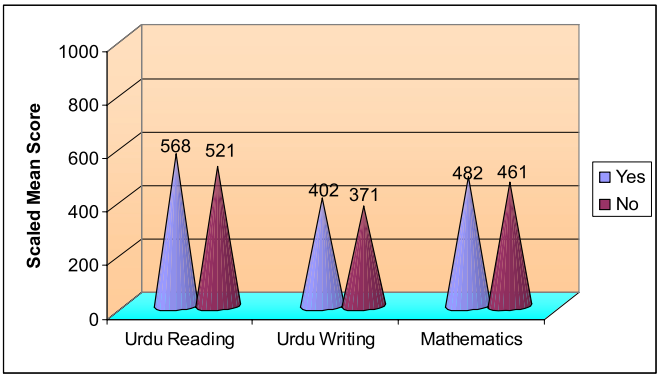


Figure No.44 Impact of Table-Desk Usage Vs Achievement

The impact of physical facilities can be seen in the performance of students who study at home by using chair and table. The socio economic background of the students does have impact on the learning achievement as 39% students who reported to use table chair for study perform significantly better than 61% students who do not have this facility. The stable economy of the country has due impact on students learning achievement.

Evening Play Grade-8

Table 20. Percentage of Students playing in the Evening

Does your child play at evening?	Percentage
Yes	69%
No	31%

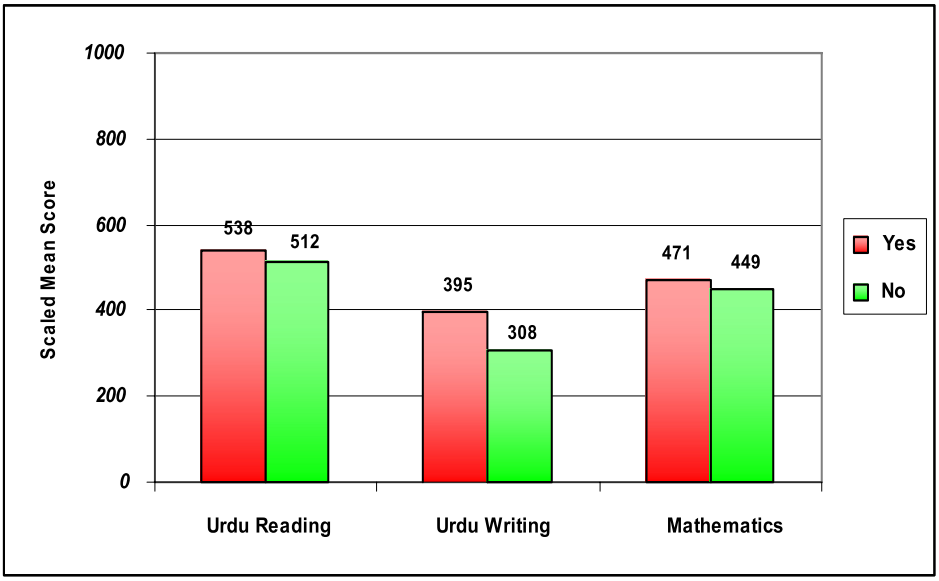


Figure No.45 Students playing in the Evening Vs Achievement

Participation in games keeps the child physically and mentally healthy. The NAT 2014 results are evident that the students who were used to play games in the evening scored significantly higher in Urdu (Reading & Writing) and Mathematics. As compared to the students who did not show interest in the games. Parents' attention can yield better results both in terms of health and academics of a child.

Use of Writing Board Grade-8

Table 21. Percentage of Use of Writing Board in Classroom Instructions

My teachers use the writing board while teaching.	Percentage
Never	7%
Sometimes	14%
Always	79%

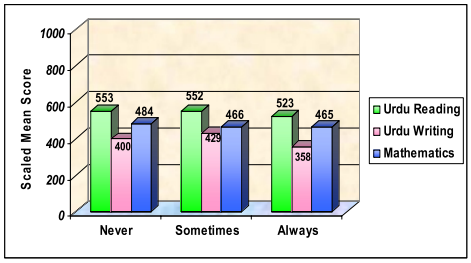


Figure No.46 Use of Writing Board in Classroom Instructions Vs Achievement

Use of writing board is considered to be very important for learning concepts of various subjects, especially of Mathematics. But the results of the NAT study reveal that there does exist statistically significant difference between the scaled mean scores of students. The difference in the scaled mean score has appeared unusual as in case of all three subjects, Urdu (Reading) and Mathematics the scaled mean score 553, 484 respectively is the highest of those students whose teachers do not use writing board. This result is quite surprising, therefore, needs to be looked into in greater detail.

Entertainment Impact on Scores Grade-8

Table 22. Percentage of Impact of TV watch as Entertainment

Do you watch T.V at home?	Percentage
Yes	75%
No	**25%**

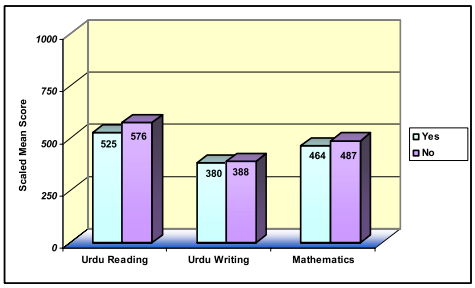


Figure No.47 Impact of TV watch as Entertainment Vs Achievement

Excessive T.V watching had a very significant impact on the learning achievement of the students as in case of Urdu (Reading) and Mathematics the performance of the students who watched T.V as a matter of entertainment and did not waste much of their time in watching T.V performed statistically better than the students who used to watch T.V excessively. Although in case of Urdu (Writing) the numerical difference in scaled mean score is higher for the students who watch T.V less but the difference in achievement was not significant.

Teacher-Gender Vs Performance Grade-8

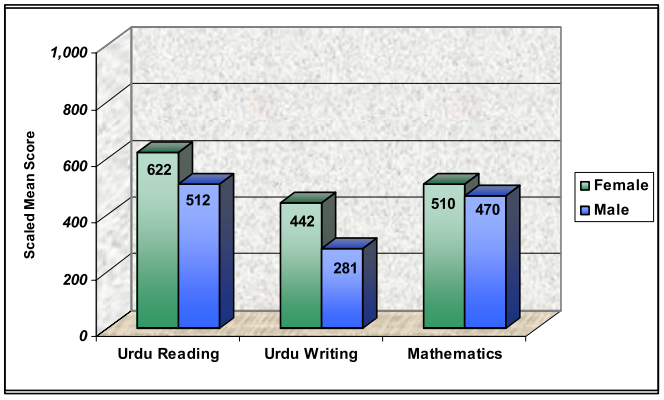


Figure No.48 Teacher-Gender Vs Performance

The gender of teacher has made statistically significant difference in achievement of students' scaled mean scores. Generally, a perception exists that the students of female teachers perform better in languages but the results are evident that the students of female teachers performed significantly better in Mathematics as well

School-Level Grade-8

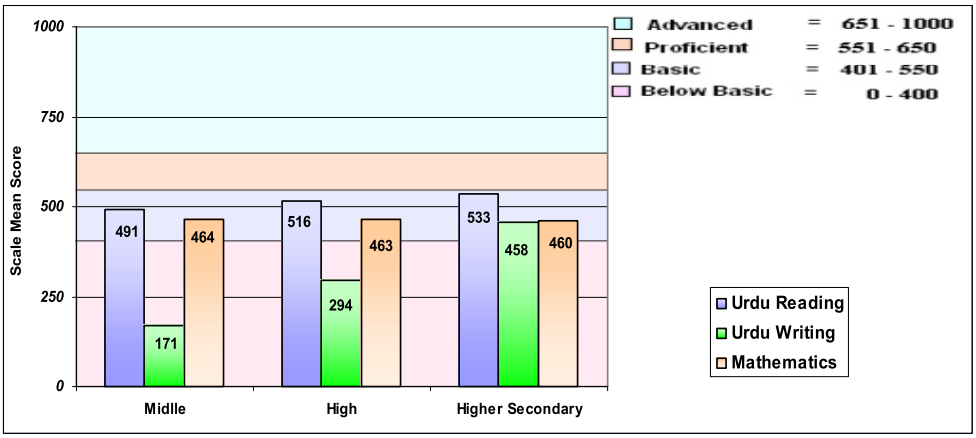


Figure No.49 School Level Vs Achievement

The different categories of schools, 'middle', 'high' and 'higher secondary', have shown a statistically significant difference on the scaled mean scores. Each category has significant difference in scaled mean scores achievement than the others for all three subjects. Students from none of the categories of schools could cross the set line of average scaled mean score of 500 except by the students of high and higher secondary category of schools in the subject of Urdu (Reading).

Coaching at Home Grade-8

Table 23. Coachig at Home Vs Achievement

Who teaches you generally at home	Scaled Mean Score		
	Urdu Reading	Urdu Writing	Mathematics
Father 15%	539	382	457
Mother 4%	542	391	462
Both Father & Mother 4%	494	444	443
Brother 22%	527	312	453
Sister 13%	526	362	457
Tutor 12%	562	424	490
Any other 5%	486	356	441
No One 26%	536	342	481
Difference	Sig.	Sig.	Sig.

The coaching imparted to students by different individuals at home had significant impact on their achievement of scaled mean score in all three subjects. The students who were taught at home were also unable to reach the average scaled mean score of 500 except in the subject of Urdu (Reading). Generally, it is presumed that giving students' tuition at home yields higher scores but in the case of this sample of students, the assumption was proved partially wrong.

Mode of Transport Grade-8

Table 24. Percentage of Mode of Transport for School

How do you go to school	Percentage
On foot	74%
By Govt. transport	2%
Public transport	11%
Own car	13%

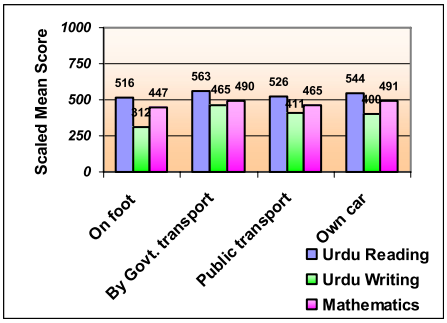


Figure No.50 Mode of Transport for School Vs Achievement

The students' means of transportation to school was considered an important factor in the teaching learning process. The impact of transportation of students to school had statistically significant difference in learning achievement in terms of scaled mean score. The mode of transportation being used by the students for reaching school yielded scaled mean score relatively above the average scaled mean score of 500 in the subject of Urdu (Reading) only.

School-Reach Time Grade-8

Table 25. Percentage of Time Taken to Reach School

How long does it take you to reach school	Percentage
Less than 15 Min	51%
15-30 Min	32%
31-45 Min.	10%
more than 1 hour	7%

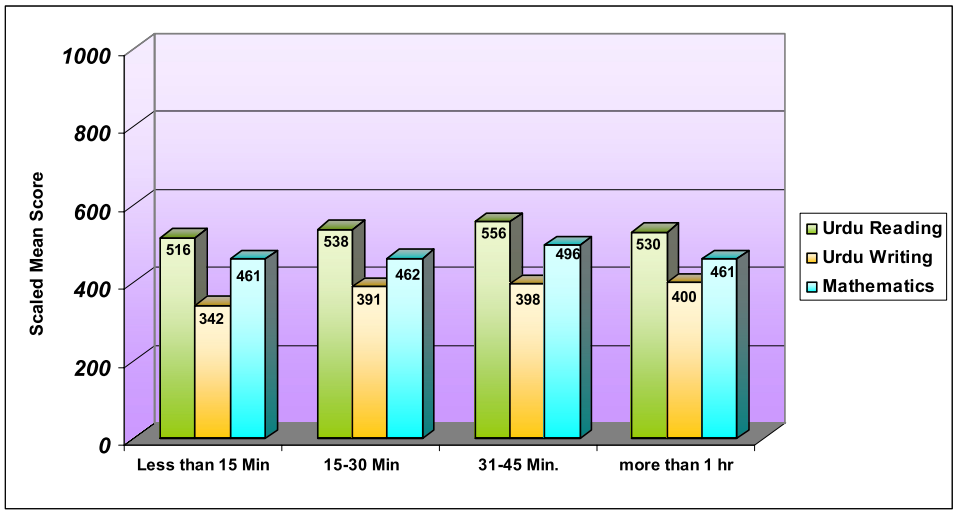


Figure No.51 Time Taken to Reach School Vs Achievement

Majority (83%) students reach school in less than 30 minutes from home. 07% students reported that it took them an hour to reach school. As for time consumption in reaching school from home and vice versa had statistically significant difference in learning achievement in terms of scaled mean scores was found in all three subjects of Urdu (Reading & Writing) and Mathematics. 17 % of the sample students' time consumption in reaching school is quite high, the provision of school facility within the reachable radius in comparatively less time may put positive impact on the learning achievement.

Free Textbooks Grade-8

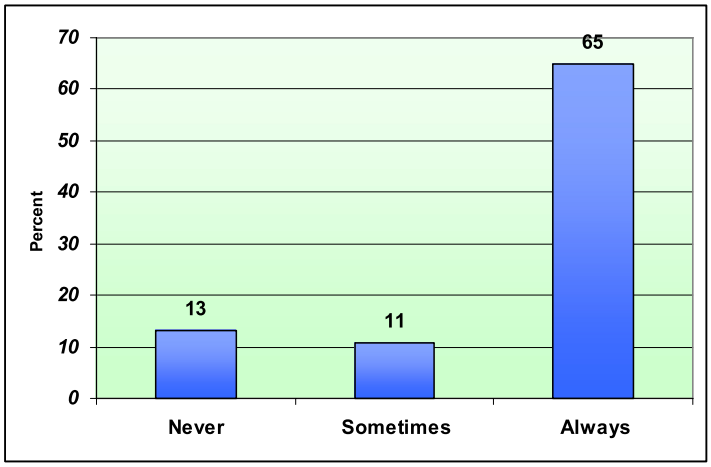


Figure No.52 Percentage of Free Textbook Supply

The initiative of provision of textbooks was taken by Federal and Provincial Governments at different times. Now the provision of the textbooks along with free and compulsory education is a constitutional obligation of all governments by the state. Although majority 65% of the sample students reported that they are provided with the free textbooks by the schools, but on the other hand it is again a question mark as to why 11% of the sample students sometimes got the free books and sometimes could not. An alarming 13% of the sample students never got free textbooks from the school, which draws attention of the authorities responsible for it.

Textbook Purchase Grade-8

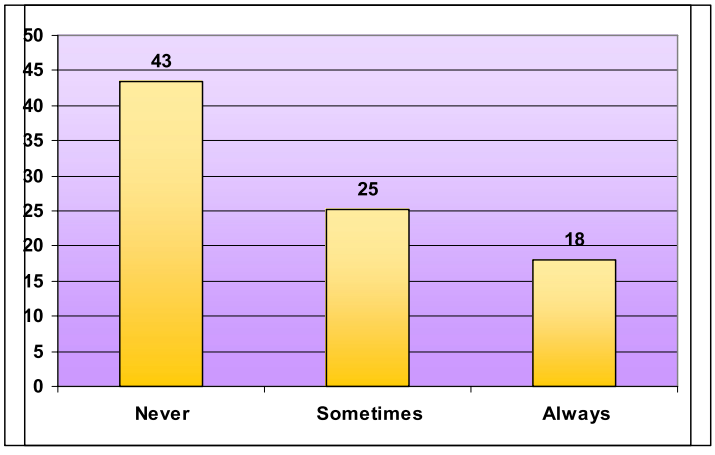


Figure No.53 Percentage of Textbook purchase Vs Achievement

For the last few years the government is providing free textbooks to the students. Responding to another variable regarding the provision of free textbooks, 24% students complained that they did not receive free textbooks from the school. In continuation of the question the students were asked if they did not get it from school whether they were able to get it from the bazaar without any difficulty. 18% students reported that they always faced difficulty in buying it even from the bazaar.

Questioning in Class Grade-8

Table 26. Percentage of Questioning during Classroom Instructions

Do your teachers allow you ask questions about the subject taught?	Percentage
Never	3%
Sometimes	17%
Always	80%

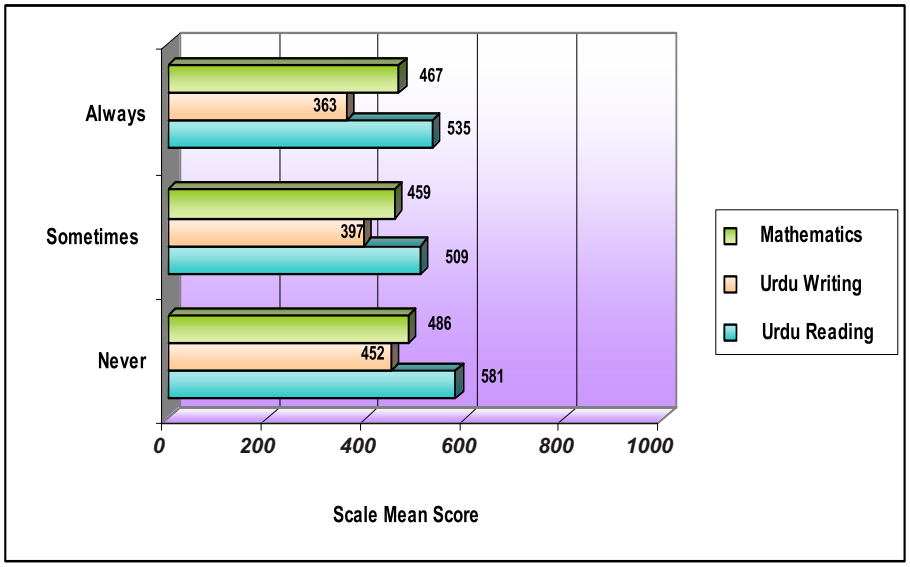


Figure No.54 Questioning during Classroom Instructions Vs Achievement

Asking questions in the class not only builds up students' confidence but also helps them in concept clarity. The results reveal that there does exist significant difference between the students who ask questions and who do not during the classroom instruction. The NAT 2014 results reveal that the scaled mean score of the students who 'never' ask question in the classroom have the highest scaled mean score in all three subjects, Urdu (Reading), Urdu (Writing) and Mathematics and these scores are significantly better. The anomaly in results as compared to general conception needs to be found out and the facts should be explored further.

Parent Qualification Grade-8

Table 27. Percentage of Parent Qualification Vs Achievement

Parent/ guardian Education	Scaled Mean Score		
	Urdu Reading	Urdu Writing	Mathematics
Illiterate 21%	492	346	452
Primary Passed 21%	505	288	447
Matriculation 28%	517	345	454
Intermediate 13%	516	369	457
BA/B.Sc 8%	550	421	470
M.A/M.Sc 6%	566	445	487
M.Phil/Ph.D 3%	486	359	474
Difference	Sig.	Sig.	Sig.

The students scaled mean scores have significant difference for their parents' qualification from 'illiterate' to 'M.Phil / Ph.D'. On the whole those students have the highest scaled mean score in all three subjects, Urdu (Reading) 566, Urdu (Writing) 445, and Mathematics 487 whose parents possess master degree as qualification. The qualifications of the parents thus have a positive impact on their students' learning achievement, so today's son is tomorrow's father needs to get good quality education at the top tiers of qualification. This chain of qualification from generation to generation may change the fortune of the nation.

Teacher Qualification Grade-8

Table 28. Percentage of teachers academic Qualification Vs Achievement

What is your academic qualification?	Urdu Reading	Urdu Writing	Mathematics
Matriculation 1%	525	205	463
Intermediate 8%	549	441	489
Bachelor (e.g. BA, B.Sc) 31%	524	313	490
Masters 58%	605	410	501
M.Phil/Ph.D 3%	546	347	486
Difference	Sig.	Sig.	Sig.

The students' scaled mean score does show significance difference in achievement due to qualification of their teachers. Quite good percentage of teachers possesses qualification graduation and post-graduation. 3% of the sample teachers are holding degrees of M.Phil / Ph.D, which is a good sign as teachers with high qualification are now inclined to contribute for the betterment of their country. 8% of the teachers who have low qualification such as matric and intermediate speak that the ratio of low qualifications teachers is gradually decreasing day by day. As it has already been decided at policy level that to stop awarding certificates in PTC and CT, the teaching force now joining the education system at any of the school level must at least possess graduation as qualification.

Teacher Professional Qualification Grade-8

Table 29. Percentage of Teachers Professional Qualification

Teacher's Professional Education	Percentage
CT	15%
Diploma in Edu.	4%
B.Ed	53%
M.Ed.	1%

The significant difference in learning achievement of students has been seen in their scaled mean scores due to various tiers of professional qualification of teachers. The teachers possessing graduate and post-graduate degrees in education are 54% of the total. The percentage of teachers with diploma in education is the lowest with 4%, the reason is that this program remained continued for a short span of time. The policy on the recruitment of highly qualified teachers even at the primary level is good addition to the education system. The teachers with the qualification CT are 16% of the sample; their replacement would be possible with the new recruitment policy of highly qualified teachers once those already working are retire.

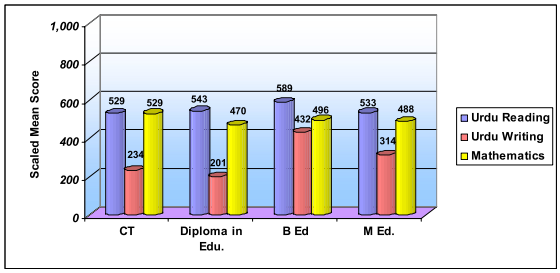


Figure No.55 Teacher Professional Qualification Vs Achievement

Teacher Experience Grade-8

Table 30. Percentage of Teaching Experience

Teaching Experience in years	Percentage
Less than 5 years	16%
5-10 years	14%
11-15 years	13%
16 or More	57%

Teachers having experience more than 05 years need to be transferred to other schools to benefit others by their experience. The scaled mean scores shows significant difference among the students of teachers having different years of experience of teaching. The highest score are attained by the students of teachers (14%) having experience 5 to 10 years in all three subjects. Apparently it seems that they acquired experience in the early years and robustly delivered instructions to make the scores of their students to this level.

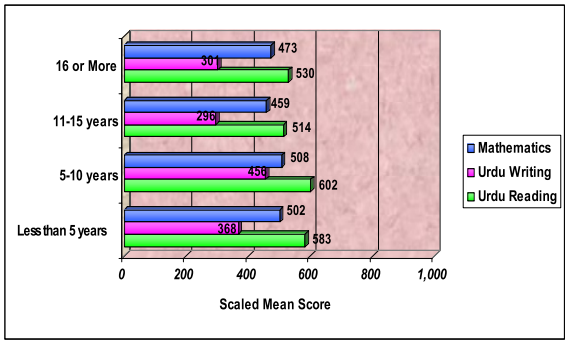


Figure No.56 Teaching Experience Vs Achievement

Teacher Guide Grade-8

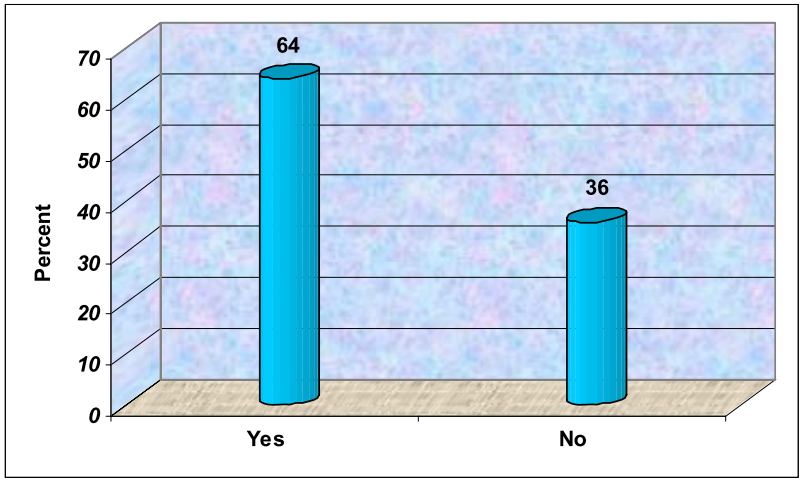


Figure No.57 Percentage of Teacher Guide Availability

As the textbooks are modified every year with new edition especially in the present scenario of new curriculum 2006, the textbooks are implemented in the schools. These textbooks have relatively rich content, which requires an understanding for the teachers for delivery of instruction at classroom level, therefore, purposely designed teacher guides were used by 64% teachers and 36% teachers have no access to these guides. This situation may cause those students a loss whose teachers do not guide while delivering instructions to their students in the classroom.

Teacher Guide Grade-8

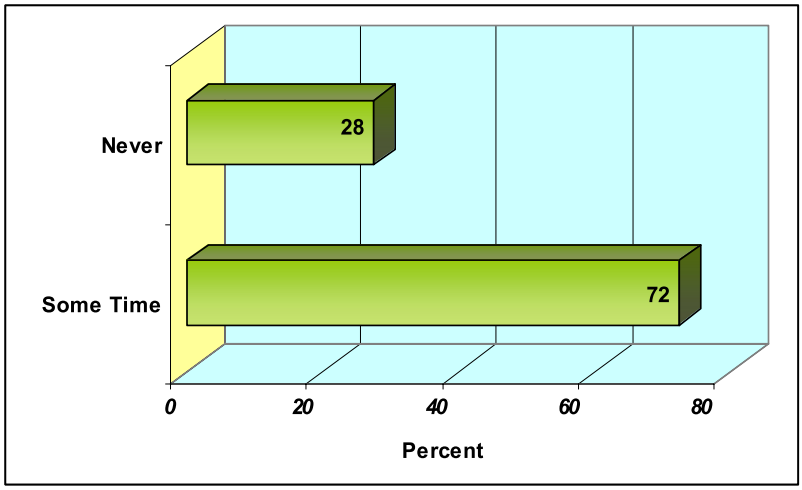


Figure No.58 Percentage of Teacher Guide Practice

Out of 64% teachers who reported that they were provided with teacher guide only 28% teachers are not benefiting from it. While 72% use this teaching guide as and when they require. 28% teachers who never use teaching guide despite the fact they have it is an alarming situation as no professional trend among teacher is found for their classroom instruction.

Teacher-Age Grade-8

Table 31. Percentage for Categories of Teacher Age Vs Achievement

Teacher Age	Urdu Reading	Urdu Writing	Mathematics
Under 25 7%	648	449	506
25-35 28%	600	455	504
36-45 35%	520	278	475
46-55 23%	511	264	476
Above 55 7%	489	314	466
Difference	Sig.	Sig.	Sig.

The results of the students are mixed with reference to age of their teachers. Teachers under25 years of age are 7% of the total teachers and their students are performing significantly better in the subject of Urdu (Reading) and Mathematics with the scaled mean score of 648 and 506 respectively. While, in Urdu (Writing) the scores of students whose teachers fall in the age group 25-35 years perform significantly better. Assessment studies may enable us over the years to give a scientific evidence based finding to the policy makers for appropriate age of retirement for the teachers with reference to their efficiency in the classroom instruction.

Teaching Aids Grade-8

Table 32. Teaching Aids Percentage

Do teachers use teaching aids while teaching?	Percentage
Always	11%
Usually	47%
Seldom	38%
Never	4%

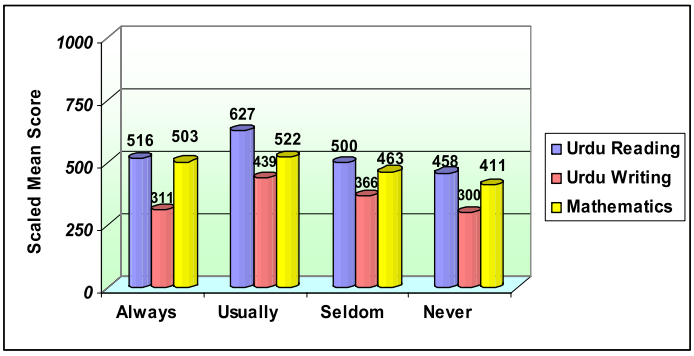


Figure No.59 Teaching Aids Vs Achievement

The teaching aids are available to 58% teachers as and when they need and the scores of their students are significantly better than the students of those teachers who cannot benefit from the teaching aids. The teachers who are not benefitting due to unavailability of teaching aids are 42%. This is huge number of teachers and is a question mark for the educational planners and managers to take appropriate measures to ensure provision of teaching aids to 100% across the country.

School-Zone Grade-8

Table 33. School zone percentage

School zone	Percentage
Summer Zone	75%
Winter Zone	25%

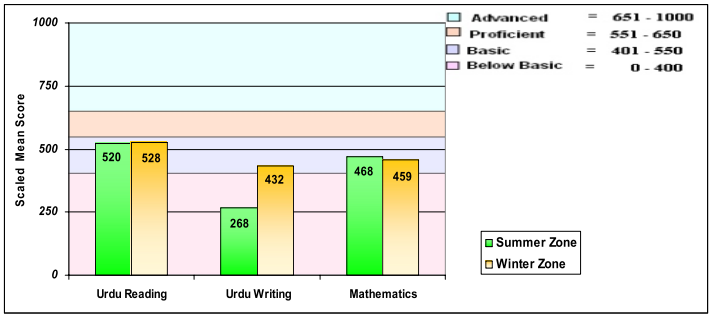


Figure No.60 School zone Vs Achievement

The whole country was divided into two zones based on climate. The cold regions were known as winter zones and the hot regions are known as summer zones. The summer zone of the country was representing 75% of the total sample and winter zone was representing 25% of the sample.

Student-Status Grade-8

Table 34. Percentage of Student-Status

Students	Percentage
Promoted	99.6
Repeater	0.4

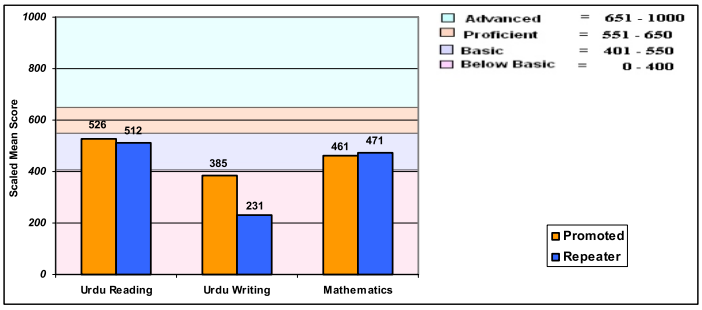


Figure No.61 Student-Status Vs Achievement

The sample was representing students both promoted and repeaters. Promoters were 99.6% of the sample and repeaters were just 0.4% of the sample. The difference in learning achievement of students was not found significant between the promoters and repeaters for the subject of Urdu (Reading) and Mathematics but the difference in achievement was significant for Urdu (Writing). Although the percentage of repeaters is nominal, it invites us to look into the matter for bringing the performance of repeaters, at least, at par with the promoters as the repeaters spent double time for acquiring mastery in the same standards.

School Distance Grade-8

Table 35. Percentage of School Distance from Home Vs Achievement

How far is your school from your home?		Scaled Mean Score		
		Urdu Reading	Urdu Writing	Mathematics
0-2 km	60%	529	339	466
3-4 km	21%	516	352	455
5-6 Km	9%	509	383	462
7 km or More	10%	554	431	471
Difference		Sig.	Sig.	Sig.

Majority 60% students live within the radius of 2km from school but a considerable 40% of the sample students had to come to school by travelling 3 or more kilometers each side. Majority of the students' mode of coming to school was 'on foot'. To avoid impact of distance from home to school on the learning achievement of students, the policy and plan makers are required to consider the provision of school facility within an appropriate reachable distance.

Table 36. Percentage of Computer Use at Home

Do you use computer at home?	Percentage
Yes	46%
No	54%

Computer Usage Grade-8

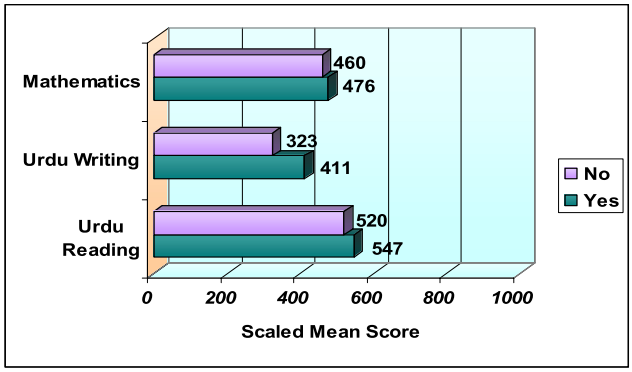


Figure No.62 Computer Usage at Home Vs Achievement

The use of computer at home was reported to be just 46% by the sample students in an era when 100% students in the advanced world have been using computer even at school for the last couple of decades . The performance of students in all three subjects was significantly better than the students who did not use computer at home. It can be concluded that use of computer enhances the learning achievement.

Dictionary Usage Grade-8

Table 37. Percentage of Dictionary Usage

Do you have generally use dictionary at home?	Percentage
Yes	47%
No	53%

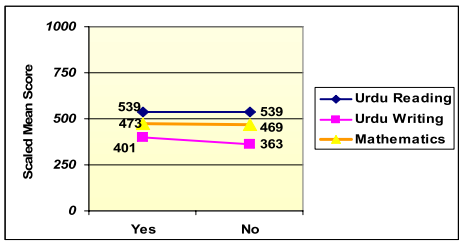


Figure No.63 Dictionary Usage Vs Achievement

Dictionary is a very basic component as additional resource for students' learning. Just 47% students had this facility and their performance was found significantly better in Urdu (Writing) and Mathematics. On the other hand those 53% students who didn't have the facility of dictionary performed lower in achievement. Since the state has taken up the responsibility of providing free textbooks to the students, the policy and plan makers may think of providing free dictionary both for Urdu and English languages at least once in school life.

Co-Curricular Activities Grade-8
Debate Grade-8

Table 38. Percentage of Participation in Debate

How often do you take part in debate	Percentage
Never	43%
Sometimes	40%
Always	17%

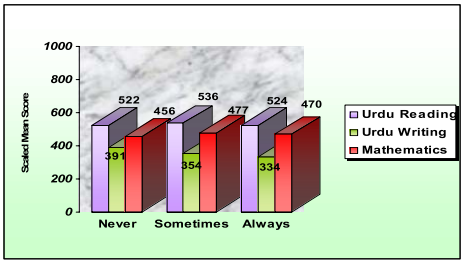


Figure No.64 Participation in Debate Vs Achievement

The co-curricular activity, 'debate' is an important factor in the teaching-learning process. 17% of the sample students always participate in debates organized by the school. 40% participate sometimes and 43% students reported that they had never participated in the debate competition. Students who participated in debates sometimes had significantly better scaled mean scores in all three subjects and the students who always participate are better than those students who never participated in debates. This invites the attention of the school authorities and parents to motivate their children for participation in debates but excessive participation in debates yields comparatively low scores for those students.

Physical Exercise Grade-8

Table 39. Percentage of Participation in Physical Exercise

How often do you take part in physical exercise	Percentage
Never	24%
Sometimes	38%
Always	38%

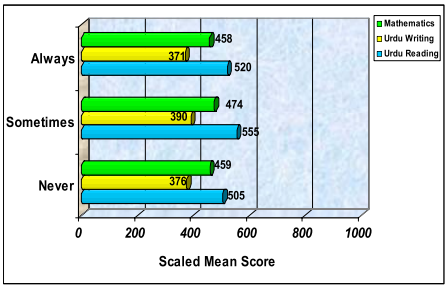


Figure No.65 Participation in Physical Exercise Vs Achievement

Physical development is in fact development of brain. Games are considered highly important for physical fitness. Students who used to play different games 'sometimes' attained the highest scaled mean scores in all three subjects, which is significant. The results speak that the students who play games too much and who do not play games at all had low scaled mean score. School and home both are required to ensure the participation of children in playing games.

Scouting/Girl Guide Grade-8

Table 40. Percentage of Participation in Scouting/Girl Guide

How often do you take part in scouting/girls guide	Percentage
Never	58%
Sometimes	27%
Always	15%

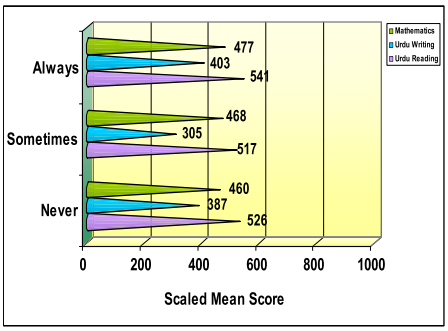


Figure No.66 Participation in Scouting/Girl Guide Vs Achievement

The scouting and girl-guide movement is considered an important socially motivated leadership factor in our education system. The participation in this activity tells students how to manage living with limited resources and lead the others in daily life. The students who remained part of this activity always performed significantly better than the students who participated sometimes.

House-Hold Work Grade-8

Table 41. Percentage of House-Hold Work

Does your study effect at home due to helping parents in the house hold work ?	Percentage
Yes	69%
No	31%

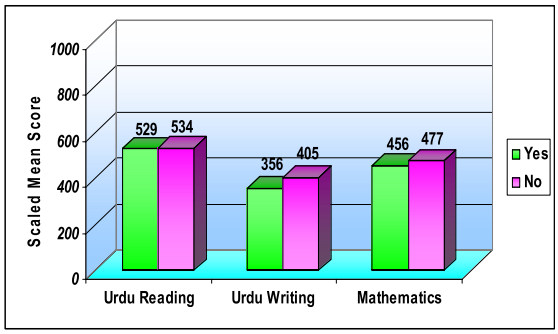


Figure No.67 House-Hold Work Vs Achievement

69% of the total sample of students reported that their studies had been affected due to helping parents in house hold activities at home. The results of the study are evidence of the fact that those who help parents in household affairs at home had significantly low scores in all three subjects.

Games Grade-8

Table 42. Percentage of Participation in Games

Does your study at home is affected due to games?	Percentage
Yes	57%
No	43%

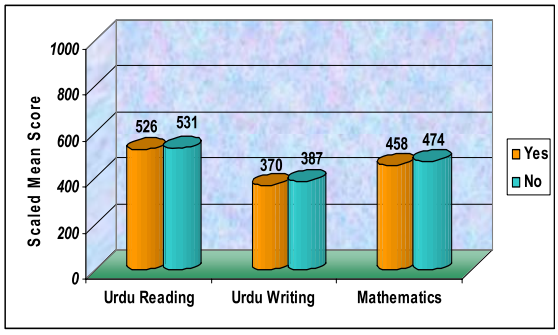


Figure No.68 Participation in Games Vs Achievement

Excessive participation in games yielded bad results for the students as they were not able to pay proper attention to their studies. As a matter of fact the results of the students who used to play games too much scored significantly lower than those students who did not play games that much. The schools are required to have an appropriate timing for games and similarly parents are required to delimit too much play of their kids.

Book-Reading Grade-8

Table 43. Percentage of Book-Reading

Besides text books, I also study other informative books, stories etc.	Percentage
Never	10%
Sometimes	52%
Always	38%

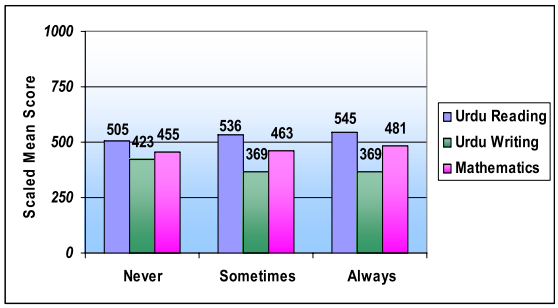


Figure No.69 Book-Reading Vs Achievement

Use of resource material enhances the learning achievement of the students. Majority 52% of the students were found using informative and story books besides their textbooks and some 38% students reported that they always used resource material books. 10% students never used story and other informative books. Their scores were surprisingly high in the subject Urdu (Writing). For the other two subjects the scores of students were significantly high in Urdu (Reading) and Mathematics of those students who always used resource material for learning.

Lesson Repetition Grade-8

Table 44. Percentage of Lesson Repetition

During study at class teacher repeat the lesson many times.	Percentage
Never	4%
Sometimes	10%
Always	86%

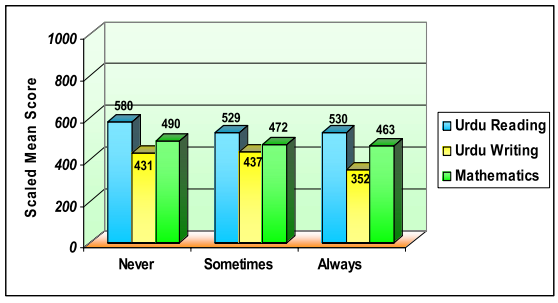


Figure No.70 Lesson Repetition Vs Achievement

The concept clarity and making the students understand a particular topic it was found that 86% students were taught lesson time and again in case their teachers finding that they had not yet completely understood it. 14% students were partially taught the lesson time and again till they were able to understand it completely.

Parent Study-Concern Grade-8

Table 45. Percentage of Parent Study-Concern

My parent ask about my school study	Percentage
Never	9%
Sometimes	25%
Always	69%

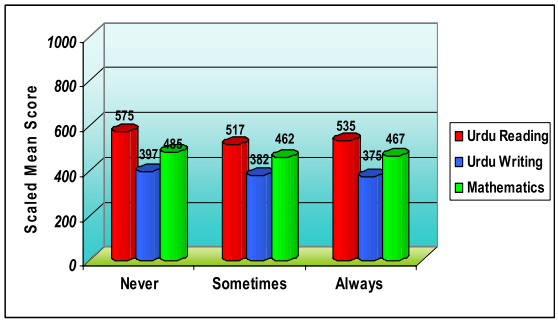


Figure No.71 Parent Study-Concern Vs Achievement

The role of parents' vigilance about the study of their kids certainly yields good results. The students who reported that their parents always asked them about their study were 69%, parents who asked about the study of their kids sometimes were 25% and 6% students' parents never asked them about their study, but surprisingly they attained significantly high scores in Urdu (Reading & Writing) and Mathematics.

Group-Study Grade-8

Table 46. Percentage of Group-Study

I study with my class fellow	Percentage
Never	7%
Sometimes	22%
Always	72%

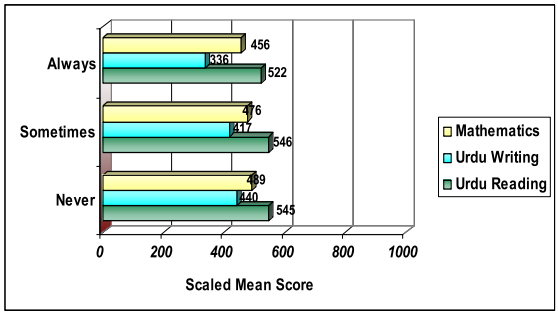


Figure No.72 Study in Group Vs Achievement

Team study or group study especially with the class fellows having intimacy among them is considered yielding very positive impact on learning achievement. 71% students confirmed that they were always used to study in a group with their class fellows, 22% students studied sometimes and 7% students never studied in group. The scaled scores were unusual as those who never used to study in group with class fellows achieved significantly high scores in Urdu (Writing) and Mathematics and in Urdu (Reading) they were found quite good as well. The results cannot minimize the importance of group learning if it is supervised by a vigilant teacher as it is the child psychology that they prefer discussing other issues if they are in the group.

Parent School Satisfaction Grade-8

Table 47. Percentage of parents Satisfied with School Performance

Are you satisfied with the performance of the school?	Percentage
Yes	91%
No	9%

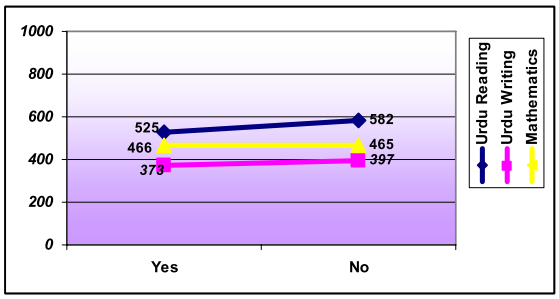


Figure No.73 Parents School Satisfaction Vs Achievement

School community relationship no doubt plays significant role in the teaching learning process. 91% parents of the students were satisfied with the performance of the school but the score of their children was nominally above the scores of those students whose parents were not satisfied with the performance of school. The parents of students who performed significantly better in Urdu (Reading & Writing) were not satisfied with the performance of the school. The results draw the attention of researchers to find out the factors due to which satisfied parents' children were not performing as expected.

HEAD TEACHER Grade-8

Academic Qualification

Table 48. Percentage of Head Teacher Academic Qualification

Academic education	Percentage
Bachelor	20%
Masters	73%
M.Phil/Ph.D	7%

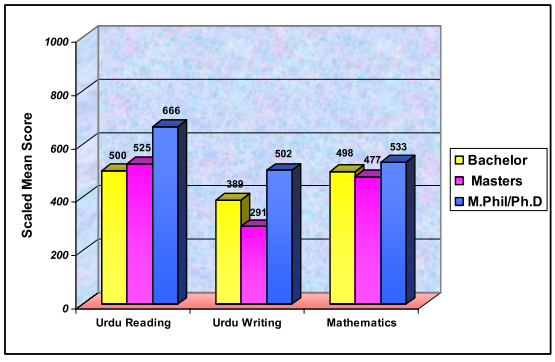


Figure No.74 Head Teacher Academic Qualification Vs Achievement

The role of head teacher is highly important in earning good name for the institution. 73% of the head teacher sample were master degree holders, 20% bachelor and quite encouraging 7% head teachers possessing M.Phil / Ph.D degree at elementary level. The most important aspect was that the students of head teachers possessing M.Phil / Ph.D degree scored significantly high in all three subjects.

Professional Qualification Grade-8

Table 49. Percentage of Head Teacher Professional Qualification

Professional Education	Percentage
Diploma in Ed.	1%
B.Ed	38%
M.Ed.	57%
M.Phil/Ph.D	1%

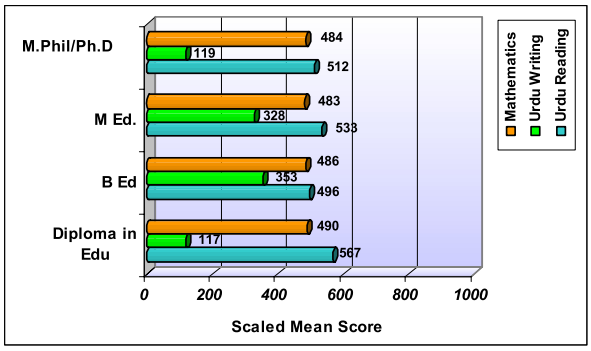


Figure No.75 Head Teacher Professional Qualification Vs Achievement

Professional qualification of the head teachers is another important component as he has to deal with the students, teachers and parents simultaneously. Majority of the head teachers were possessing B.Ed., M.Ed. as professional qualification. 1% of the head teachers were having M.Phil / Ph.D in the subject of education as well. The trend of getting higher professional qualification is a very positive sign for our education system.

Teacher Lesson Plan Check Grade-8

Table 50. Percentage of Head Teacher Check Lesson Plan

Checking the lesson plan prepared by the teacher.	Percentage
Daily	14%
Weekly	56%
Monthly	25%
Annually	2%
Never	2%

The lesson plan certainly helps teachers delivering instructions in an organized, meaningful and fruitful way. 56% head teachers check the lesson plan of their teachers on weekly basis, 25% on monthly basis, 14% on daily basis and 5% do not interfere in the classroom instructions of their teachers. The results are significant for those head teachers who check the plan of their teachers on monthly basis. A comprehensive plan by the head teacher needs to be in place to monitor every single lesson being delivered by his teacher.

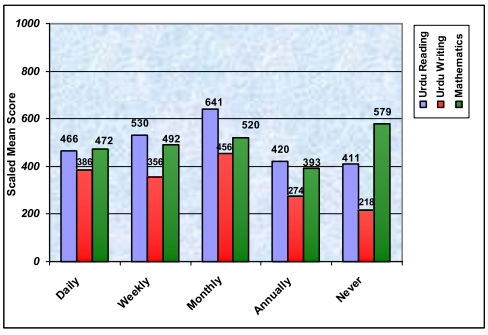


Figure No.76 Head Teacher Check Lesson Plan Vs Achievement

Model Lecture Grade-8

Table 51. Percentage of Head Teacher Deliver model Lecture Vs Achievement

Model lecture for teacher and students.	Scaled Mean Score		
	Urdu Reading	Urdu Writing	Mathematics
Daily 13%	499	369	457
Weekly 33%	508	276	476
Monthly 41%	629	466	527
Annually 10%	559	341	477
Never 4%	488	221	517
Difference	Sig.	Sig.	Sig.

The head teacher, being the role model, can play highly significant role in uplifting the standard of his institution. The head teachers were asked whether they delivered a model lecture to the teachers and students for their better understanding. 13% head teachers reported that they did this practice on daily basis, 33% on weekly basis, 40% on monthly basis and 14% remained stuck to the principle of laisser-faire. The results were highly significant for the head teachers who used to deliver model lecture on monthly basis.

Good Performance Direction Grade-8

Table 52. Percentage of Head Teacher Give Direction

Directions for the uplift of the school.	Percentage
Seldom	15%
Sometimes	32%
Always	49%
Never	4%

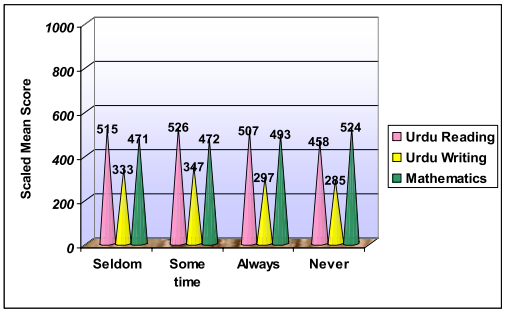


Figure No.77 Head Teacher Give Direction Vs Achievement

Guidance by the head teachers to the teachers for uplifting the standard of the school shows how vigilantly a head teacher wants to run his institution. The NAT 2014 results show that 15% head teachers were seldom directing the teaching staff 32% sometimes, 49% always and 4% never did so. The results of those head teachers were significantly high in Urdu (Reading & Writing) who used to direct their teachers on sometime basis. In case of Mathematics the results of those teachers were significantly better who had never been given direction by the head teacher.

Parent Cooperation Grade-8

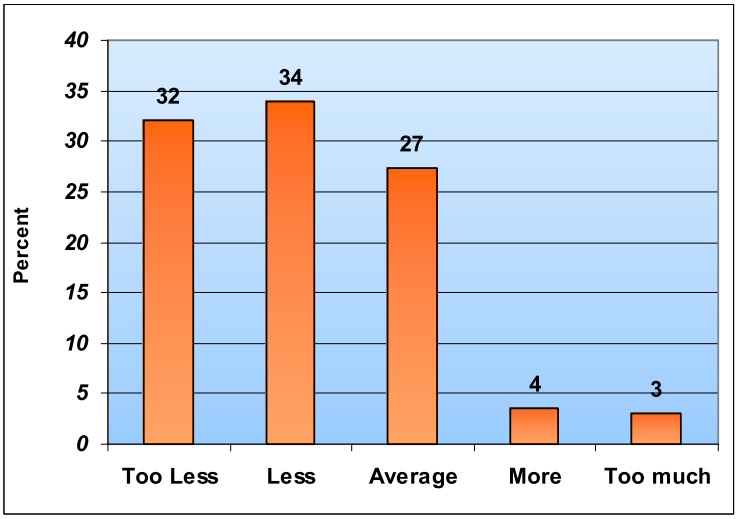


Figure No.78 Percentage of Parent Cooperation with School

The parent cooperation usually yields positive impact on the teaching learning process. Hardly 7% parents were not found interested in the studies of their kids. Majority 93% showed mixed interest as they cooperated with school in three different tiers of interest.

Parent-Teacher Committee Grade-8

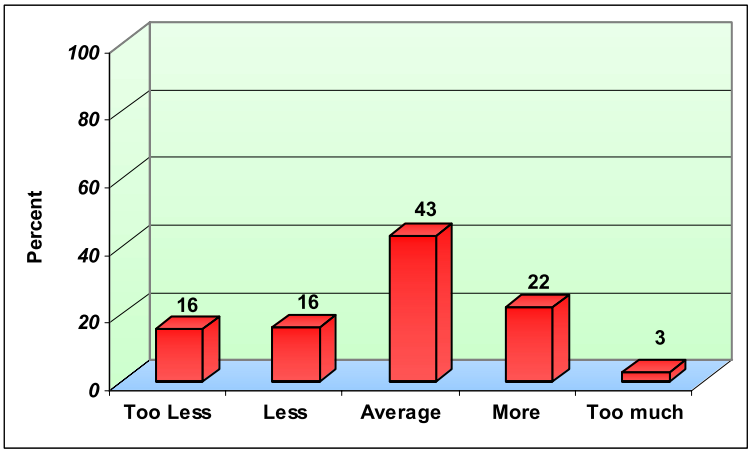


Figure No.79 Percentage of Parent-Teacher Committee Cooperation

75% parent-teacher committees did not participate in carrying out school education activities, which was not good sign as compared to previous participation of parents. Only 25% parents were found cooperating with the parent-teacher committee for resolving the educational problems of the schools.

Cooperation for Problem Solution Grade-8

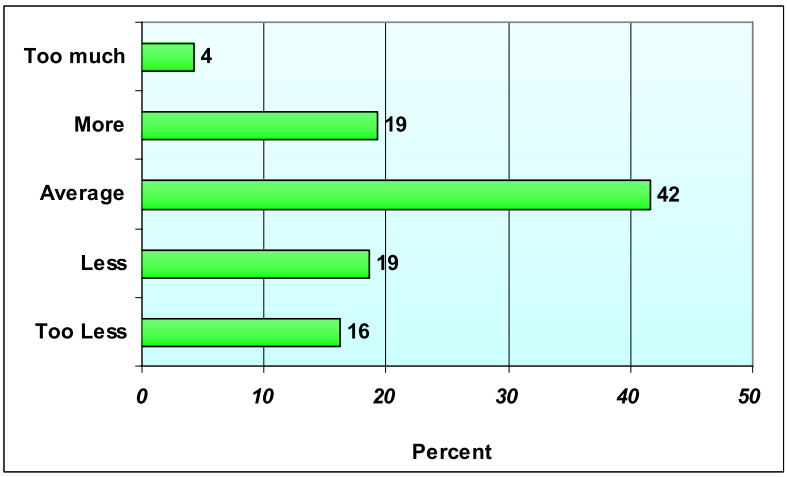


Figure No.80 Percentage of Parent-Teacher Committee for the solution of Problems

School related problems cannot be resolved by the school alone. School and home jointly can find out solution and uplift the standard of education. 65% parents were found cooperating with school for solving problems of students with mixed interest level. 35% parents and teachers committee were found least interested in solving the day to day emerging problems of the schools. More parent and community involvement is need of the hour. Necessary measures are required to be taken to reach the target.

Teacher Contact Permission Grade-8

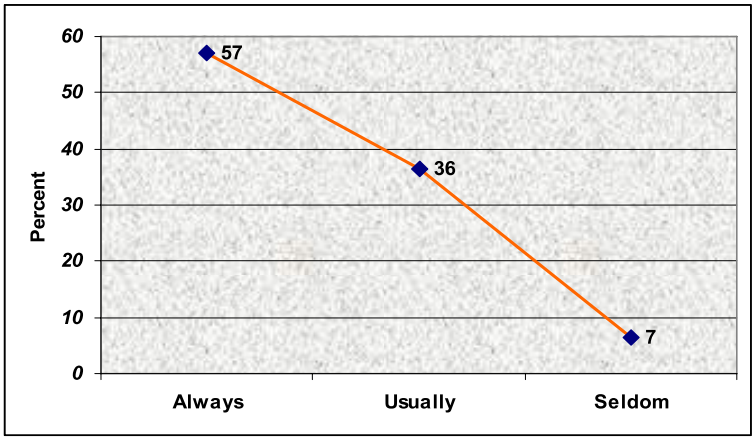


Figure No.81 Percentage of Head Teacher Allow Teacher to Contact Parents

The head teachers were found quite cooperative to allow their teachers to contact parents for resolving the problems of their kids. As 57% head teachers always allowed their teachers in this context and 36% were found allowing their teachers on regularly basis. 7% head teachers seldom allowed their teachers to contact parents.

Guest Speaker Arrangement Grade-8

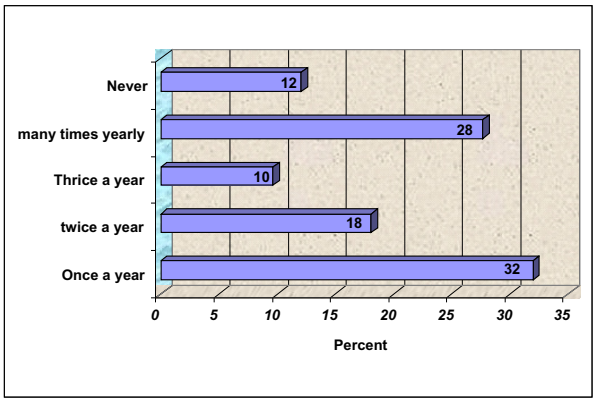


Figure No.82 Percentage Guest Speaker Arrangement on Different Time

Students' interaction with the learned and scholarly people can develop their interest in the studies as well as they can have the scholars as their role model. A question was asked regarding invitation to the guest speakers to deliver a lecture to the students of the schools on any important topic. Majority schools were found arranging guest speakers on different occasions. Only 12% schools never invited any guest speaker to their school.

Staff Evaluation Grade-8

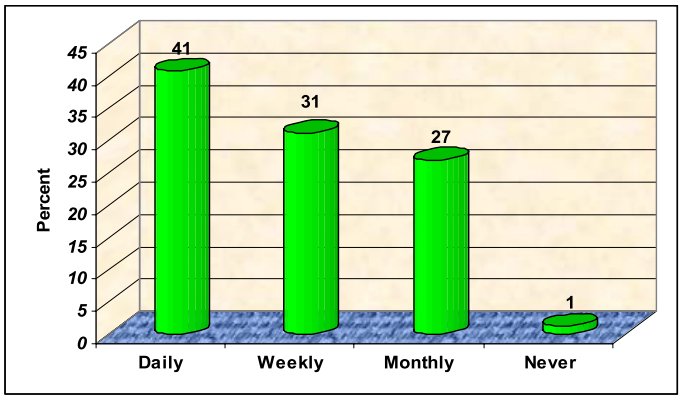


Figure No.83 Percentage of Evaluation on Different Time

The head teachers were asked about evaluating the performance of their teaching staff, which is an integral component of the teaching learning process, especially raising in the standard of the institution by keeping a vigilant eye on things. On daily basis 41% head teachers evaluated their teachers, 31% on weekly basis, 27% on monthly basis and only 1% head teachers reported that they never evaluated their teachers.

Student Evaluation Grade-8

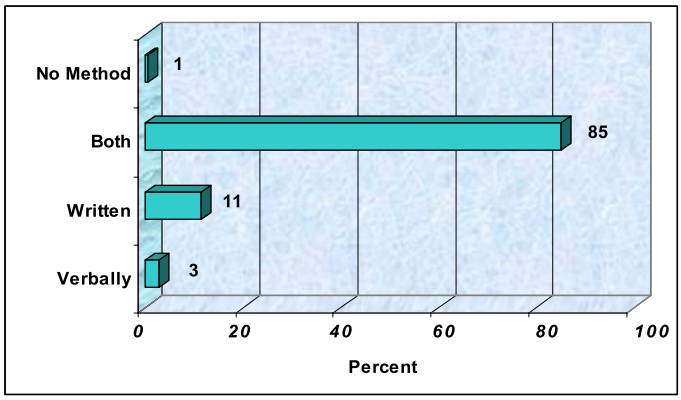


Figure No.84 Percentage of Evaluation With Different Methods

Schools were found evaluating the academic ability of the students by using verbal, written and both methods. 85% of the schools evaluated their students' academic ability both verbally and in written, 11% evaluated in writing only, 3% evaluated verbally and 1% schools did not use any of the methods for evaluation of the students' performance.

Staff Performance Grade-8

Table 53. Percentage of Head Teacher Satisfaction from Staff Performance

Are you satisfied with the performance of the teachers in school?	Percentage
Yes	85
No	15

The head teachers are the main source who can tell better about the performance of their teachers as they have to interact with them for most of the school time. 85% of the head teachers were found satisfied with the performance of their teachers in the school. Apparently it seems reciprocal to the overall performance of the students in all three subjects of grade 8, as they secured average score above the mean of 500 only in Urdu (Reading). 15% head teachers were not satisfied with the performance of their teachers, this appeared to be right in the context of scaled mean score achievement.

Teacher Shortage Grade-8

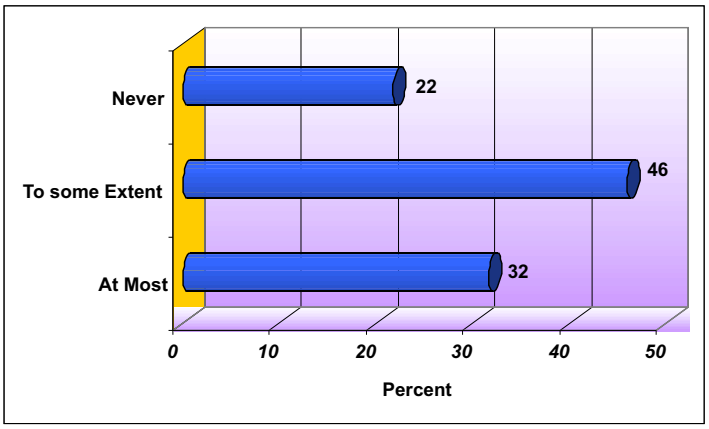


Figure No.85 Percentage of Teacher Shortage on Different Scale

The geographical distribution of the country demands posting of the teachers in all schools as very few students might be having proper coaching other than at the school. 22% schools had never faced shortage of teaching staff but 46% schools did have shortage of teachers to some extent. 32% of the head teachers reported that they had serious shortage of teaching staff.

Political Pressure Grade-8

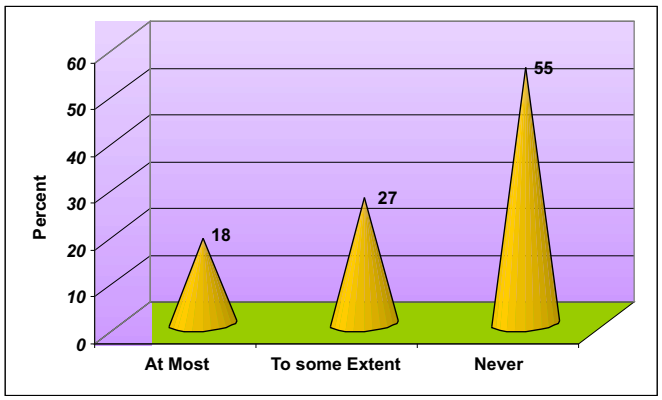


Figure No.86 Percentage of Political Pressure on Different Scale

Political pressure was found at the local level, people interfering in the school academic and administrative matters. Although, majority 55% schools reported that they had never faced any political involvement in the school matters but on the other hand 45% head teachers complained that they faced political involvement sometimes at the most and sometimes to some extent.

Teacher Professionalism Grade-8

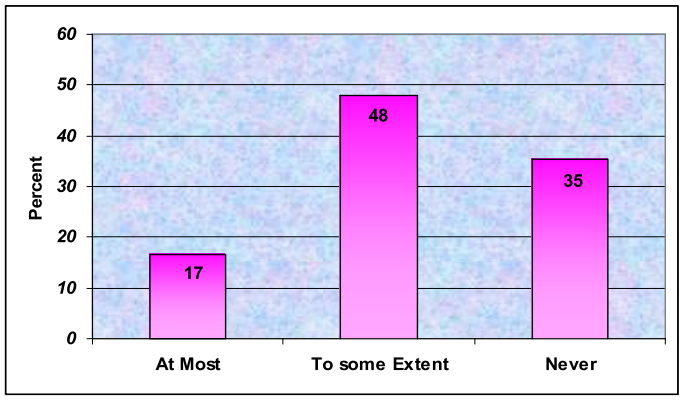


Figure No.87 Percentage of Teachers Lacking Professionalism

65% head teachers reported that their teachers lacked professionalism as a teacher. 17% lacked professionalism at the most and 48% were found having professionalism to some extent. 35% head teachers were absolutely satisfied with the professional approach of their teachers. Professionalism, no doubt, matters much in teaching learning process. The teacher recruitment policy, pre-service and in-service training and other aspects are required for addressing the matter.

Building Condition Grade-8

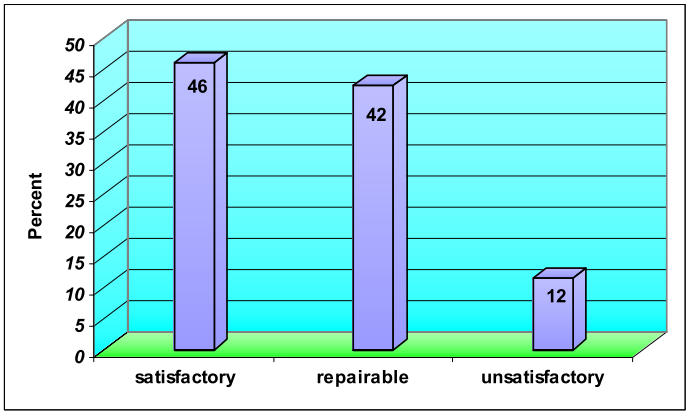


Figure No.88 Percentage of Building Condition on Different Scale

No one can deny the contribution of peaceful environment in the teaching learning process. The facility of building protects from the weather ups and downs and help in providing peaceful atmosphere to both students and teachers. 46% head teachers reported about the satisfactory building condition of their schools, 42% wanted the buildings to be repaired and 12% head teachers were totally unsatisfied with the building condition for carrying out teaching learning process.

Building Status Grade-8

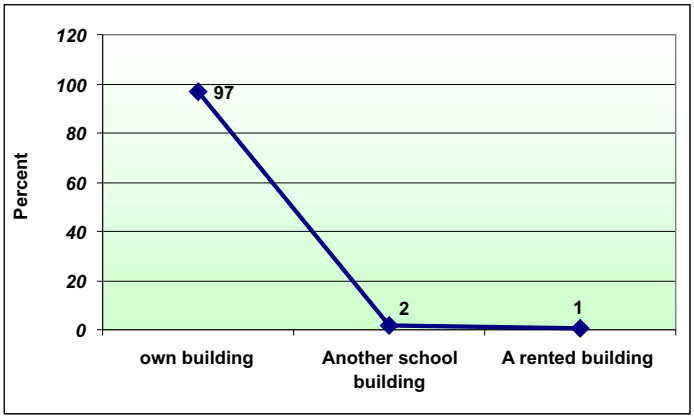


Figure No.89 Percentage of Building Ownership Status

The majority 97% of the schools are being run in the government buildings, 2% head teachers reported their school affairs were run in the other school buildings and 1% schools were being run in the rented buildings.

Teaching-Kit Grade-8

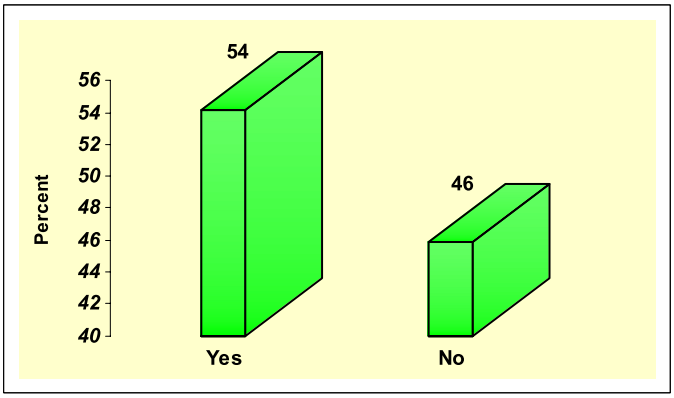


Figure No.90 Percentage of Teaching-Kit Availability

The teaching kits were provided to the schools by the government and by the donors driven projects to enhance the effectiveness of teaching and better learning of the students. The head teachers of 54% schools reported that they had the facility of teaching kit at their schools but 46% of the head teachers reported that they did not have the teaching kits.

Teaching-Kit Usage Grade-8

54% schools which had the facility of teaching kit were not found using it on 100% basis. 30% schools were not benefitting from the teaching kit and the remaining 70% were using the teaching kit 'sometime' when they needed to make the instruction effective.

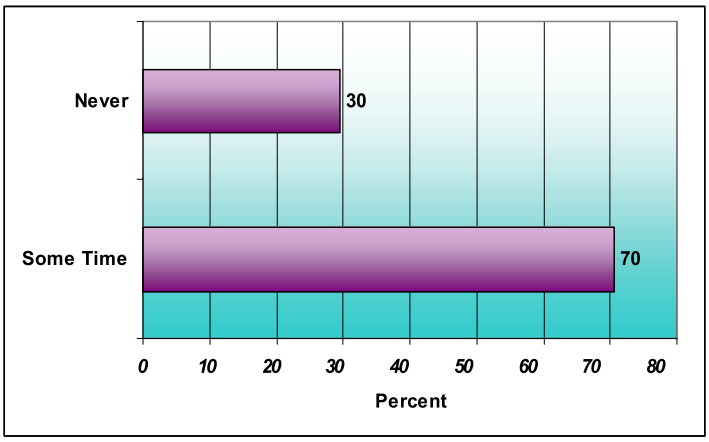


Figure No.91 Percentage of Teaching-Kit Availability

Utility Facility Grade-8

Table 54. Percentage of Utilities in Schools

Facility	Percentage
Electricity	80%
Water	82%
Boundary Wall	60%
Play Ground	39%

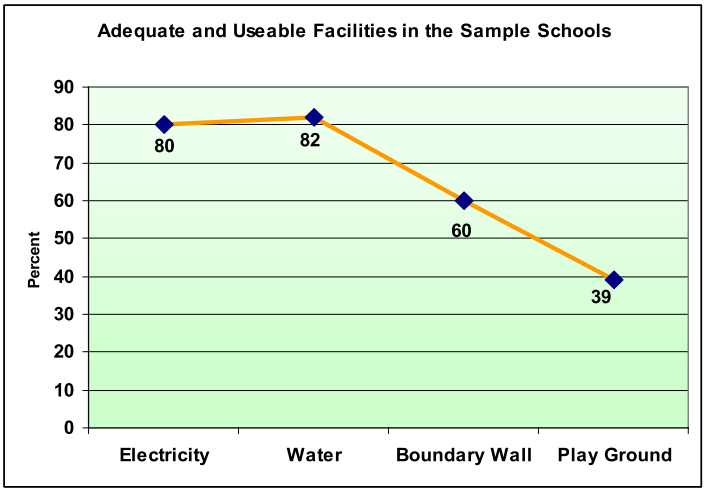


Figure No.92 Percentage of Utilities in Schools

Electricity, drinking water, boundary wall and playground were listed as basic facilities for the schools. The schools that did have these facilities were 40% to 82%. On the other hand 18% to 60% schools were deprived of these facilities. The contribution of the basic facilities cannot be ignored as the physical and mental satisfaction plays very important role in the teaching learning process.

Student Absence Grade-8

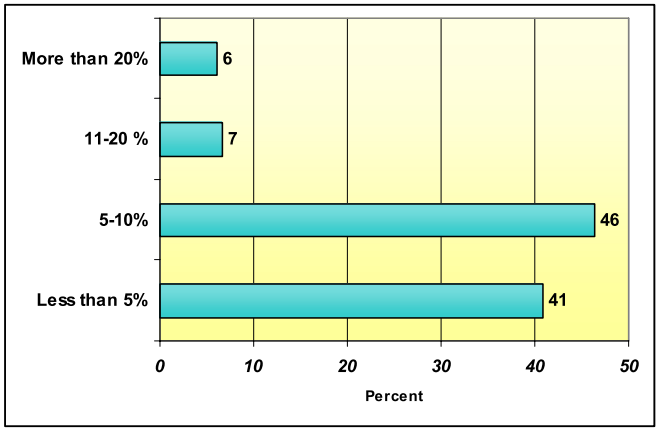


Figure No.93 Percentage of Students' Absence in the school

The absence of students affects their performance in terms of learning. The students who usually remain absent from the school cannot go along with the rest of the schools in their academic matters, thus surely lagging behind in learning. 41% students had their attendance 95% during the whole academic year. 59% students remained absent from school 5 - 20% of the total working days. The absentism of students was seen on the high side, which spoke of the weak administration of the schools. The schools are required to adopt such measures to ensure students' 100% presence in the school for teaching learning process.

School Library Grade-8

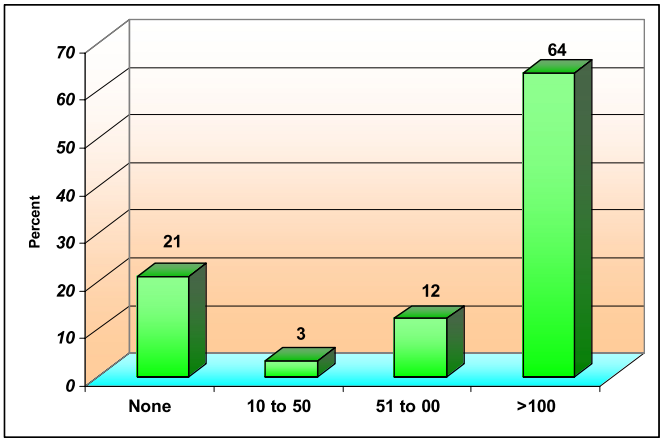


Figure No.94 Percentage of Books in School Library

Books are considered ever as the constant friends because they are always beneficial to the readers. The role of library cannot be overlooked due to e-library, e-books, and internet information etc. The schools where no book / library existed are 21% of the total sample. The schools with 10 to 50 books were 3%, the schools with 51 to 100 books are 12% and the schools which had more than 100 books were 64% of the total sample. The school administration and the district education authorities are required to look into the matter for the provision of books, maintenance of library and making the library functional for the students.

TEACEHR REPORTED VARIABLES

Rating Multi-grade Teaching Grade-8

The multi-grade teaching on the one end is considered as the most difficult assignment and on the other end it is considered the best if effectively carried out by the teachers. The teachers were asked about the impact of multi-grade teaching on the teaching learning process on 5 points scale. The answers ranged from 'very bad' to 'very good'. 46% teachers thought it would be yielding very bad impact on the teaching learning process, 22% thought it to be good and 33% teachers were satisfied teaching multi-grades.

Parent-Teacher Meeting Grade-8

Table 55. Percentage of Parent-Teacher Meeting on Different Timing

Meeting parents of the students.	Percentage
Daily	8%
Once a week	9%
Once a month	56%
Never	17%

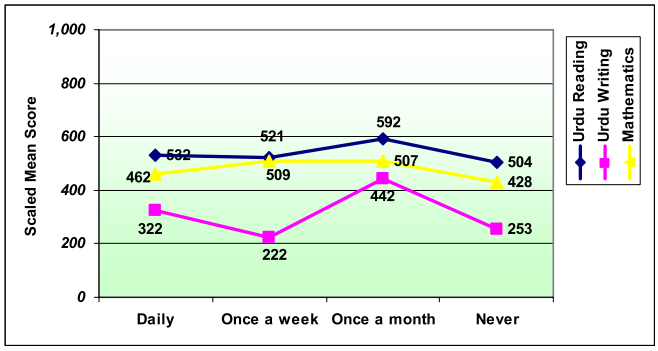


Figure No.95 Parent-Teacher Meeting Vs Achievement

The teachers who reported meeting the parents of the students regarding students' performance, 8% of the sample teachers reported that they use to meet parents on daily basis, 9% once in a week, 56% once in a month, 17% teachers never met the parents. The frequent meetings with the parents would not certainly be affordable for the school as proper attention to the teaching process would not be possible for the teachers; similarly parents are involved in earning their livelihood and would not be able to come to school on daily basis. An appropriate time may be settled in parent teachers meeting suitable to both sides.

Problem-Solving Grade-8

Table 56. Percentage of Problem-Solving by Teacher on Different Timing

Solving academic problems of the students.	Percentage
Daily	73%
Once a week	13%
Once a month	6%
Never	2%

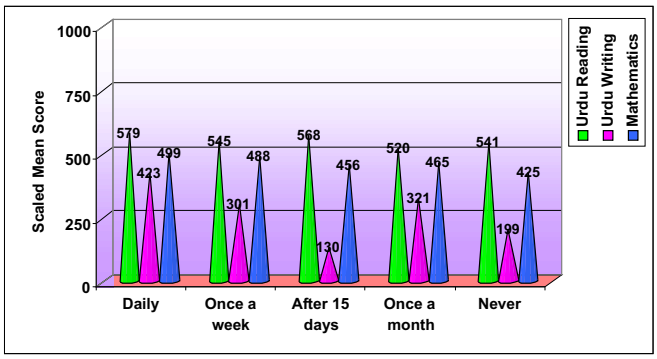


Figure No.96 Problem-Solving by Teacher Vs Achievement

Seeking solution for the students' problem is one of the best approaches of the schools. The teachers who used to solve the academic problems on daily basis were 73% of the sample, 14% teachers solved problems of the students once in a week, 6% once in a month and 2% never bothered. The students of the teachers who solve the students' problem on daily basis had their scores significantly better than the students of those teachers who used to solve the problems at different times.

Teacher Administrative Duty Grade-8

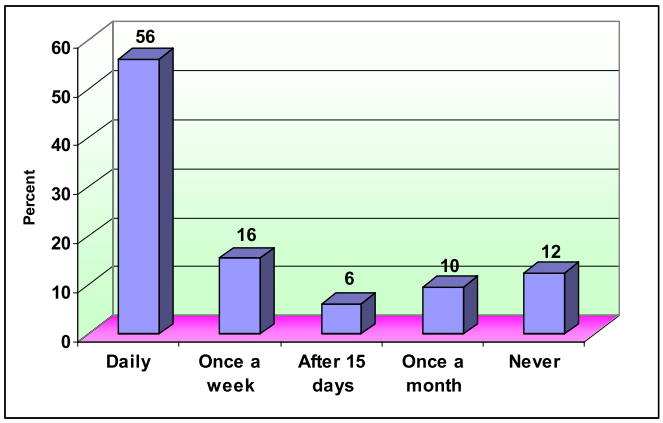


Figure No.97 Percentage of Teacher Performing Administrative Duty

The administrative duties performed by the teachers at daily basis were 56% of the sample, 16 % once in a week, 6% after 15 days, 10% once in a month and 12% teachers reported that they were never asked to perform adminis-trative duties in school.

Discipline Meeting Grade-8

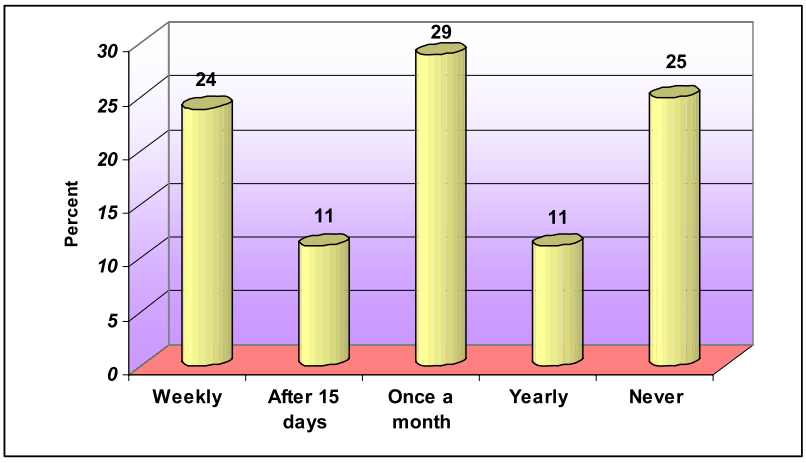


Figure No.98 Percentage of Parent- Teacher Meeting regarding child Discipline

The maintenance of discipline requires the cooperation of the parents. Meetings were conducted with the parents of the students on weekly to yearly basis by the teachers. 24% teachers had this meeting on weekly basis, 11% on after every 15 days, 29% once a month, 11% on yearly basis and 25% teachers reported that they had never called parents regarding students' discipline. This may mean either the students of those 25% teachers were well disciplined or the teachers were having low concern.

Parent-School Contact Grade-8

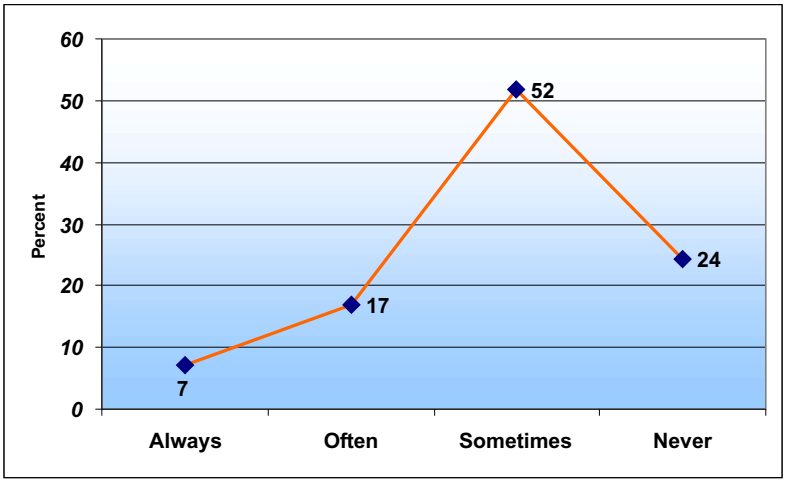


Figure No.99 Percentage Parent-School Contact for Child Academics

Parents were asked whether they contacted teachers regarding the academic performance of their children. The response thus obtained revealed that 52% parents contact teachers sometimes, 17% contact teachers often, 7% contact teachers always and 24% never contact teachers regarding the academic performance of their children.

Head Teacher Guidance Grade-8

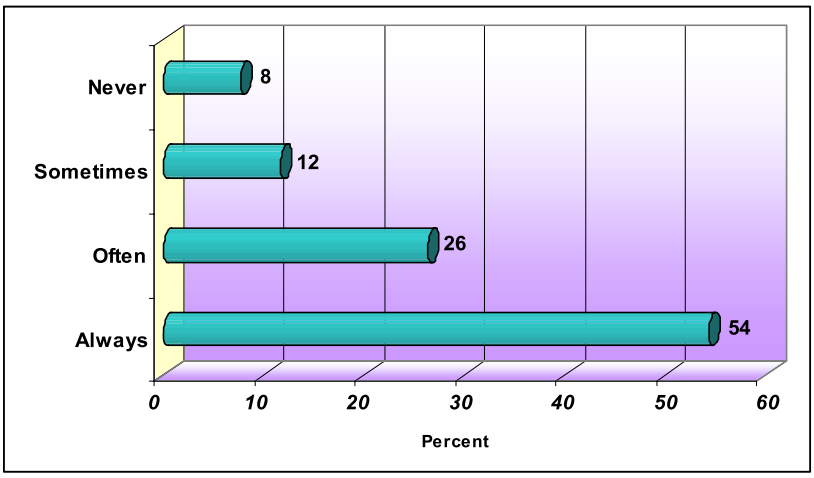


Figure No.100 Percentage of Heads' Guidance on Different Scale

Teachers were asked about the effectiveness of the role of the head of the institution. Their response in percentage reveals that the majority 54% head teachers guide their subordinates regarding delivery of instructions in the classroom, 26% head teachers guided often, 12% guided sometimes, 8% head teachers never thought it appropriate to guide their subordinates.

Course-Completion Grade-8

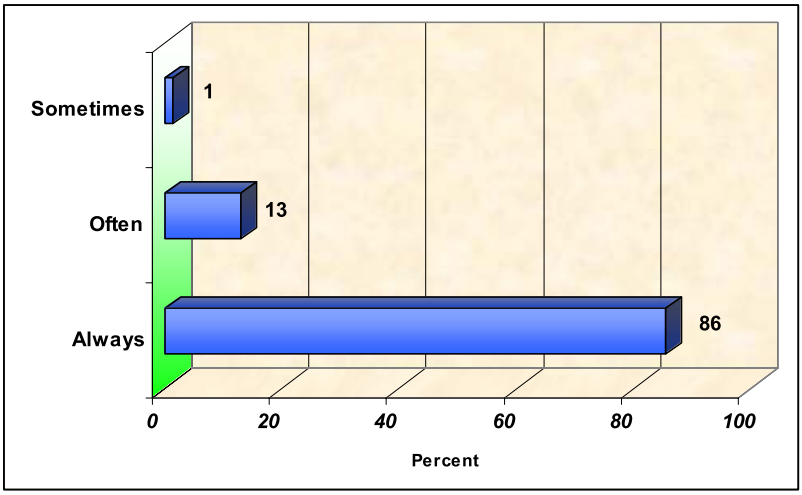


Figure No.101 Percentage of Teachers completing Course

The teachers reported that they complete course work in time. The response in percentage revealed that 86% teachers always used to complete course work for their students in time, 13% often and 1% sometimes.

Syllabus Revision Grade-8

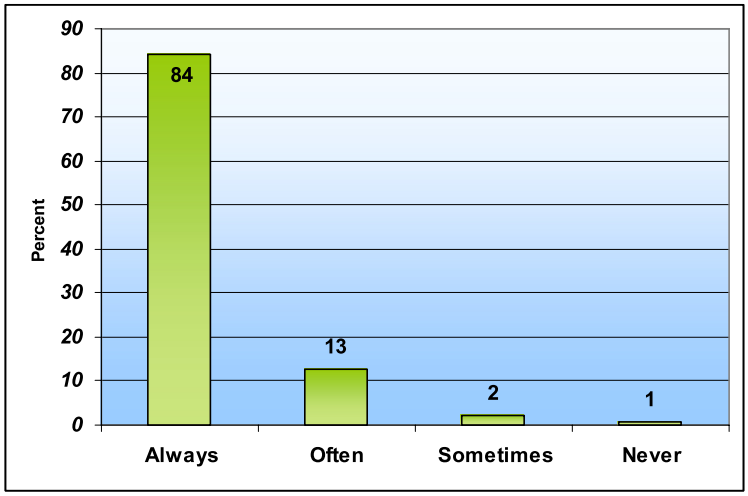


Figure No.102 Percentage of Syllabus Revision after completion

The teachers who got completed course work in time were 86% and out of them 84% reported that they revised the course work before the examination, 13% often revise, 2% sometimes and 1% never revised course.

Progress Report Sharing Grade-8

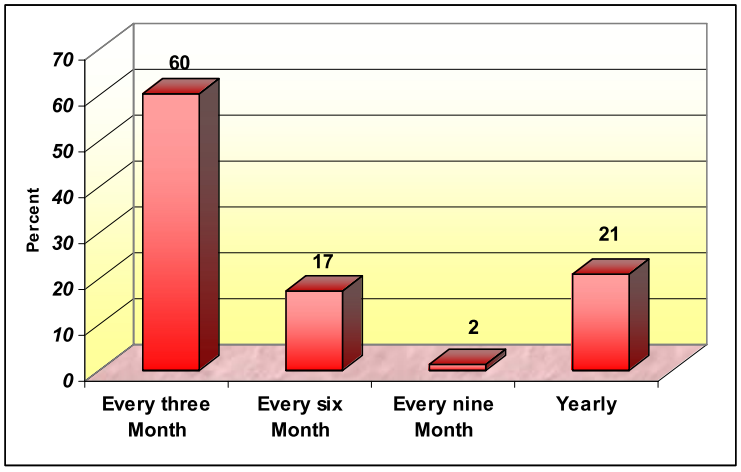


Figure No.103 Percentage of Progress Report sharing with parents

The policy of the school regarding informing the parents about the progress of their wards is a very contributing factor in raising the performance of students. 60% schools inform parents about their children's progress on quarterly basis, 17% half yearly basis, 2% nine month basis and 21% schools informed parents about the students' progress on yearly basis.

Student Evaluation Grade-8

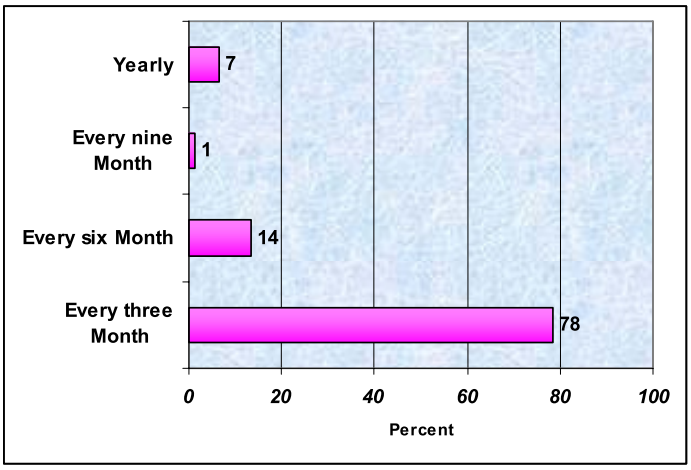


Figure No.104 Percentage of Students' Evaluation on different Time

Teachers' evaluation of their students was measured on four point scale. The evaluation scale started from 'every three months' to 'yearly'. Majority 78% teachers evaluate the academic activities of the students on quarterly basis, 14% on six monthly basis, 1% after every nine months and 7% on yearly basis.

Mathematics Teaching Grade-8

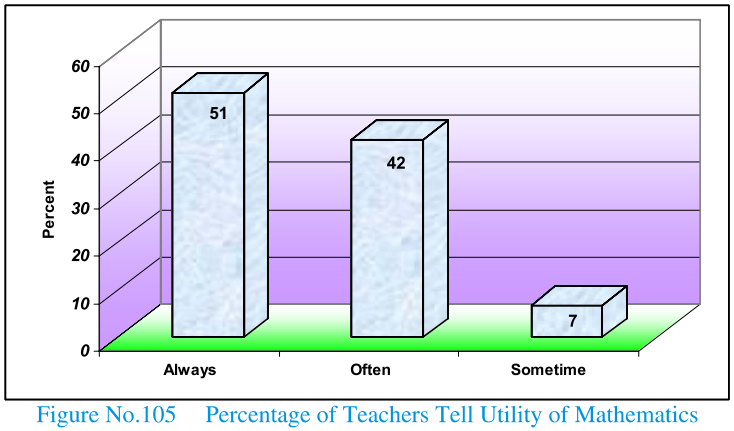


Figure No.105 Percentage of Teachers Tell Utility of Mathematics

The Mathematics teachers who used to highlighting the utility of Mathematics in daily life were 93% of the total sample and only 7% teachers used to emphasise this aspect on 'sometimes' basis. Practically students should have the knowledge of application of Mathematical concepts and formulate in daily life to solve the problems they face.

General Questioning Grade-8

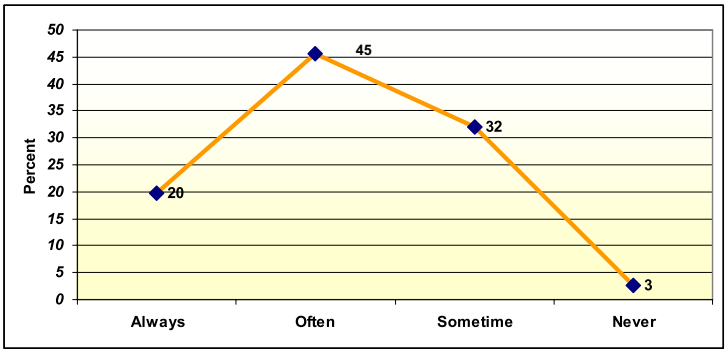


Figure No.106 Percentage of Students Ask General Questions

The students who were found interested in increasing their knowledge from sources other than textbook contents, 20% students 'always' asked questions other than textbooks, 45% students 'often' asked, 32% asked the questions 'sometimes' and 3% 'never' asked.

Mathematics & Daily Life Grade-8

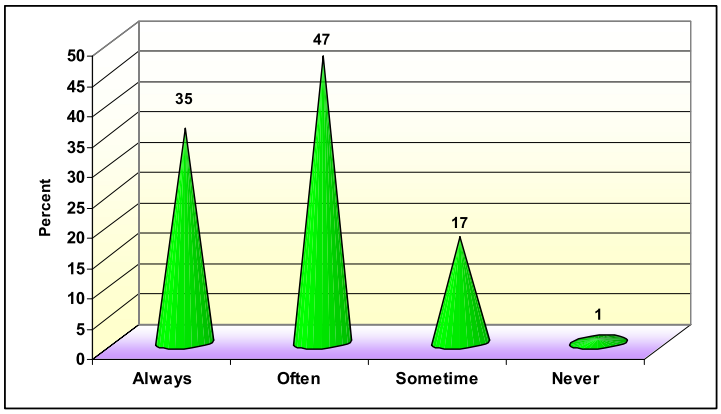


Figure No.107 Percentage of Teachers Relate Mathematics with Daily Life

The teachers who 'always' used to make their instructions fruitful relating to the students' acquired knowledge of Mathematics with the daily life were 35% of the sample achieved. 47% did this practice 'often', 17% tried to do 'sometimes' and 1% 'never' bothered.

In-Service Urdu Training Grade-8

Table 57. Percentage of In-Service Urdu Training

Topic	Percentage	
	Yes	No
Urdu content	21%	79%
technical education of Urdu	25%	75%
Urdu syllabus	29%	71%
Urdu to create positive criticism	32%	68%
Urdu to solve problem	29%	71%
Urdu exercise	33%	67%

Refresher courses for in-service teachers enhance their competence and bring up their teaching skills at par with the needs of the time. The majority teachers, who were assigned the subject of Urdu to teach in the class, did not get opportunity to have refresher training courses essential for promoting skills and improve accordingly.

Teacher Opinion Grade-8

Table 58. Percentage of Teachers' opinion for Language Contents

Topic	Percentage	
	Easy	Difficult
comedy stanza	85%	15%
language topics	55%	45%
stories and phrases	80%	20%
pronunciation	73%	28%
make a sentence	91%	9%

The need of refresher courses emerges when teachers are reporting themselves that they face 9% to 45% difficulty in teaching various topics. The hardest area for teachers was 'language topics' with 45% and relatively less hard area was 'make a sentence' with 9% complaint from teachers.

In- Service Mathematics Training Grade-8

Table 59. Percentage of In- Service Mathematics Training

Topic	Percentage	
	Yes	No
Maths content	33%	67%
Applied math	33%	67%
Maths syllabus	40%	60%
Maths critical thinking in the students	30%	70%
Maths problem solving	37%	63%
math exercise	41%	59%

The situation for the Mathematics teachers was no more different from that of teachers of Urdu. Almost 60% and above teachers could not benefit from the refresher courses arranged for addressing the difficulty of teachers in various content areas of Mathematics. Equal opportunities should be available for all teachers for participation in courses.

Mathematics Teaching Grade-8

Table 60. Percentage of Mathematics Teaching

Topic	Percentage	
	Easy	Difficult
Natural numbers	98%	2%
Least common multiple	93%	7%
Highest common multiple	95%	5%
Common fraction	88%	12%
Decimal fraction	94%	6%
Unit of length	83%	17%
Unit of weight	84%	16%
Sides of square and triangle	69%	31%

The majority teachers were found having command over the various content areas of Mathematics. Some content areas were found difficult; among these the hardest area found was 'sides of square and triangle' for 31% teachers and the least difficult was 'natural numbers' for 2% teachers.

FINDINGS GRADE-4 NAT-2014

National Scores Grade-4

Table 61. National Scaled Mean Score Grade-4

Subjects	Scaled Mean Score	Proficiency Level
English Reading	494	Basic
English Writing	290	Below Basic
Science	433	Basic

The performance of students was measured against the scaled score ranging from 0-1000 score with a mean score of 500 and standard deviation 100. The performance of students remained below the mean of 500 in all three subjects, as alarming situation emerged in English (Writing) with a scaled mean score of 290 for all concerned stakeholders. In terms of proficiency the subjects of English (Reading) and Science are placed in 'Basic' and English (Writing) in 'Below Basic' tier of proficiency.

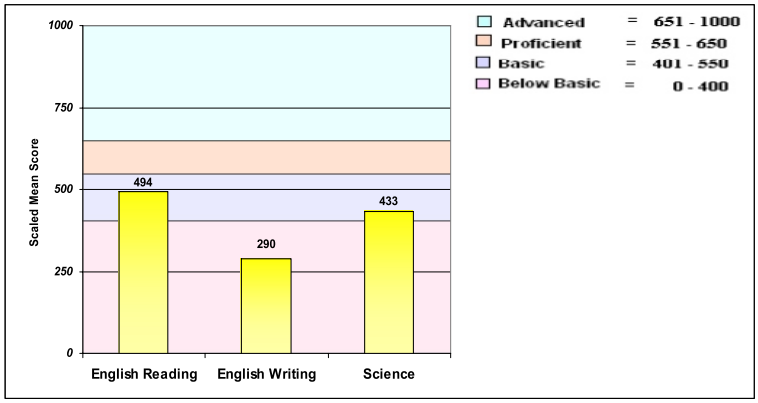


Figure No.108 National Scaled Mean Score Grade-4

Table 62. Percentage Below & Above Mean Grade-4

Option	English Reading	English Writing	Science
Below mean	56	87	79
Above mean	44	13	21

The above graph reveals that the performance of the sample students in terms of percentage obtained below and above the scaled mean score set at 500 was analyzed in all three subjects. In English (Reading) the students below the set mean of 500 were 56% and above were 44%. The situation in English (Writing) was totally reciprocal as 87% students were below the mean of 500 and hardly 13% students were above the mean of 500. The score in the subject of Science was good as compared to English (Writing). 79% students obtained scaled mean score below the mean of 500 and only 21% students could cross the mean of 500. In general it is concluded that the overall performance is not good and a lot of measures have to be taken to raise the standard.

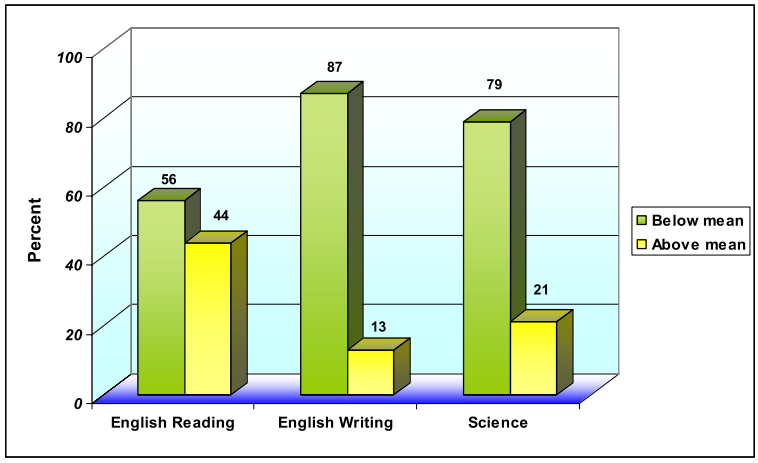


Figure No.109 Performance of Students Below & Above Mean Score-500

Province-Area Scores Grade-4

Table 63. Provinces & Area Scaled Mean Score with sample percentage

Province /Area		Scaled Mean Score		
		English Reading	English Writing	Science
AJK	**5%**	430	215	418
Balochistan	**8%**	449	164	402
FATA	**3%**	481	209	405
Gilgit-Baltistan	**6%**	448	290	419
ICT	**5%**	470	292	409
Khyber Pakhtunkhwa	**18%**	503	425	441
Punjab	**44%**	593	262	487
Sindh	**11%**	477	450	420
Difference		Sig.	Sig.	Sig.

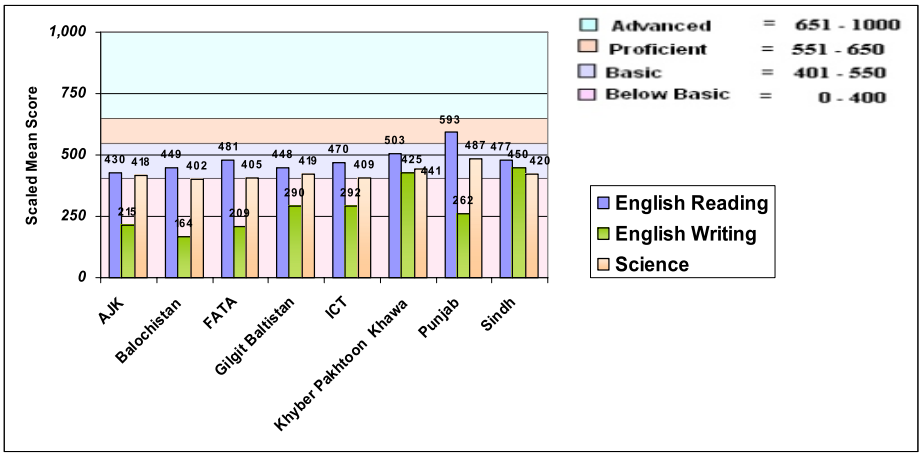


Figure No.110 Provinces & Area Scaled Mean Score Grade-4

Since the national assessment was carried out in all federating units of Pakistan in the subjects of English (Reading), English (Writing) and Science at Grade-4 level. The difference in achievement was seen significant among the students of each federating units. The highest scaled mean score achieved in English (Reading) is 593 by students from the province of Punjab and the students of AJK performed the lowest with scaled mean score of 430. In English (Writing), the students of Sindh province had distinction with high scaled mean score of 450. Whereas the students of Baluchistan found English (Writing) the most difficult subject with an achieved scaled mean score of 164.

Rural-Urban Scores Grade-4

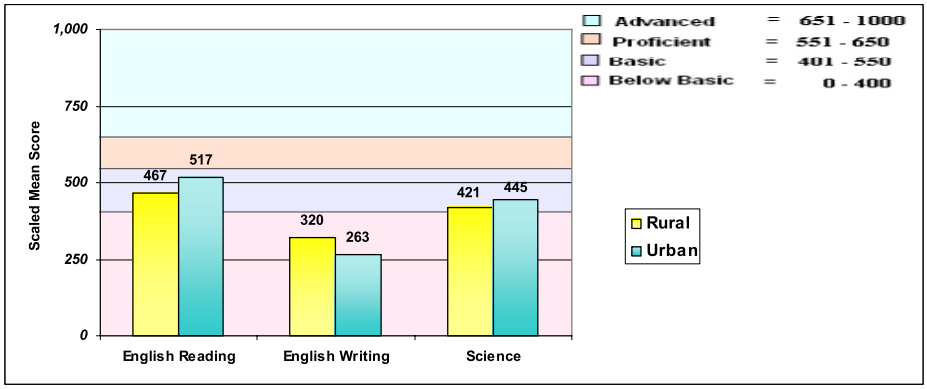


Figure No.111 Rural-Urban Scaled Mean Score Grade-4

The impact of location in the achievement of rural (56%) and urban (44%) students was seen usual. The urban students had significant upper hand in achieving scaled mean score in English (Reading) and Science. Interestingly the rural students' performance is significant in English (Writing) with a scaled mean score of 320. Only the urban students could get scores higher than the mean of 500 in English (Reading).

Boy-Girl Scores Grade-4

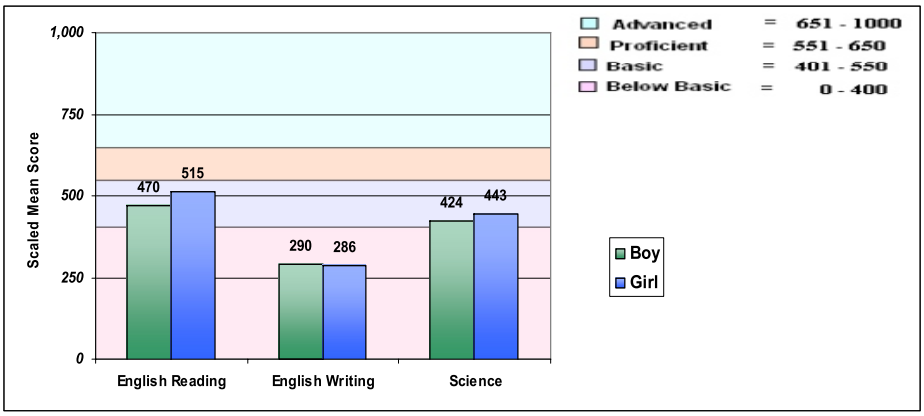


Figure No.112 Boy-Girl Scaled Mean Score Grade-4

The girls (47%) were ahead of boys (53%) in the NAT-2014 as they performed significantly better than boys in English (Reading) and Science by attaining a scaled mean score of 515 and 443 respectively. The subject of English (Writing) was almost equal to both the gender in terms of achievements.

Year-Wise Scores Grade-4

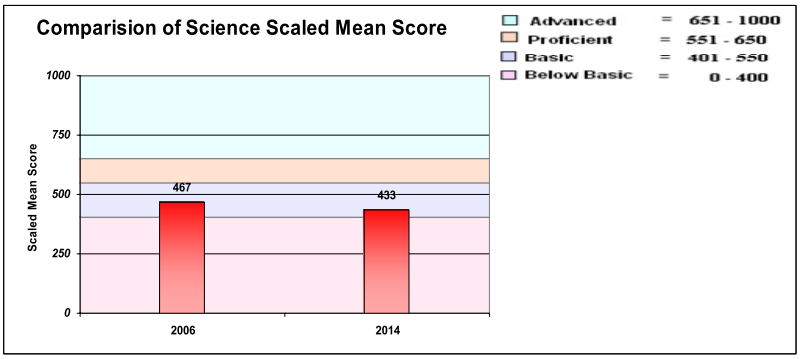


Figure No.113 Year-Wise Comparisons of Student Performance

A comparison of the scaled mean scores of previous national level assessment study conducted in the year 2006 is given with the recent national level study which shows significant difference in achievement as the scaled mean score of students in 2006 was quite high with a score of 467. The students' performance declined this time to significant low level with scaled mean score of 433. The performance of students in Science on the proficiency scale was 'basic' in both national assessments.

Proficiency Level Grade-4

The performance of students was measured against four levels of proficiency i.e. 'below basic', 'basic', 'proficient' and 'advance'. The breakup of the criteria for proficiency levels is given below for better understanding of the audience:

Table 64. Proficiency Level Criteria

Proficiency Level	Percentage
Below basic	0 - 40%
Basic	41 - 55%
Proficient	56 - 65%
Advance	66 - 100%

One of the most important features of NAT 2014 study is the assessment of students' performance in terms of their proficiency in the subjects. The proficiency was sub-categorized into four different proficiency levels namely 'below basic', 'basic', 'proficient' and 'advance'. The first two tiers of proficiency are considered as low achievement in terms of scaled mean score below the set mean of 500 and the upper two tiers are considered high proficiency with reference to their achievement in obtaining scaled mean scores above 500.

English (Reading) Grade-4

NEAS took a step forward in National Achievement Test (NAT) 2014 by analyzing data on proficiency level as it is practiced in the international assessments like Trends in International Mathematics and Science Study (TIMSS) etc. A greater percentage of students could just attain the initial proficiency levels in English (Reading). Only 17 % students fall in the advanced level of proficiency which is declared as the highest level.

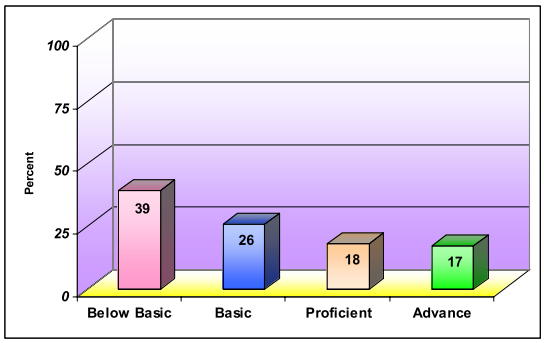


Figure No.114 Proficiency in English (Reading) Grade-4

English (Writing) Grade-4

Surprisingly the result of English (writing) are highly alarming as the top students of English (Reading) even could not perform to the extent they should have. Just 01% students were placed in advanced level, whereas 86% students remained below the level of proficient.

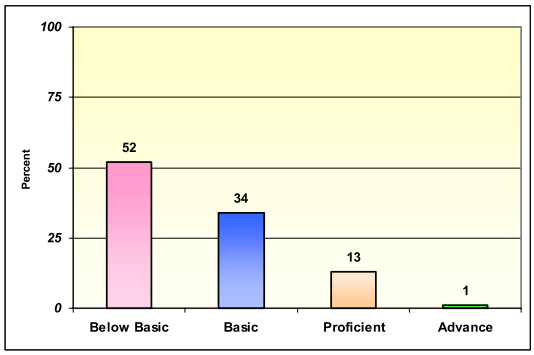


Figure No.115 Proficiency in English (Writing) Grade-4

Science Grade-4

The placement of students in terms of proficiency in the subject of Science does not differ much in comparison with other subjects. Hardly 2% students fall in the advanced proficiency level. Above 85% of students again could not cross the proficiency limit of'basic'.

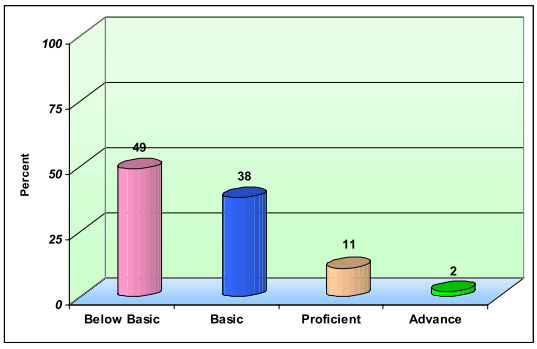


Figure No.116 Proficiency in Science Grade-4

CONTENT & COGNITIVE DOMAIN FINDINGS GRADE-4

English (Reading) Grade-4

Table 65. Context of Reading

Context of Reading	Percent
Reading for literary experience	51
Reading for Information	46

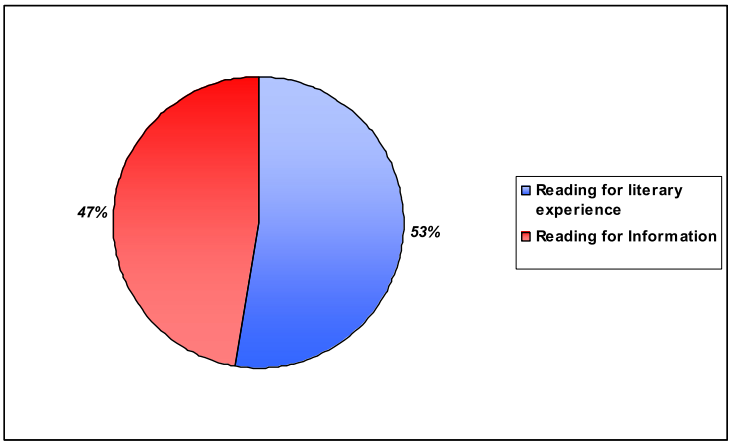


Figure No.117 Context of English (Reading) Grade-4

The context of English (Reading) was assessed against two categories. The 51% questions attempted were related to 'reading for literary experience'. Contrary to the 46% of questions which were from 'reading for information'.

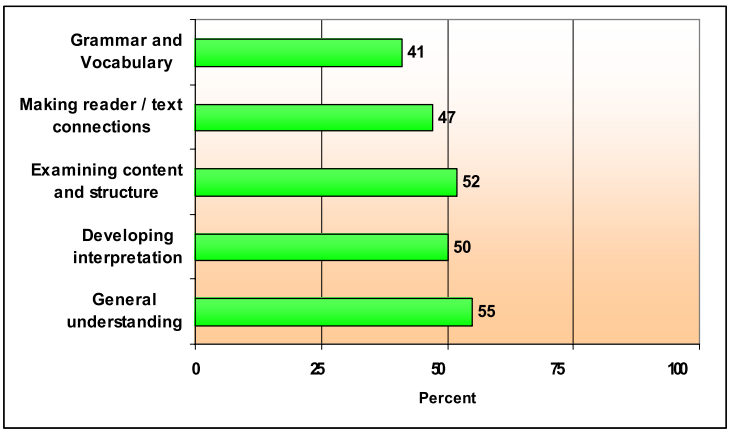


Figure No.118 Aspects of English (Reading) Grade-4

The subject of English (Reading) was assessed against five different sub categories of the 'aspects of reading'. The students responses were good enough in the category of 'general understanding' with a percentage of 55. The most difficult categories appeared in English (Reading) was 'grammar and vocabulary' with just 41% achievement.

English (Writing) Grade-4

The subject of English (Writing) was assessed against three purposes of writing. 'Narrative' purpose with a percentage of 23%, 'informative' purpose with 22% and 'persuasive' purpose with a 29%, usually considered as the most difficult one.

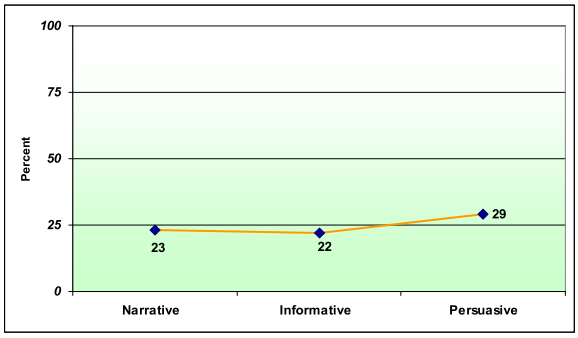


Figure No.119 Purposes of English (Writing) Grade-4

SCIENCE GRADE -4

Content Domain

The other strand of the subject of Science was based on content domain. The Science subject was categorized into the three sub-sciences for a comprehensive assessment overall. The life science questions achieved were 39 % physical science 37% and Earth Science appeared to be difficult with 35% achievement as compared to the previous one.

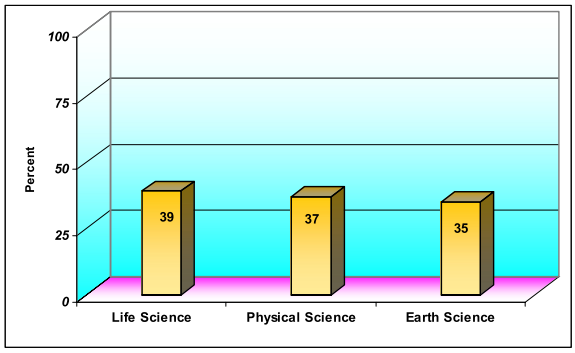


Figure No.120 Science Content Domain Achievement Grade-4

Cognitive Domain

The subject of Science at Grade-4 level had two strands for the purpose of assessment. As for cognitive strand it was categorized into three sub categories. The questions based on 'conceptual understanding' were achieved 39%, practical reasoning 37% and scientific investigation 38%.

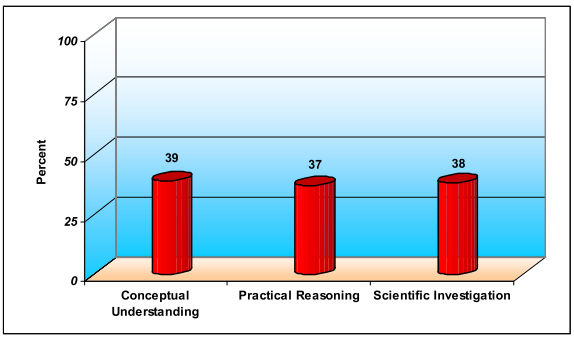


Figure No.121 Science Cognitive Domain Achievement Grade-4

IMPACT OF BACKGROUND VARIABLES ON SCORES GRADE-4

Teacher homework Check Grade-4

Table 66. Percentage of Teacher homework Check

How many times do your teachers check your homework	Percentage
Never	2%
Sometimes	13%
Always	85%

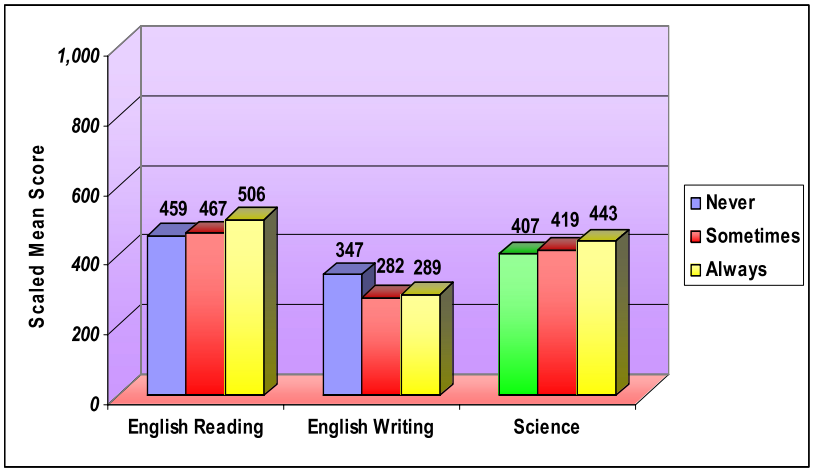


Figure No.122 Teacher homework Check Vs Achievement

The students whose homework is 'always' checked by their teachers performed significantly better in English (Reading) and Science with a scaled mean score of 506 and 443 respectively. As usual the performance of students in the subject of English (Writing) is better whose homework was 'never' checked.

Homework Correction Grade-4

Table 67. Percentage of Homework Correction

Do your teachers pinpoint the mistakes in homework and also correct them?	Percentage
Never	5%
Sometimes	21%
Always	74%
Difference	

A positive sign was seen in the homework correction by the teachers. In all three subjects the performance of students is significantly better whose teachers 'always' correct mistakes in their homework.

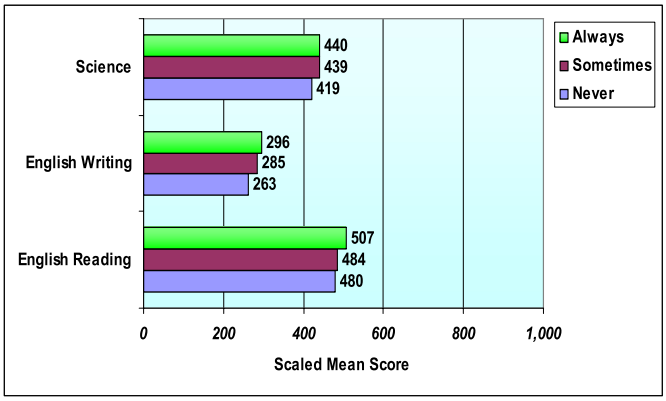


Figure No.123 Homework Correction Vs Achievement

Local Language Instructions Grade-4

Table 68. Local Language Instructions Percentage

Does your teacher use any local language to teach the subject	Percentage
Never	14%
Sometimes	28%
Always	58%

The importance of local language was also observed in the teachers' instructions. The teachers who use local dialect 'sometimes' for the clarity of their students concepts showed that their students performed significantly better in English (Reading) and Science with a scaled mean score of 520 and 446 respectively. For English (Writing) the scaled mean score of those students is high who are 'always' taught in local language.

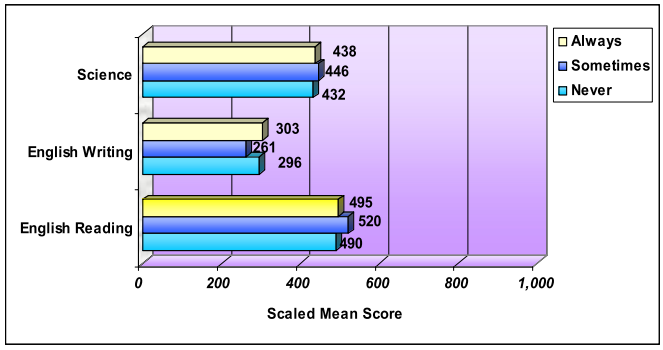


Figure No.124 Local Language Instructions Vs Achievement

Game-Effect Study Grade-4

Table 69. Percentage of Game-Effect on Study Grade-4

Do the games affect your study at home?	Percentage
Yes	70%
No	30%

Games are highly important for human life as a complete exercise and entertainment, especially for the students of growing age. 70 % students feel that their studies are affected due to games. The students who used to play games achieved high scores with significant difference in achievement. Numerical difference in the scores of English (Writing) made no significant difference in achievement between the high and low achievers.

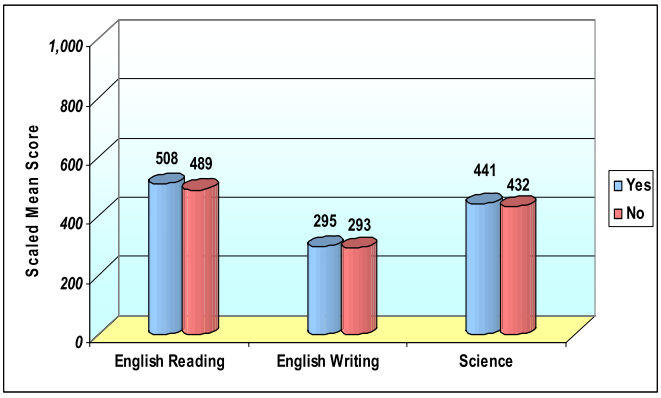


Figure No.125 Game-Effect on Study Vs Achievement Grade-4

Relative-Effect Study Grade-4

Table 70. Percentage Effect Study due to Meeting Relative

Does meeting the relatives affect your study at home?	Percentage
Yes	69%
No	32%

69% of the students are of the view that their studies are affected in case they have frequent visit of their relatives, especially at the times of study and during examination.

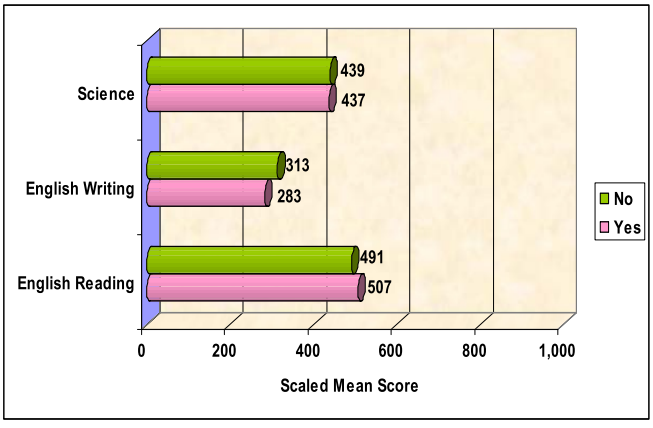


Figure No.126 Meeting Relative Effect Study Vs Achievement

Homework Guidance Grade-4

Table 71. Percentage of Homework Guidance Grade-4

Teachers guide me by seeing my homework	Percentage
Never	4%
Sometimes	20%
Always	76%

76% teachers guide their students in homework whereas 24% teachers exhibit negligence in this important aspect of teaching learning process which can't be ignored at any level.

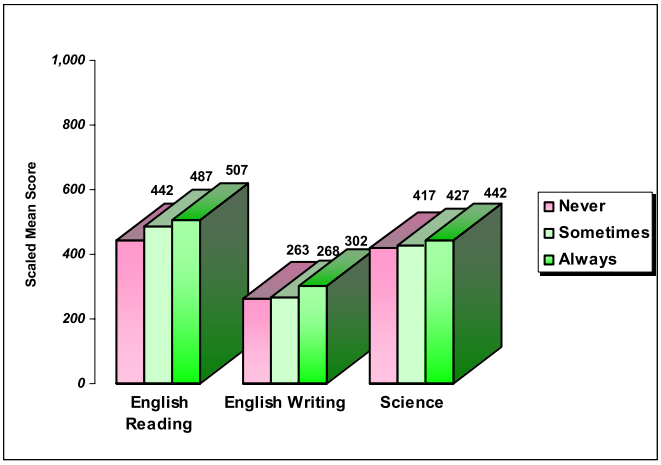


Figure No.127 Homework Guidance Vs Achievement

Homework Prepare for Exam Grade-4

Table 72. Percentage of Homework Prepare for Exam

I don't have to prepare for exams if I do homework regularly.	Percentage
Never	15%
Sometimes	31%
Always	54%

Although the homework yields relatively better learning yet schools may look into the matter why students are given homework during the examination as 54% students showed their annoyance towards it.

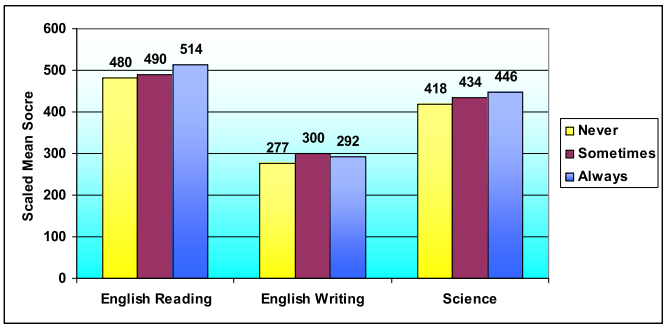


Figure No.128 Homework Prepare for Exam Vs Achievement

Writing Board Grade-4

Table 73. Percentage of Teachers Using Writing Board Grade-4

My teachers use the writing board while teaching.	Percentage
Never	6%
Sometimes	10%
Always	84%

A healthy sign has been the use of writing board during teaching. Majority, 84 % of the teachers, make their teaching effective by using writing board. This exercise yielded significantly better results for their students.

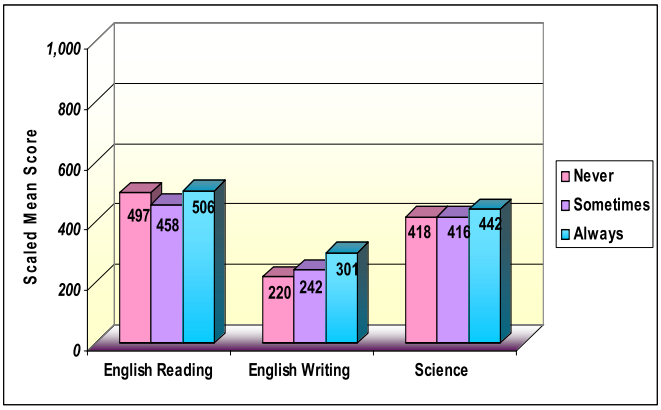


Figure No.129 Teachers Using Writing Board Vs Achievement Grade-4

Lesson Repetition Grade-4

Table 74. Percentage of Lesson Repetition

During study teacher makes me understand the lesson many times.	Percentage
Never	3%
Sometimes	9%
Always	88%

A real professionalism was seen during the assessment study as 88% teacher continue making their student understand a lesson many times if they say that they have not yet understood the concept. Significantly better scores were achieved by the students of such teachers.

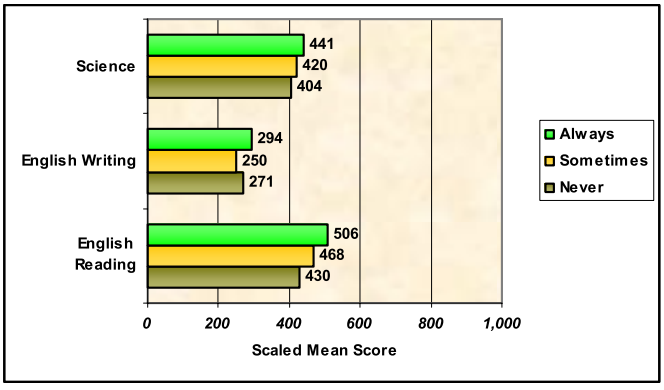


Figure No.130 Lesson Repetition Vs Achievement

Learning Help Grade-4

Table 75. Percentage of Help in Learning Grade-4

I get help of others to learn English and Science.	Percentage
Yes	86%
No	14%

Students who cannot have anybody's help in their study have performed significantly lower than those students who are assisted in study. Such a mechanism is required to be evolved where students could get better learning opportunities for the enhancement of their learning capacity.

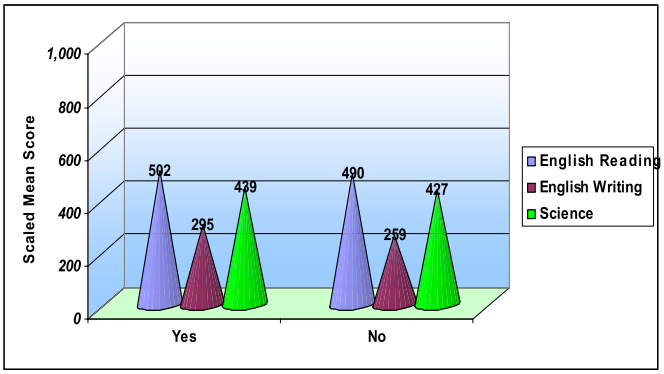


Figure No.131 Help in learning vs Achievement

School Satisfaction Grade-4

Table 76. Percentage of School Satisfaction Grade-4

Are you satisfied with the performance of the school?	Percentage
Yes	91%
No	9%

91% parents have shown their confidence in the performance of schools. The significantly better scores are evident of their trust in schools we must not forget that the teaching learning process is continuous in nature, so there is always room for improvement.

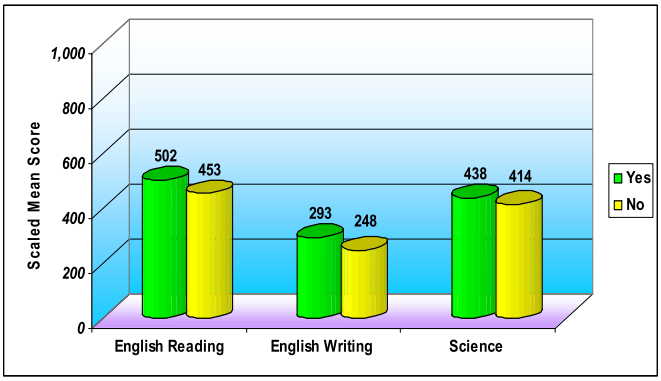


Figure No.132 School Satisfaction Vs Achievement

Teaching Aid Usage Grade-4

Table 77. Percentage of Teaching Aid Usage Grade-4

Do teachers use teaching aids while teaching?	Percentage
Always	27%
Usually	50%
Seldom	23%

27% head teachers reported that their teacher 'always' use teaching aid while teaching, 50% teachers who 'usually' use teaching aids performed significantly better in all three subjects with scaled mean score 464 in English (Reading), 320 in English (Writing) and 439 in Science. But the overall achievement in attaining scaled mean score above the mean of 500 was not seen.

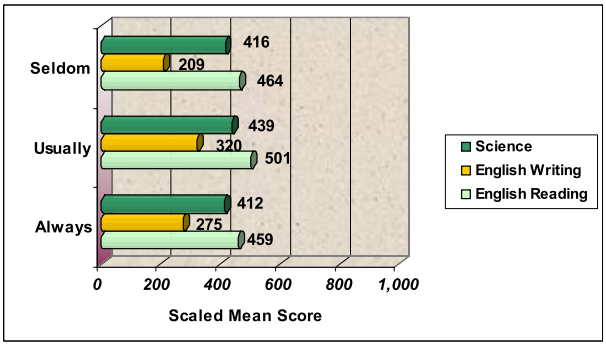


Figure No.133 Teaching Aid Usage Vs Achievement

Teacher Guidance Grade-4

The head teachers' leadership role plays an important role in teaching learning process. 54% head teachers who guided their teacher in planning of lessons on daily basis had their students attain significantly high scores in English (Reading) and Science. Surprisingly, the scores were better for those teachers whose lesson plan was guided on monthly basis.

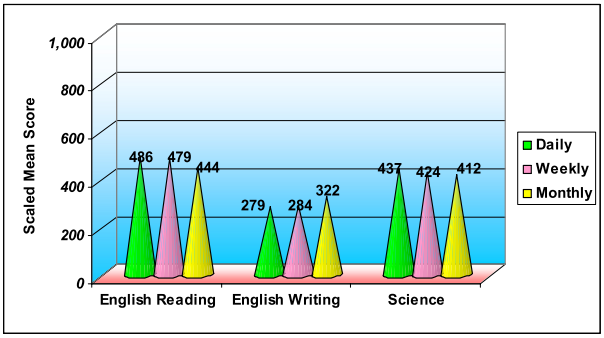


Figure No.134 Teacher Guidance in Lesson Plan Vs Achievement

School Zone Grade-4

Table 78. Percentage of Schools Zone-wise Grade-4

Zone	Percentage
Summer	87%
Winter	12%

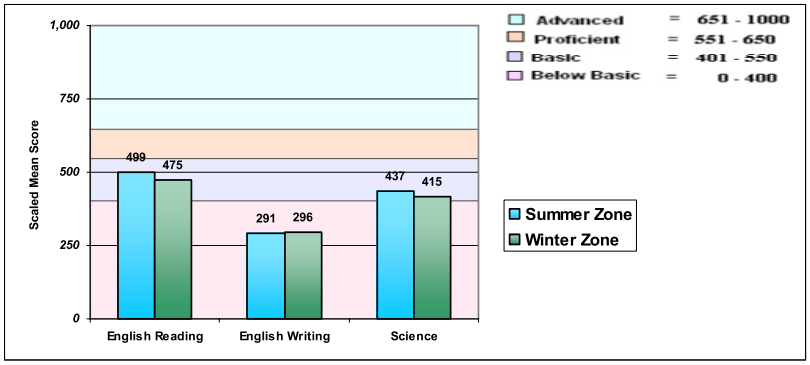


Figure No.135 Schools Zone Grade-4 Vs Achievement

The whole country was divided into two zones based on the long vacation in schools. 88% of students appeared in NAT-2014 from summer zone and winter zone students were 13%. Significance difference in achievement is seen in two subjects with the dominance in achievement of summer zone students.

Medium of Instruction Grade-4

Table 79. Percentage of Medium of Instruction

Medium of Instruction	Percentage
Urdu	81%
Sindhi	6%
English	13%

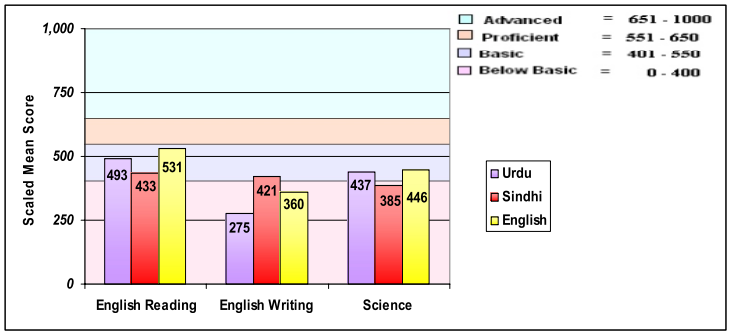


Figure No.136 Medium of Instruction Vs Achievement

The students were taught in three different mediums of instructions i.e. Urdu, Sindhi, and English. Significant difference is seen in the achievement of scaled mean score of students studying in different mediums of instruction. The students of English medium instruction performed better than the others in English (Reading) and Science but surprisingly students studying in Sindhi medium instruction achieved high scaled mean score of 421 in English (Writing) as compared to the other two media of instruction.

Student Status Grade-4

Table 80. Percentage of Student Status Grade-4

Students	Percentage
Promoted	97%
Repeater	3%

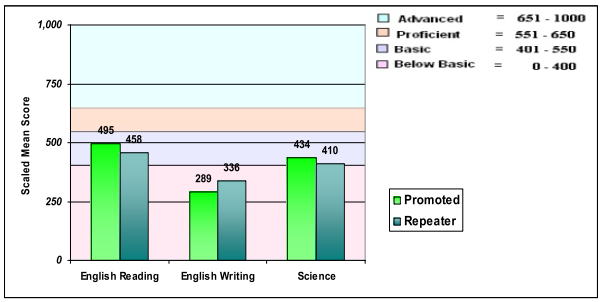


Figure No.137 Student Status Vs Achievement

The students were categorized as "promoted" and "repeater" to see the performance of students from another angle. The repeater students performed comparatively well in the subject of English (Writing) only with a scaled mean score of 336. Their performance in the other two subjects was significantly lower than the students promoted this year.

School Level Grade-4

Table 81. Percentage of School Level Grade-4

School Level	Percentage
Primary	57%
Middle	18%
High	24%
High Secondary	1%

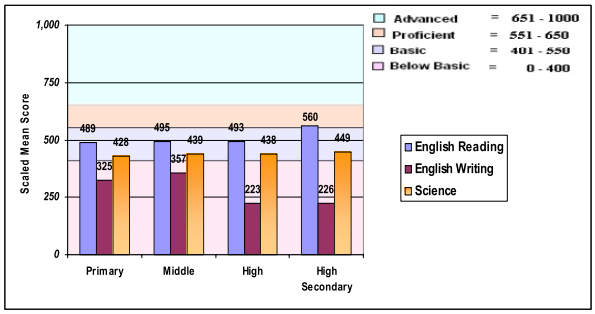


Figure No.138 School Level Grade-4 Vs Achievement

The different categories of schools, 'primary', 'middle', 'high' and 'higher secondary', have shown a statistically significant difference on the scaled mean scores. Each category has significant difference in scaled mean scores achievement than the others for all three subjects. Students from higher secondary schools crossed the set line of average scaled mean score of 500 in English (Reading) except by the students of primary, middle and high schools.

STUDENTS REPORTED VARIABLES

Language Spoken Grade-4

Table 82. Percentage of Language Spoken

Language Spoken at Home	Percentage
National	16%
Regional	84%

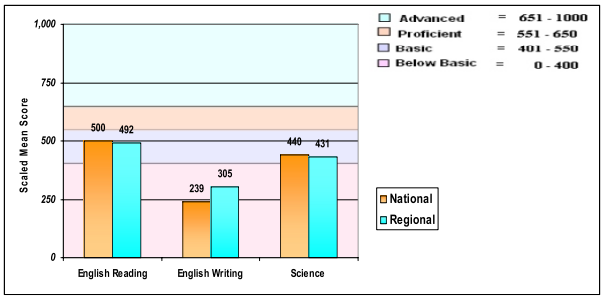


Figure No.139 Language Spoken Vs Achievement

The performance of students was assessed against categories of languages i.e. national and regional. Students speaking national language performed significantly better in English (Reading) and Science with a scaled mean score of 500 and 440 respectively. Students speaking regional language were good in English (Writing).

Home Coaching Grade-4

Table 83. Percentage of Home Coaching and Achievement

Who teaches you generally at home		Scaled Mean Score		
		English Reading	English Writing	Science
Father	**15%**	490	280	434
Mother	**8%**	495	287	435
Both Father & Mother	**5%**	500	224	427
Brother	**20%**	480	267	429
Sister	**23%**	495	279	432
Tutor	**10%**	558	314	471
Any other	**3%**	495	292	422
No One	**16%**	482	347	431
Difference		Sig.	Sig.	Sig.

The significant difference was found in the scale mean score achievement of students in NAT-2014 who were taught at home by different people. 10% students taught by the 'tutor' achieved the highest scale mean scores in English (Reading) and Science.

Transport Mode Grade-4

Mode of going to school was determined in terms of percentage. 93% students go to schools on foot, 1% by government transport 2% by public transport and 4% by own car.

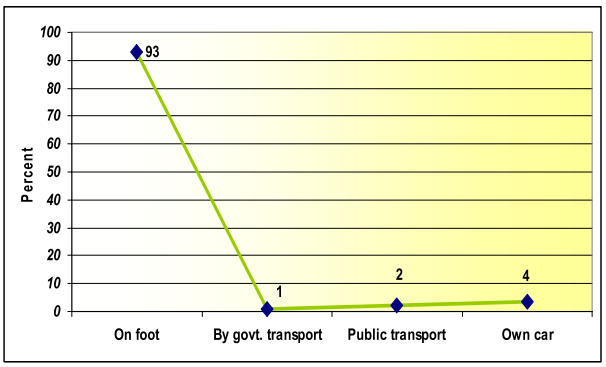


Figure No.140 Percentage of Transport Mode for School Grade-4

School Time Taken Grade-4

Time taken to reach school has an impact on students' learning. Almost 35% students responded that time taken to reach school is from 30 minutes to more than an hour as majority of students go on foot.

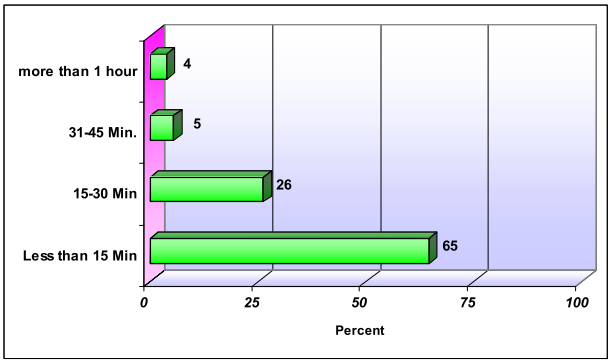


Figure No.141 Percentage of time taken to reach the school

School Distance Grade-4

Table 84. Percentage of School Distance Grade-4

How far is your school from your home?	Percentage
0-2 km	76%
3-4 km	13%
5-6 Km	6%
7 km or More	5%

Almost 24% students have the access problem as the schools situated away from their home were more than 3 to 7 km. 76% students live with the radius of 2km from the school.

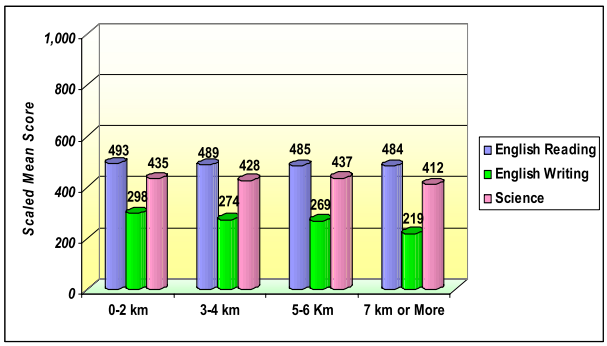


Figure No.142 School Distance Vs Achievement Grade-4

Corporal Punishment Grade-4

Table 85. Percentage of Corporal Punishment Received

Do you get corporal punishment at school?	Percentage
Always	5%
Sometimes	54%
Never	41%

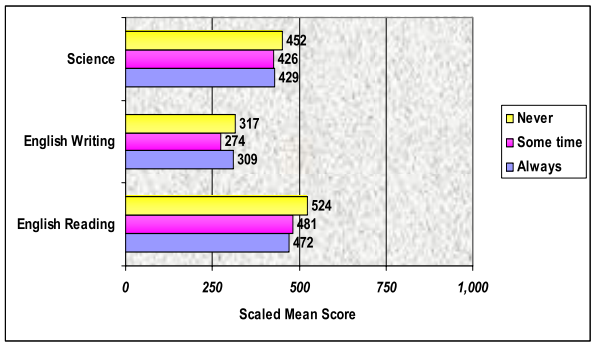


Figure No.143 Corporal Punishment Vs Achievement

The corporal punishment is treated as a curse for the learning atmosphere. Alarmingly 61% students reported about receiving corporal punishment at schools, 41% students did not complain.

Homework Regularity Grade-4

Table 86. Percentage of Homework Completion

How many times do you get homework in English and science subject?	Percentage
Less than 15 Min.	19%
15-30 Min	28%
more than half hour	30%
More than One hour	23%

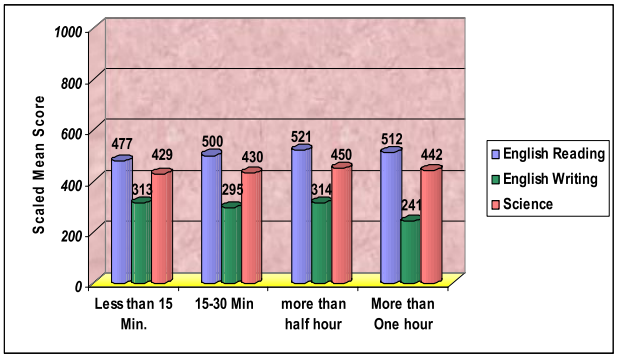


Figure No.144 Homework Completion Vs Achievement

No impact on the learning achievement of students was seen in the subject of Science. The students who get home work for 'more than half an hour' obtained scaled mean score 521 & 314 with significant difference in English (Reading) & English (Writing) respectively.

Homework Received Grade-4

Table 87. Percentage of Homework Received

Do you get home work for English and science?	Percentage
Never	3%
Sometimes	17%
Always	80%

Students who 'always' get homework had significantly better performance with a scaled mean score of 502 in English (Reading). On the other hand students who get homework 'sometime' performed better as a whole. No significant difference in Science achievement was found even in the presence of numerical difference.

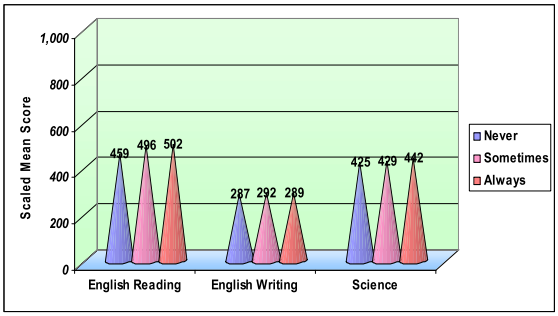


Figure No.145 Homework Received Vs Achievement

Homework Help Grade-4

Table 88. Percentage of Homework Help

Who helps the child in doing his homework?	Percentage
Father	35%
Mother	23%
Guardian	17%
Any Other	25%

Home involvement is seen in helping their child in studies. 35% fathers perform this duty, 23% mothers and in some cases 17% guardians. The kids taught by mothers performed significantly better in English (Reading). The students' performance was found equally good if taught by 'any other'.

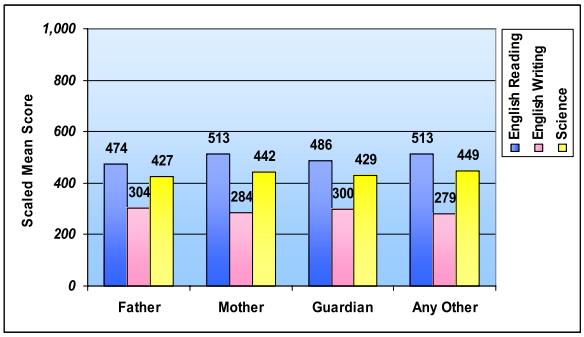


Figure No.146 Homework Help Vs Achievement

Homework Done Grade-4

Table 89. Percentage of Homework Done

Does your child do homework	Percentage
Yes	96%
No	4%

96% parents reported that their kids do their homework which is slightly different in percentage with the crossed questions purposely asked from students and teachers for verification. Anyhow, the overall trend for homework appears to be healthy, this yielded significantly high scores for the students.

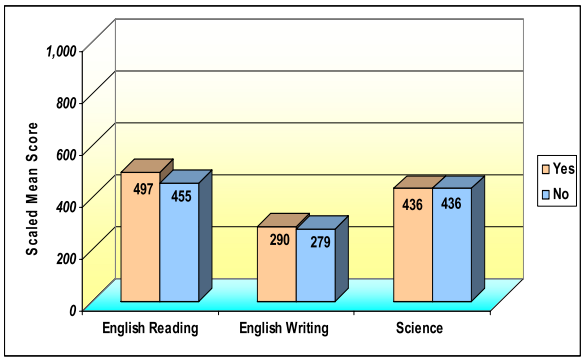


Figure No.147 Homework Done Vs Achievement

Parent Help-Complete Homework Grade-4

Table 90. Percentage of Parent Help-Complete Homework

Parents make their children complete their homework regularly.	Percentage
Always	13%
Often	25%
Sometimes	44%
Never	18%

Parental vigilance regarding the academic activities of their children has an important role in the teaching learning process. 38% parents were found much concerned regarding homework completion regularly. 44% were found asking their kids for completion of homework casually. 18% had no concern what their kids used to do.

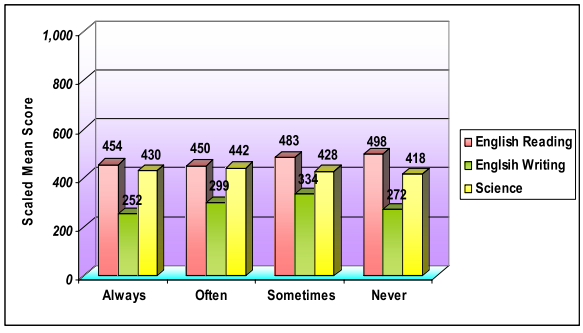


Figure No.148 Parent Help-Complete Homework Vs Achievement

Teacher Explaining Mistakes in Homework Grade-4

Table 91. Percentage in Explaining Mistakes in Homework

Explaining mistakes in homework before the whole class.	Percentage
Every three Months	89%
Every six Months	6%
Every nine Months	3%
Yearly	2%

The mistakes made in the homework, if not corrected, may remain as the factual knowledge in students' mind. 89% teachers explained mistakes in homework before the whole class in every three months, 6% teachers did this practice after six month time and the remaining on the yearly basis. Significance in achievement was only seen for English (Reading).

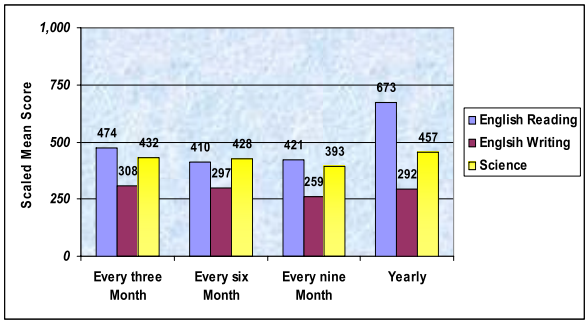


Figure No.149 Explaining Mistakes in Homework Vs Achievement

Computer Usage Grade-4

Table 92. Percentage of Computer Use at Home

Do you generally use computer at home?	Percentage
Yes	33%
No	67%

Computer literacy is considered to be an important feature of learning in the global context. One third students use computer while two third of the students have no access to the computers.

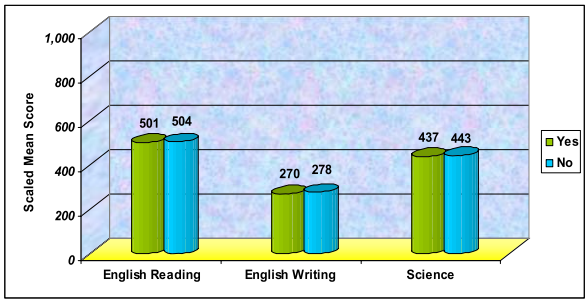


Figure No.150 Computer Usage at Home Vs Achievement

Table-Desk at Home Grade-4

Table 93. Impact of Table-Desk Usage Percentage

Do you generally use table/desk at home?	Percentage
Yes	30%
No	70%

Table and desk help in upright and convenient sitting for learning. 70% of the total students are still deprived of table or desk facility at home. Hardly 30% students have this facility at home.

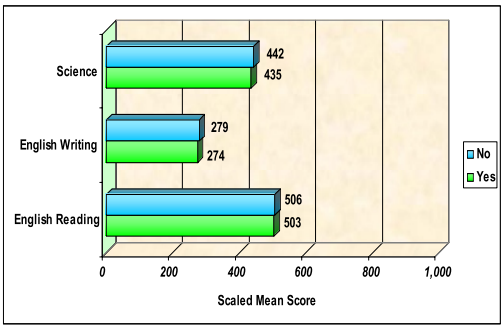


Figure No.151 Impact of Table-Desk Usage Vs Achievement

Dictionary Usage Grade-4

Table 94. Percentage of Dictionary Usage

Do you generally use dictionary at home?	Percentage
Yes	29%
No	71%
Difference	

The assessment study reveals that just 29% students had the habit of using dictionary and the learning achievement of students remained significantly lower in all three subjects.

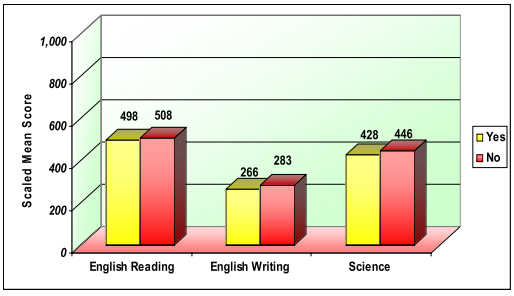


Figure No.152 Dictionary Usage Vs Achievement

Entertainment Impact on Scores Grade-4

Table 95. Percentage of Impact of watching TV as Entertainment

Do you generally use T.V at home?	Percentage
Yes	78%
No	22%

Almost 78% students watch television at home. Their learning achievement only in English (Reading) is significantly better, the scale mean score in English (Writing) was in favour of those students who reported that they do not watch television.

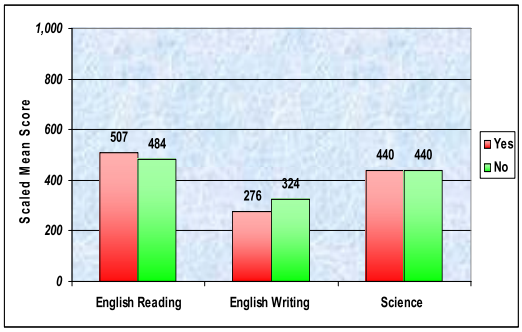


Figure No.153 Impact of TV watch as Entertainment Vs Achievement

Debate Grade-4

Table 96. Percentage of Participation in Debate

How often do you take part in debate?	Percentage
Never	40%
Sometimes	45%
Always	15%

40% students did not participate in the debate activities being arranged by schools. Although their performance in terms of achievement in scaled mean score is significantly higher but on the other side they were lacking in grooming of their personality.

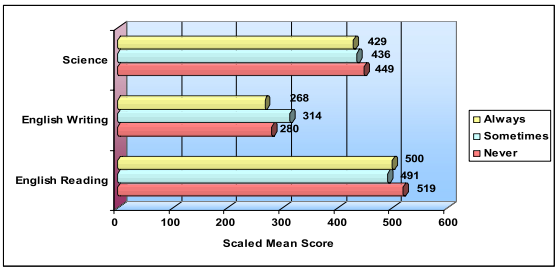


Figure No.154 Participation in Debate Vs Achievement

Physical Exercise Grade-4

Table 97. Percentage of Participation in Physical Exercise

How often do you take part in physical exercise?	Percentage
Never	24%
Sometimes	39%
Always	37%

The students who 'never' take part in games showed significantly high scores in all three subjects but this trend cannot reduce the importance of games in human life, if they are played for fitness purpose regularly.

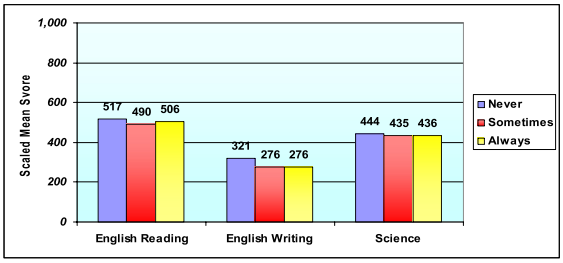


Figure No.155 Participation in Physical Exercise Vs Achievement

Scouting/Girl Guide Grade-4

Table 98. Percentage of Participation in Scouting/Girl Guide

How often do you take part in scouting/girls guide?	Percentage
Never	65%
Sometimes	22%
Always	13%

Scouting and Girls Guide are healthy activities but majority of the students do not take part in them. The students who participated 'sometimes' in Scouting and Girls Guide performed significantly better than the other students.

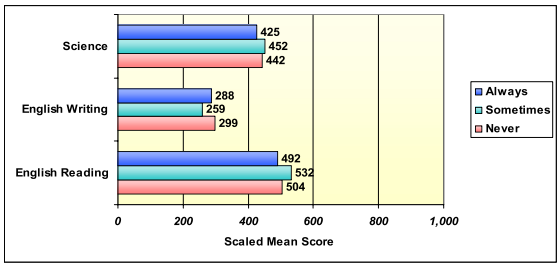


Figure No.156 Participation in Scouting/Girl Guide Vs Achievement

House-Hold Work Grade-4

Table 99. Percentage of House-Hold Work

Is your study affected at home due to helping parents in the house hold work?	Percentage
Yes	75%
No	25%

Majority of the students were of the view that their study is affected, if they help their parents in house hold work. Although no significant impact of this was seen on students' learning achievement but this aspect cannot be ignored as majority of the students complained against it.

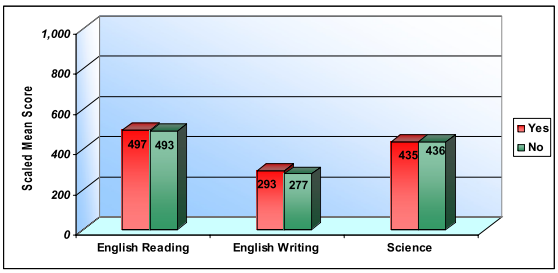


Figure No.157 House-Hold Work Vs Achievement

Bringing Utilities From Bazaar Grade 4

Table 100. Percentage of Bring Utilities From Bazaar

Is your study affected at home to bring utilities from the bazaar?	Percentage
Yes	59%
No	41%

Majority of the students complained that their study are affected if they are asked by the parents to bring utilities from the bazar. Surprisingly the results of these students were high for all three subjects with a statistically significant difference in achievement as compared to those students who did not have this complaint.

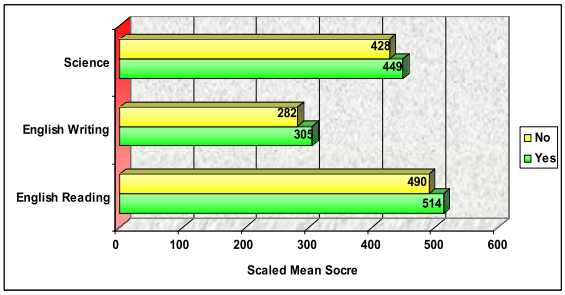


Figure No.158 Bring Utilities From Bazaar Vs Achievement

Parent Not Helping in Study Grade 4

Table 101. Percentage of Parent Not Helping in Study

Does your study effect at home that parent does not help in the study	Percentage
Yes	55%
No	45%

Study and the resultant learning is the effort of both school and home. School alone cannot do anything up to the expectation of parents. 55% students who do not receive assistance in study from home feel difficulty in learning.

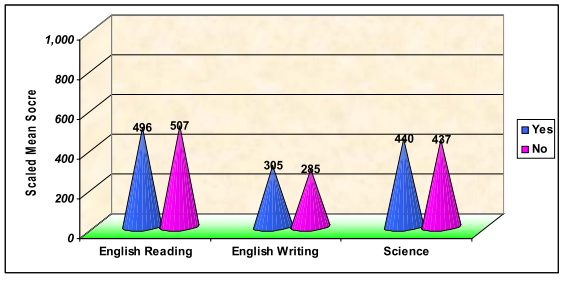


Figure No.159 Parent Not Helping in Study Vs Achievement

Questioning in Class Grade-4

Table 102. Percentage of Questioning during Classroom Instructions

Do your teachers allow you ask questions about the subject taught?	Percentage
Never	3%
Sometimes	16%
Always	81%

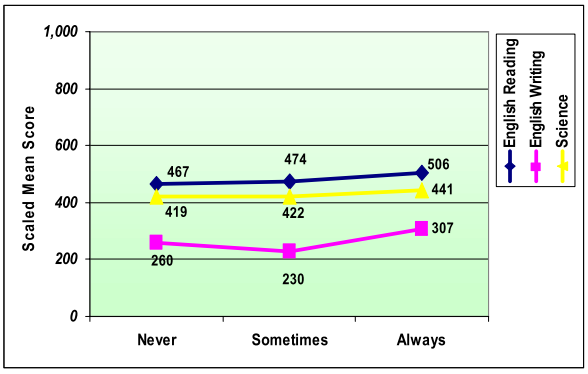


Figure No.160 Questioning during Classroom Instructions Vs Achievement

Questions by the students help them in better clarity of concepts. 81% students reported that they are allowed to ask questions by their teachers, 19% students still face problem of asking questions in the classroom.

Parent Study-Concern Grade-4

Table 103. Percentage of Parent Study-Concern

My parents ask about my school study	Percentage
Never	7%
Sometimes	31%
Always	62%

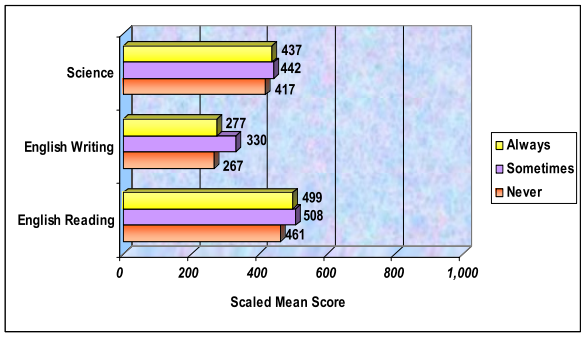


Figure No.161 Parent Study-Concern Vs Achievement

The parents' role in the teaching learning process plays an important role. Unfortunately it is observed that 38% parents showed no concern with the study of their students which is an alarming aspect and needs to be corrected as learning process completes in triangular coordination of child, school and home.

Group-Study Grade-4

Table 104. Percentage of Group-Study

I study with my class fellows	Percentage
Never	5%
Sometimes	18%
Always	77%

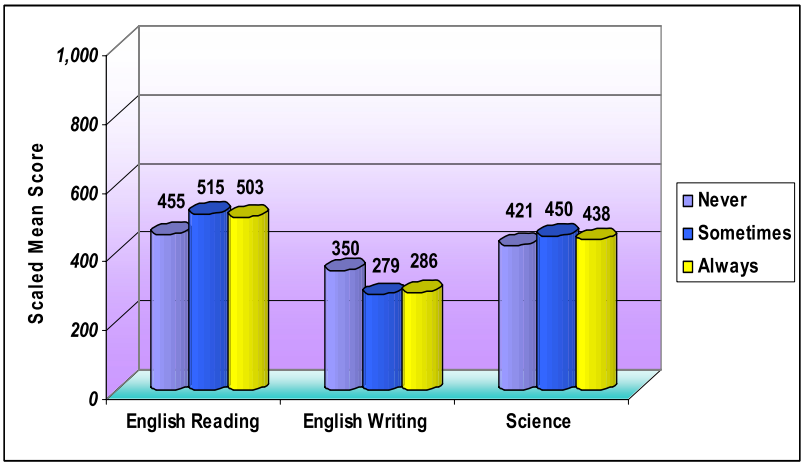


Figure No.162 Study in Group Vs Achievement

Friendly atmosphere can play an important role in learning process. If students are encouraged to have continuous study with their class mates this may help in increase of their interest.

PARENT REPORTED VARIABLES

Parent Qualification Grade-4

Table 105. Percentage of Parents' Qualification Vs Achievement

Parent/ guardian Education		Scaled Mean Score		
		English Reading	English Writing	Science
Illiterate	20%	502	336	444
Primary Passed	33%	483	321	428
Matriculation	26%	494	265	438
Intermediate	10%	499	263	433
BA/B.Sc	5%	491	240	438
M.A/M.Sc	4%	523	225	437
M.Phil/Ph.D	2%	507	278	430
Difference		Sig.	Sig.	Sig.

Although the results are significant in case they are looked at w.r.t qualification of students' parents. In some of the cases the kids of 'illiterate' parents performed exceptionally well but on the whole students whose parents possess qualification master degree performed significantly better from which it is evident that educated parents can guide their child in studies effectively.

Evening Play Grade-4

Table 106. Percentage of Students playing in the Evening

Does your child play in the evening?	Percentage
Yes	78%
No	22%

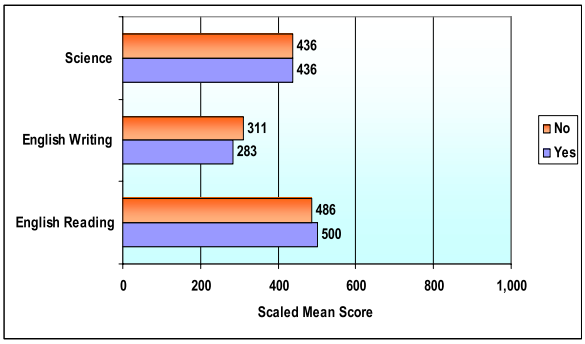


Figure No.163 Students playing in the Evening Vs Achievement

Similar trend in playing games in the evening is seen. The students who play games are 78% of the sample assessed and have shown performance significantly better than those students who for unknown reason don't play.

Parent-School Contact Grade-4

Table 107. Percentage of Parent-School Contact

Do you contact with school regarding your child performance	Percentage
Yes	84%
No	16%

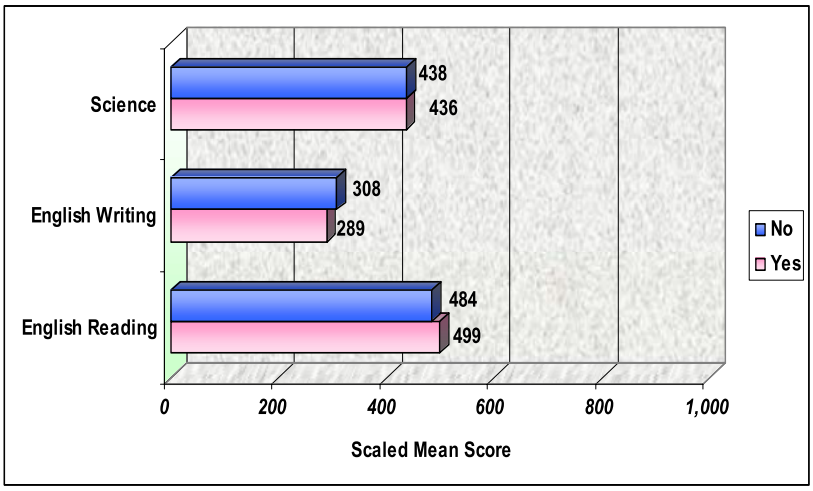


Figure No.164 Parent-School Contact for Child Academics

Parents contact with school to address the complaints. The close relationship of school and home helps in better understanding of child's need. 86% parents reported contacting school and the performance of their kids shows it, being significantly better than the kids of other parents.

HEAD TEACHER REPORTED VARIABLES

Head Teacher-Age Grade-4

Table 108. Percentage for Categories of Head Teacher-Age

Age of HT	Percentage
Under 25	3%
25-35	12%
36-45	34%
46-55	37%
Above 55	14%

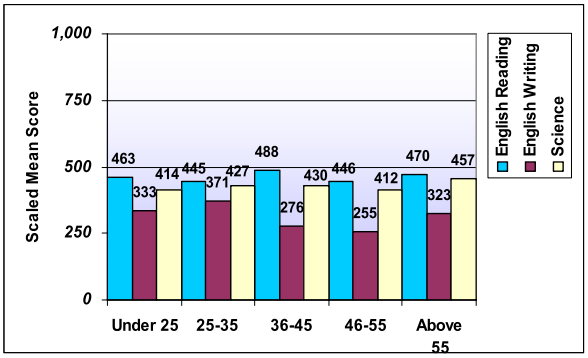


Figure No.165 Head Teacher-Age Vs Achievement

The heads of the school under the age group of 45 years are 49% of the total. Thus the scores of students from their schools are mixed. In some cases scores are high but for all three subjects the scaled scores are below the mean of 500.

Head Teacher-Gender Grade-4

Table 109. Percentage for Head Teacher-Gender

Gender of HT	Percentage
Female	45%
Male	55%

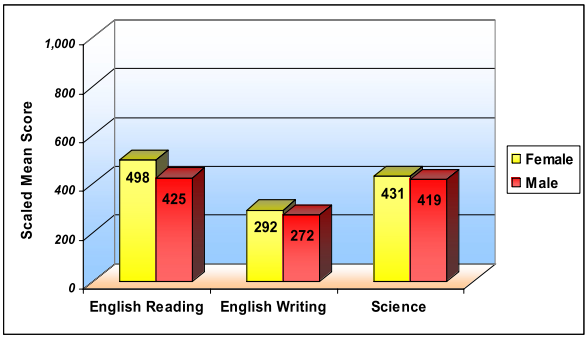


Figure No.166 Head Teacher-Gender Vs Achievement

The gender of the head teachers who had been part of NAT 2014 was 45% female and 55% male. The scores of the students of female head teachers were significantly better than students of male head teachers in the subject of reading. The difference in achievement is not significant for the other subjects i.e. English (Writing) and Science.

Head Teacher Total Teaching Experience Grade-4

Table 110. Percentage of Head Teacher Total Teaching Experience

HT's Total Teaching Experience of HT	Percentage
Less than 5 years	5%
5 -10 Years	8%
11-15 Years	11%
16 or More than 16	76%

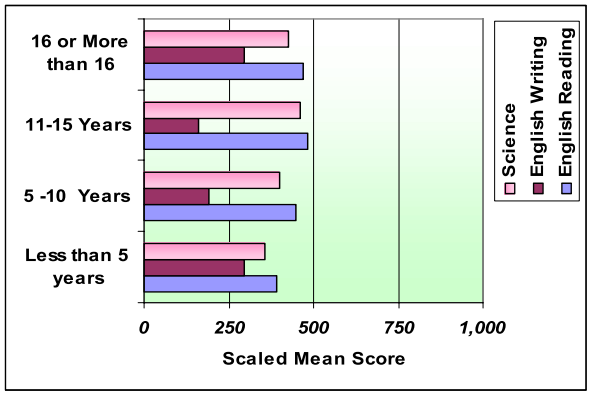


Figure No.167 Head Teacher Total Teaching Experience Vs Achievement

76% head teachers had teaching experience of more than 16 years. Interestingly, the performance of those students, whose head teachers had teaching experience between 11 to 15 years, was significant in Science. Surprisingly, the students of head teachers with 16 years or more experience performed better in English (Writing).

Head Teacher Academic Qualification Grade-4

Table 111. Percentage of Head Teacher Academic Qualification Vs Achievement

Academic Qualification	Scaled Mean Score		
	English Reading	English Writing	Science
Matriculation 6%	568	236	456
Intermediate 11%	469	312	436
Bachelor 27%	487	349	428
Masters 53%	443	253	420
M.Phil/Ph.D 3%	543	565	453
Difference	Sig.	Sig.	n.s

The academic qualification had significant impact on the scores of English (Reading) and English (Writing) as students of the 3% head teachers having M. Phil / Ph.D degree performed significantly better. The impact of academic qualification was not seen in the subject of Science.

Head Teacher Professional Education Grade-4

Table 112. Percentage of Head Teacher Professional Education

Professional Education	Percentage
PTC	25%
CT	6%
Diploma in Ed	1%
B Ed	44%
M Ed.	24%

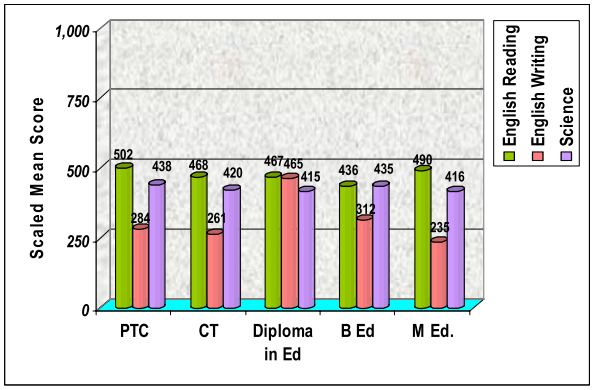


Figure No.168 Head Teacher Professional Education Vs Achievement

The majority 76% of head teachers possessed professional qualification B.Ed. or more than B.Ed. Surprisingly, scores in the subject of English (Reading) was significantly better for the students of head teachers, 25% possessing 'PTC' as professional qualification.

Adequate and Useable Facilities in the sample schools Grade-4

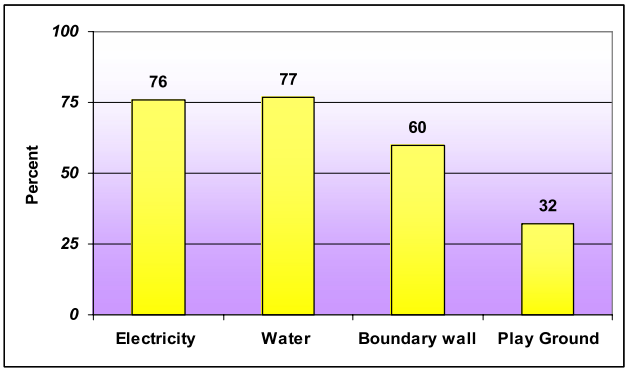


Figure No.169 Percentage of Adequate and Useable Facilities

The picture of physical facilities is shown in the graph. 76% schools had the facility of electricity, 77% had water facility, boundary wall was available at 60% schools and play ground was available to 32% schools. The schools which did not have these facilities required to be provided under a comprehensive development plan on priority.

Student Absence Grade-4

The avoidable absentism in school cannot be tolerated in any way as it affects the teaching learning process the most. The students cannot go alongwith the rest of students if they miss their classes.

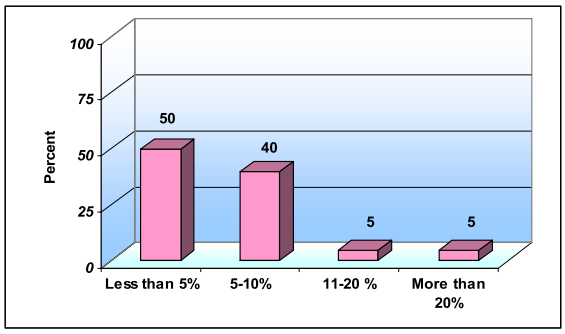


Figure No.170 Percentage of Student Absence in the school

Teacher's syllabus purposes understanding Grade-4

56% head teachers reported that their teachers understood the purpose of syllabus 'more' being taught by them. 27% teachers understood purposes of the syllabus at 'average'. 14% teachers understand the purpose of syllabus well. 4% teachers do not follow the purpose of syllabus. Scrutiny of teachers on merit basis is required, so that positive change in the education system could be ensured. We need to recruit competent and aptitude oriented teachers.

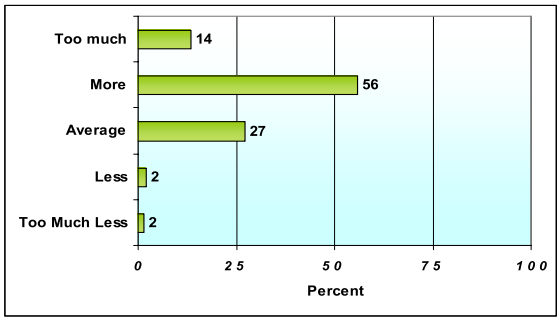


Figure No.171 Percentage of Teachers syllabus purposes understanding

Parent Cooperation Grade-4

The parent cooperation usually yields positive impact on the teaching learning process. Hardly 10% parents were found interested who were conscious about the studies of their kids. Majority 90% were found least interested as they had weak coordination with schools.

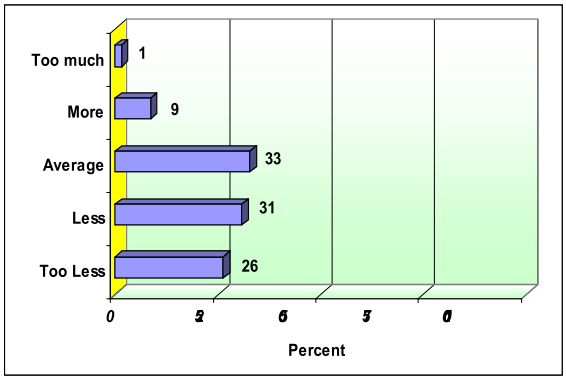


Figure No.172 Percentage of Parent Cooperation with School

Parent's participation in the school activities Grade 4

The schools are required to organize different activities for the students and the participation of parents becomes a source of inspiration for students as well as encouragement for the school. Unfortunately, 8% parents participate in the school activities, whereas majority parents do not participate. Parents are required to be made aware of the significance, so that a collective effort by the school and home could make visible change in learning process.

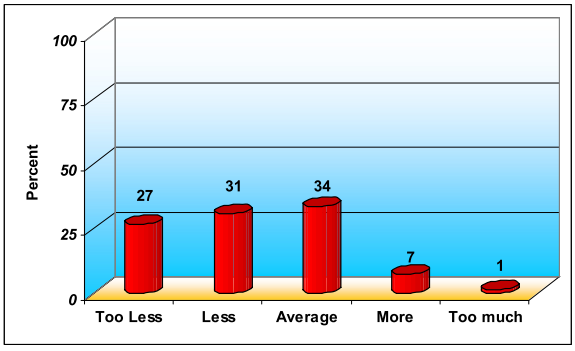


Figure No.173 Percentage of Parent's participation in the school activities

Cooperation for Problem Solution Grade-4

37% parents-teacher committee participated in carrying out school education activities, which was comparatively good sign as compared to previous participation of parents.

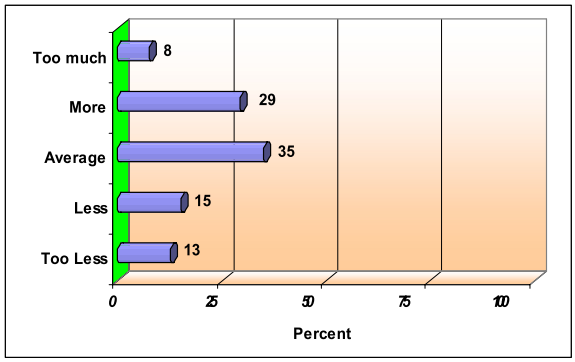


Figure No.174 Percentage of Parent-Teacher Committee for the solution of Problems

Parent-Teacher Committee Grade-4

School related problems cannot be resolved by the school alone. School and home jointly can find out solution and uplift the standard of education. 28% parents were found cooperating with school for solving problems of schools with greater interests. More parent and community involvement is need of the hour. Necessary measures are needed to reach the target.

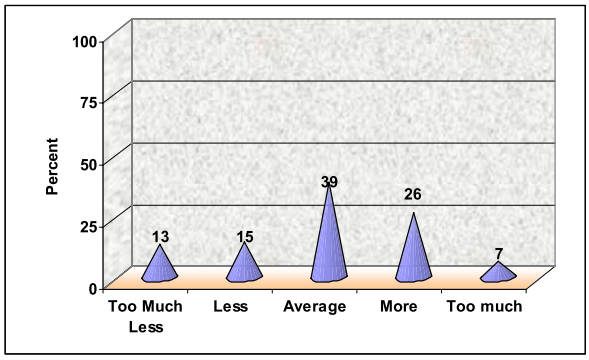


Figure No.175 Percentage of Parent-Teacher Committee Cooperation

Teacher Contact Permission Grade-4

60% head teachers allow their teachers to contact parents on 'always' basis. Usually 34% head teachers give permission to their teachers for parent contact to resolve students' problem. 6% head teachers did not allow their teachers ever. Since the teaching learning process is a collaborative effort of school and home, therefore, close cooperation mechanism needs to be developed on priority.

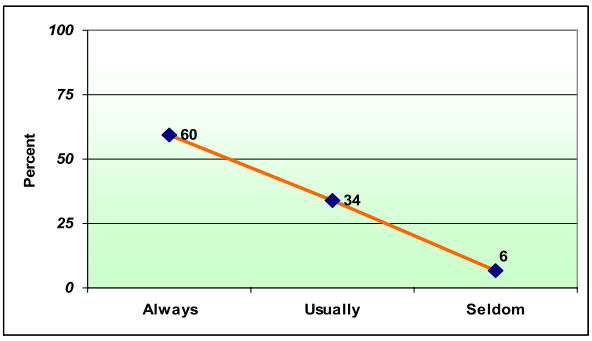


Figure No.176 Percentage of Head Teacher Allow Teacher to Contact Parents

Teaching Aids Grade-4

24% teachers did not use teaching aid during classroom instruction. 49% teachers used teaching aid on 'usually' basis. 27% teachers used teaching aids as a compulsory part of their teaching and found teaching impossible.

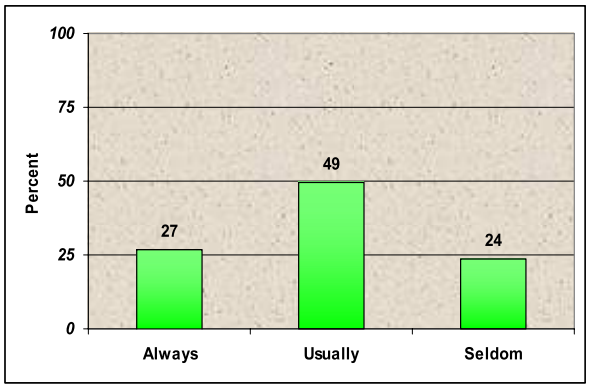


Figure No.177 Percentage of Teachers Using Teaching Aids

Record of the Students Academic Performance Grade-4

Teaching learning process is spread over twelve months-time. Human memory cannot store each and every single happening about students learning process. A black and white record of students' academic records can help making appropriate formative decisions about the student. 82% head teachers emphasized keeping academic performance record of students. 17% partially agreed for record keeping and 1% were least bothered.

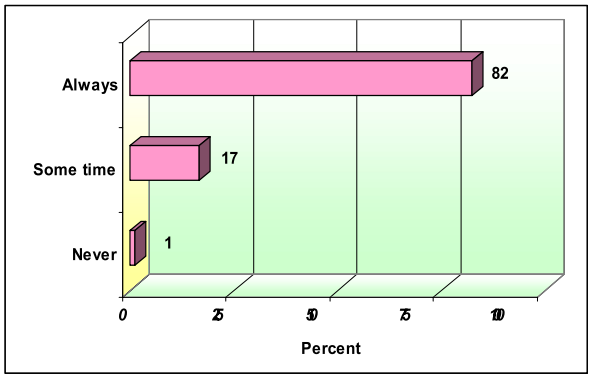


Figure No.178 Percentage of Record of the Students Academic Performance

Correcting Students Mistakes by Teachers Grade-4

Students are not much aware of their work. It is teachers who guide them in their work. 92% head teachers corrected 'always' their students' mistake, which they made. 8% corrected mistakes on 'sometimes' basis i.e. not regularly.

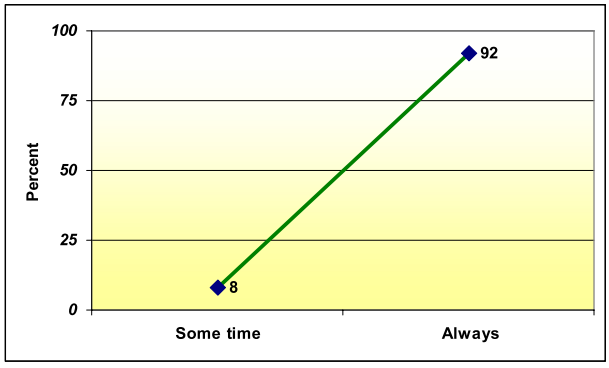


Figure No.179 Percentage of Correcting Students Mistakes by Teachers

Solving the Problems of Weak Students Grade-4

The class comprises of different ability students, these I.Q difference makes learning process slow and quick from student to student. For slow learners 87% teachers were found helping those solving problems in weak areas.

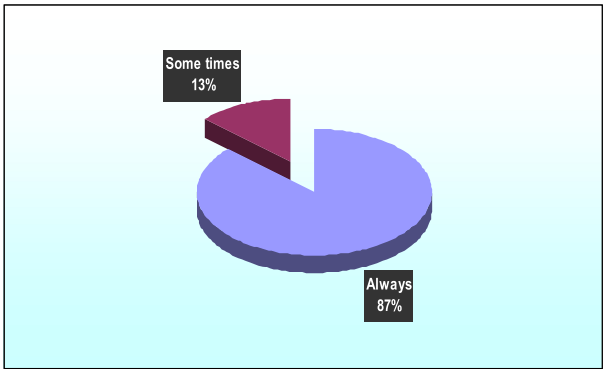


Figure No.180 Percentage of Solving the Problems of Weak Students by Teachers

Guest Speaker Arrangement Grade-4

Interaction with high skilled and knowledgeable scholars enhances vision and helps in learning a lot. 46% schools arranged such guest speakers for their students 'once a year'. 11% schools 'never' arranged lecture by a guest speaker on any occasion. 43% schools arranged two or more times a year.

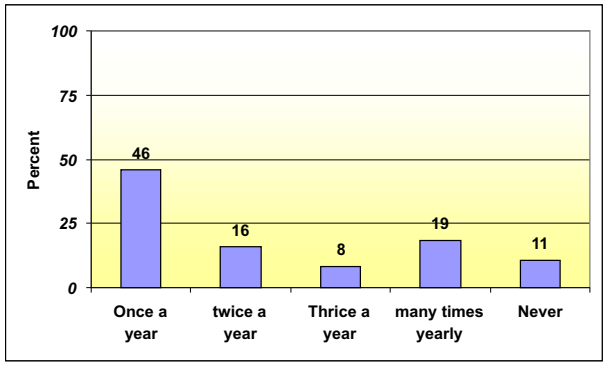


Figure No.181 Percentage Guest Speaker Arrangement on Different Time

Evaluation of Teaching Staff Grade-4

A vigilant head teacher can take the standard of his institution to a climax. 42% head teachers evaluated the performance of their teaching staff on 'daily' basis. 1% head teachers were running their schools on the 'laisser-faire' basis. 57% head teachers evaluated their teachers from 'weekly' to 'annually' basis.

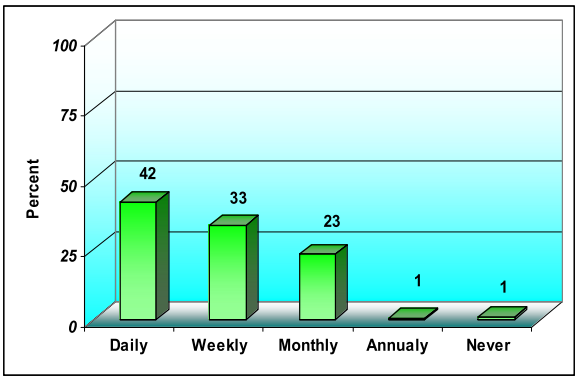


Figure No.182 Percentage of Evaluation of Teaching Staff

Head Teacher meeting with parents to Uplift School Grade-4

A head teacher can make his institution one of the best institutions of the vicinity if he wins the trust of parents. 71% head teachers held meetings with the parents on 'monthly' basis for making good progress in all fields that could win good name for the schools. 3% head teachers were fond of 'laisser-faire' doctrine and 2% used to hold meeting on 'daily' basis, which was not an appreciable act as parents have to do their own routine businesses.

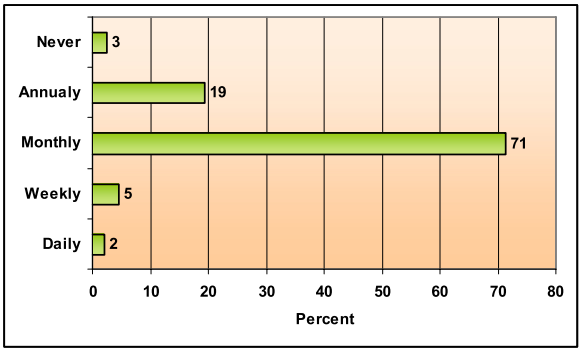


Figure No.183 Percentage of Head Teacher Meeting With Parents to Uplift School

Head Teacher Speech Grade-4

Morning assembly is a source of unity, discipline and faith for all students. A good leader of the school can yield highly fruitful results by assigning various topics to teachers and students for speeches.51% schools organized speeches on 'daily' basis in the assembly and 46% on weekly and monthly basis. 3% schools were found least bothered.

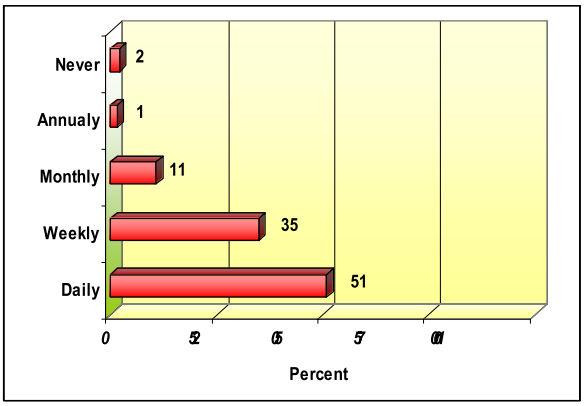


Figure No.184 Percentage of Speech in School Assembly on Various Topics

Cleanliness of the School Grade-4

Clean environment provides a healthy psychological impact for learning process. 94% schools took care of cleanliness of their schools on 'daily' basis, 4% on weekly and 2% on monthly basis.

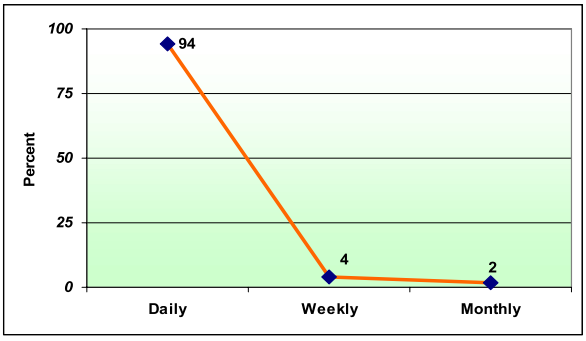


Figure No.185 Percentage of Cleanliness of the School Grade 4

Head Teacher Guidance Grade-4

Being head of an institution, leadership plays an important role. Being experienced person, his guidance in classroom instruction is of high significance. 37% head teachers 'seldom' help their teachers, 34% 'sometimes', 18% 'always' and 11% 'never'.

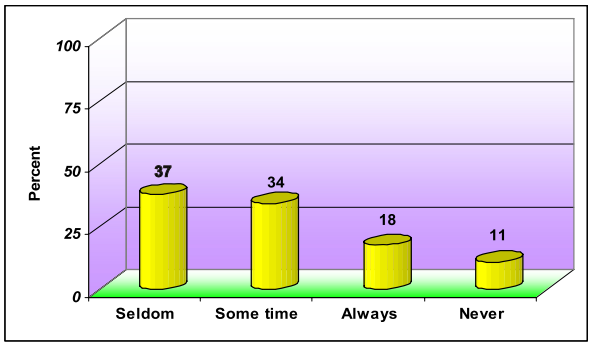


Figure No.186 Percentage of Heads' Guidance on Different Scale

Head Teacher Order on the Spot to Resolve Problems Grade-4

An immediate action by making appropriate decision is one of the good qualities of a successful leadership. 30% head teachers 'seldom' ordered on the spot for seeking appropriate solution to the problem, 27% 'sometimes', 31% 'always' and 12% 'never' bothered to find solutions of the problems.

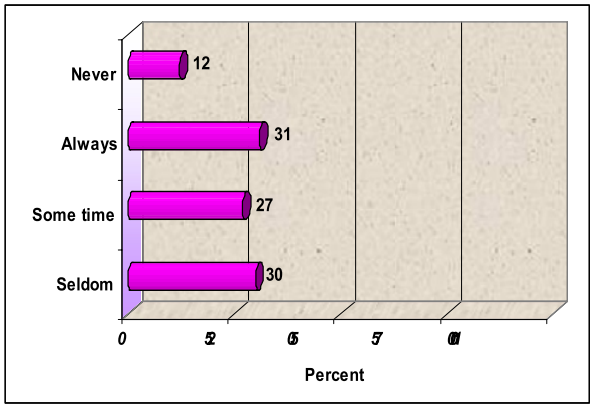


Figure No.187 Percentage of Order on the Spot to Resolve Problem

Student Evaluation Grade-4

Formative evaluation is an integral part of the teaching learning process. How well students respond in learning and how well deficiencies are removed are dependent upon proper evaluation of students. Usually the evaluation reported by the head teachers was 'verbal' and 'written' in nature. 86% schools carried out both verbal and written evaluation of students, 10% conducted only 'written', 3% schools emphasized 'verbal' evaluation and 1% did not evaluate performance of their students.

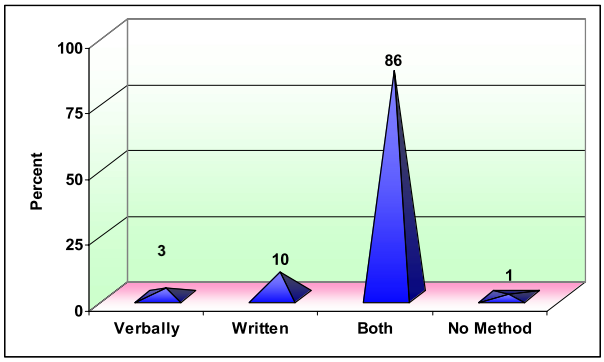


Figure No.188 Percentage of Evaluation With Different Methods

Staff Performance Grade-4

Being the head of institutions, the headmasters are the most suitable persons who can judge the performance of their teachers. 89% head teachers were satisfied with the performance of their teachers, whereas 11% head teachers were not satisfied with the performance of their teachers.

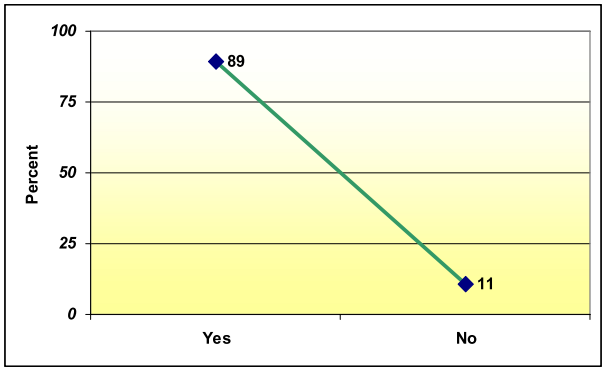


Figure No.189 Percentage of Head Teacher Satisfaction from Staff Performance

Teacher Shortage Grade-4

Multi-grade teaching is a serious issue in Pakistan. Majority 42% head teachers complained that their schools were under staffed, 37% were facing shortage of teaching staff, and 21% had 'never' remained short of staff.

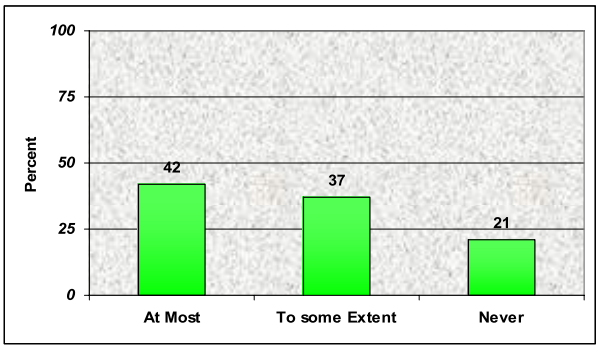


Figure No.190 Percentage of Teacher Shortage on Different Scale

Lack of Professionalism in the Teachers Grade-4

Professionalism really matters in today's teaching learning process. In the absence of professionalism a better quality teaching is a mere dream. 43% head teachers saw professionalism, in their staff 'to some extent' and 48% head teachers were confident about the professionalism of their teachers and were of the view that their teachers 'never' lacked professionalism.

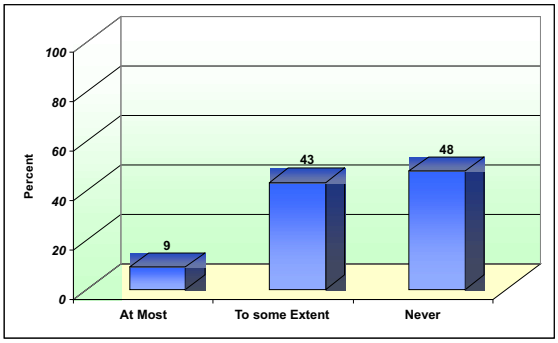


Figure No.191 Percentage of Lake Of Professionalism in the Teachers

Building Condition in the Sample Schools Grade-4

Shelter protects from changing weather conditions and is a big source of peaceful teaching learning process. 51% buildings of schools were reported to be in good conditions and 49% need attention for repair.

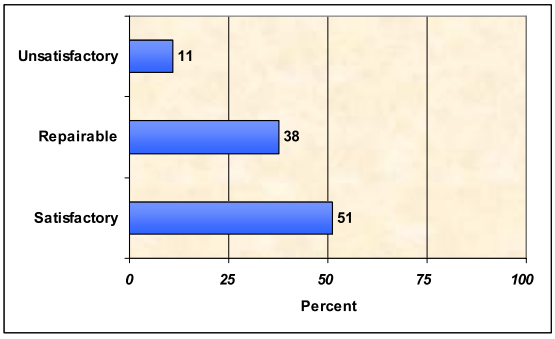


Figure No.192 Percentage of Building Condition on Different Scale

Building Status Grade-4

93% schools are working in the 'state-owned buildings'. 5% schools are seen in the building of other schools and 2% schools run in the 'rented buildings'. Measures are needed for the provision of adequate building to fulfill the needs. A policy decision by the Govt. of Khyber Pakhtunkhwa has recently been taken to construct six room buildings for all new primary schools.

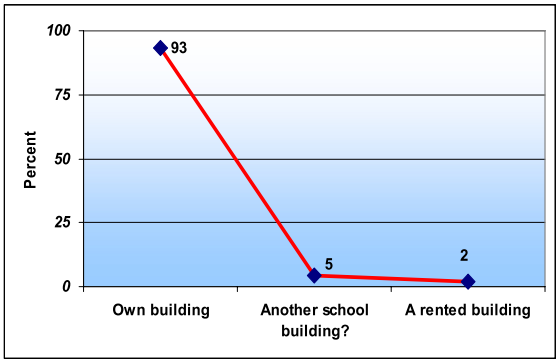


Figure No.193 Percentage of Building Ownership Status

Library Facilities Grade-4

Libraries and teaching learning process are part and parcel of each other. A fully equipped library with books is a real source of resource material. Only 15% schools libraries had adequate and usable books. The remaining 85% schools did not have Libraries and in some cases they had Libraries but the books present there were not usable as the condition of books was so shabby.

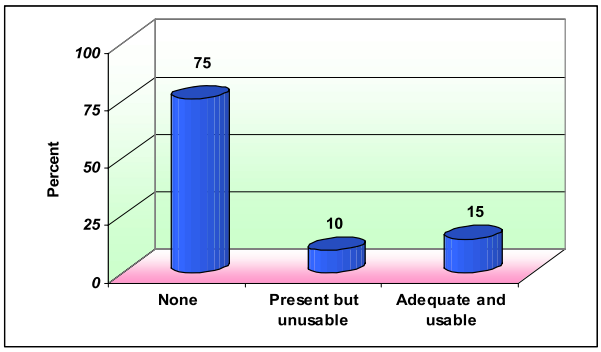


Figure No.194 Percentage of Library Facilities in the Schools

Planting In the School Grade-4

Plantation is such a good thing which is highly contributory to the economy of the country along with greenery around us, making the environment highly attractive. 74% schools took part in plantation while 26% showed no interest in this regard. Motivation among students can turn Pakistan green.

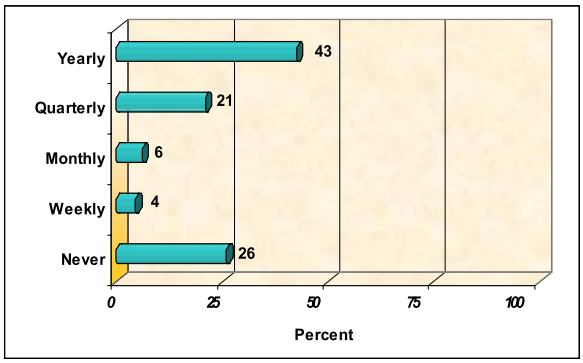


Figure No.195 Percentage of Planting In the School

Teaching-Kit Availability Grade-4

The use of teaching kits makes the teaching learning process convenient and attractive for the students. 56% schools did not have 'teaching kits' and just 44% schools had 'teaching kits' with them. Majority schools did not have teaching kits, which draws attention of the authorities for an appropriate action.

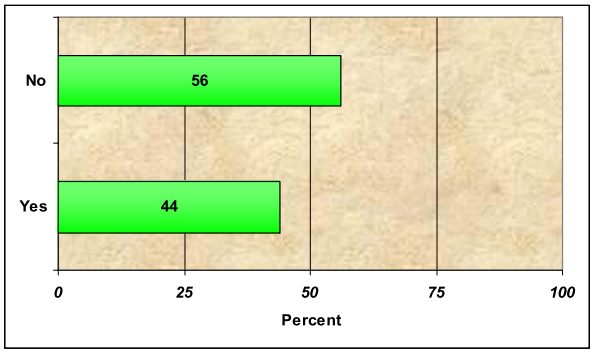


Figure No.196 Percentage of Teaching-Kit Availability

Teaching-Kit Usage Grade-4

The teaching kits were available with just 44% schools of the total sample. Out of 99 schools only 66% use teaching kits 'sometimes'. 34% schools were not using teaching kits irrespective of the facility available to them.

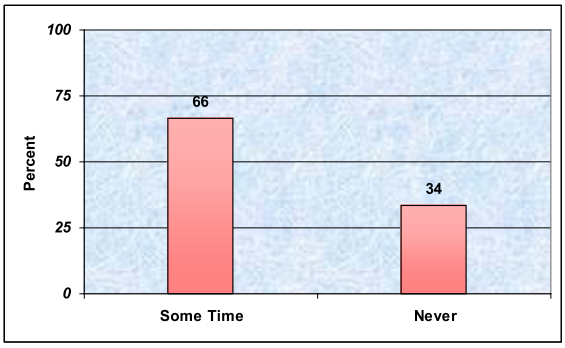


Figure No.197 Percentage of Teaching-Kit Availability

Teachers Guides Availability Grade-4

Teacher guide is a resource material, which is quite helpful to teachers making their instructions attractive and meaningful. Although teaching guide was available to 78% teachers, yet the remaining 22% needed it on priority basis. A mechanism needs to be evolved that all teaching resources are made available to teachers before the start of academic year.

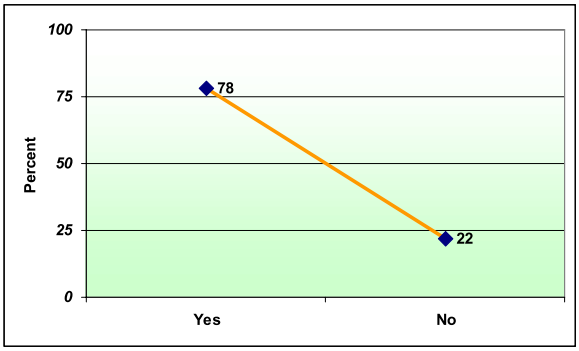


Figure No.198 Percentage of Teachers Guides Availability

Free Textbooks Grade-4

The government is providing free textbooks to students as a matter of policy. Majority schools were getting free textbooks but those 11% schools which never got books were part of the system. The negligence on the part of those responsible is harmful and the need is that responsibility is fixed and the guilty brought to justice. This will obviate chances of future loss with regard to provision of free books well in time.

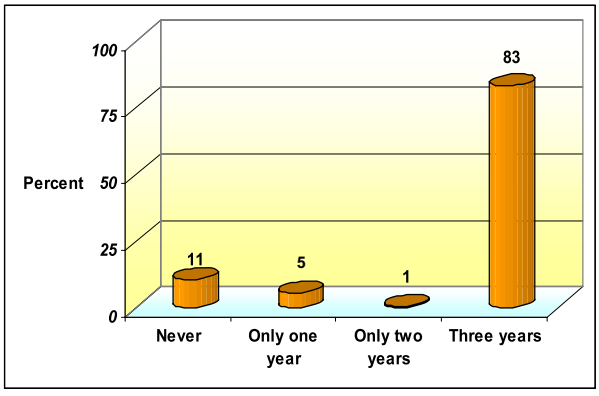


Figure No.199 Percentage of Free Textbook Supply

TEACHER REPORTED VARIABLES

Teacher-Age Grade-4

Table 113. Percentage for Categories of Teacher Age

Teacher's Age	Percentage
Under 25	8%
25-35	41%
36-45	35%
46-55	11%
Above 55	4%

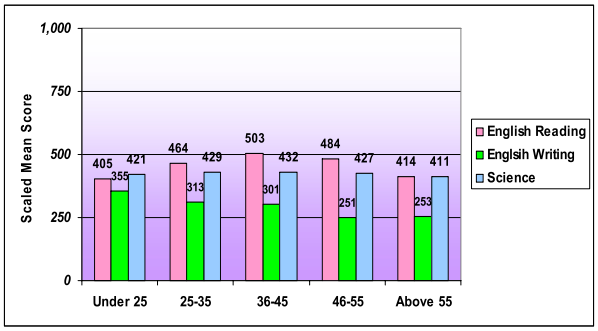


Figure No.200 Categories of Teacher Age Vs Achievement

The factor of age of teachers yielded significant difference in achievement only in case of English (Reading), while for other two subjects this variable had no significant impact. The scores found high were for the age group 35 45 years of teachers.

Teacher- Gender Grade-4

Table 114. Percentage of Teacher Gender

Teacher's Gender	Percentage
Female	50%
Male	50%

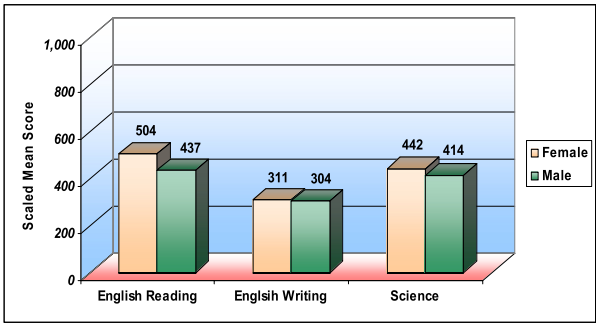


Figure No.201 Teacher Gender Vs Achievement

An overview of the teachers' gender impact on learning is presented for the information of stakeholders. The students of female teachers performed significantly better for all three subjects i.e. English (Reading), English (Writing) and Science.

Teacher Academic Qualification Grade-4

Table 115. Percentage of Teacher Academic Qualification

What is your academic qualification?	Percentage
Matriculation	6%
Intermediate	10%
Bachelor	36%
Masters	46%
M.Phil/Ph.D	2%

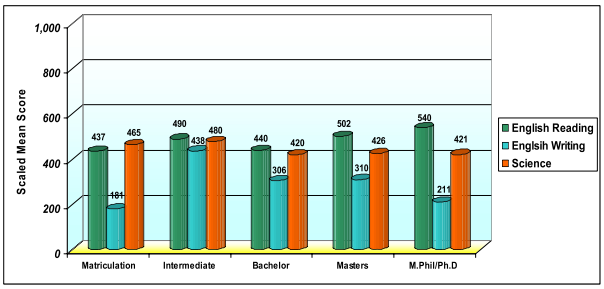


Figure No.202 Teacher Academic Qualification Vs Achievement

Teachers' qualification is getting better at primary level as the required qualification of the teachers was Matric with PTC. 96% teachers possess 'intermediate and above' as qualification. Significant scores were observed for all tiers of qualification. The government has replaced pre-service teacher training programs of PTC and CT with Diploma in Education and other degree programs as the teachers in future will not be recruited on the basis of these certificates. It is a concrete measure taken for the improvement of quality education in the country.

Teacher Professional Education Grade-4

Table 116. Percentage of Teacher Professional Education

Teacher's Professional Education	Percentage
PTC	27%
CT	9%
Diploma in Edu.	2%
B.Ed	49%
M.Ed.	13%
M.Phil/Ph.D	0.4%

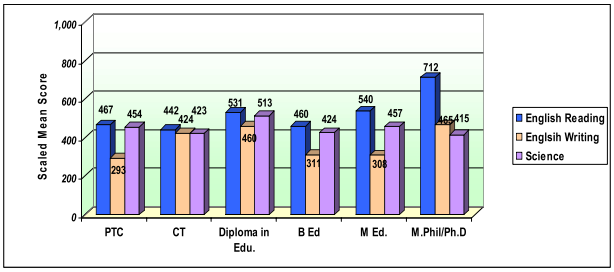


Figure No.203 Teacher Professional Education Vs Achievement

The qualification required to teach at primary level is PTC, the present strength of the PTC teachers was found 27% in NAT-2014 assessment study. The remaining 72.4% teaching force possessed professional qualification CT and above. Significant difference in the scores for each tier of professional qualification was found.

TeacherTeaching Experience Grade-4

Table 117. Percentage of Teacher Teaching Experience

Total Teaching Experience in years	Percentage
Less than 5 years	25%
5-10 years	21%
11-15 years	12%
16 or More	41%

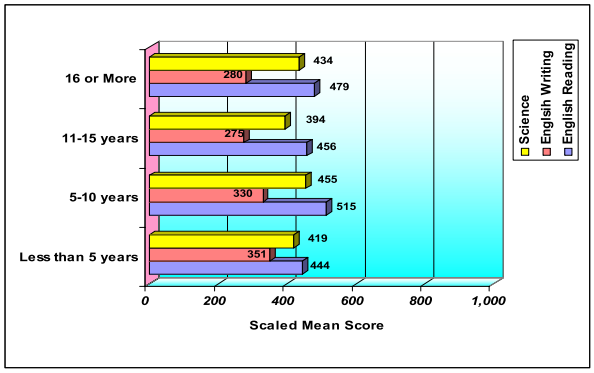


Figure No.204 Teacher Teaching Experience Vs Achievement

Teaching experience was categorized into four tiers. The highest percentage was 41% for the group of teachers who had experience of 16 years and above. Significant difference was found in the scores of students for each tier of experience.

Multi-grade teaching Grade-4

Table 118. Percentage of Multi-grade teaching

Do you teach two or more classes in any period?	Percentage
Yes	50%
No	50%

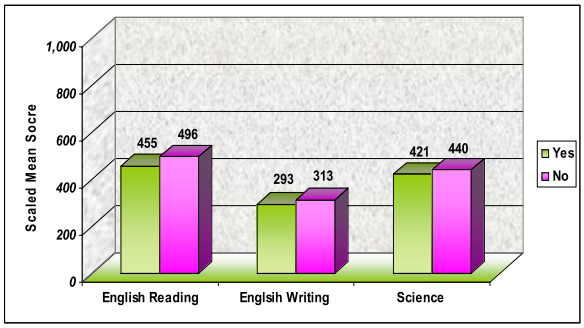


Figure No.205 Multi-grade teaching Vs Achievement

One of the biggest problems at primary level is teaching by one teacher to a number of different grade levels at a time in the same room. The phenomenon is generally known as multi-grade teaching. 50% teachers were doing multi-grade teaching and measures are required to eliminate the remaining 50% multi-grade teaching gradually.

Teacher Administrative Duty Grade-4

Table 119. Percentage of Teacher Administrative Duty

Doing administrative duties at school.	Percentage
Daily	70%
Once a week	15%
After 15 days	2%
Once a month	5%
Never	8%

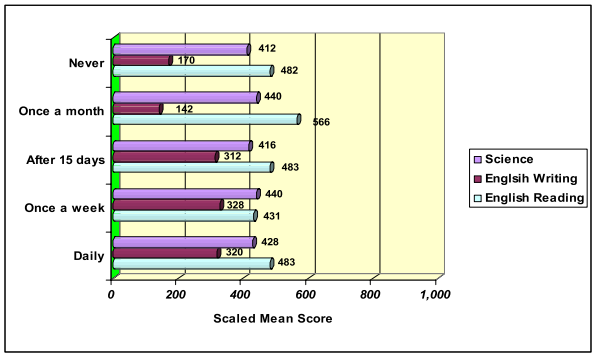


Figure No.206 Teacher Administrative Duty Vs Achievement

Teachers are meant for teaching but 70% teachers were reported performing administrative duties at school on daily basis, 15% did the same once a week. The remaining 15% were also doing administrative duty. This could cause adverse impact on the performance of teachers.

Lesson Plan Grade-4

Table 120. Percentage of Lesson Planning

Pre-planning the lesson	Percentage
Daily	82%
Once a week	17%
After 15 days	1%

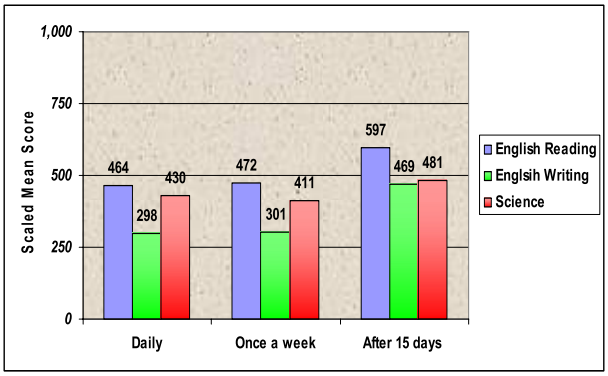


Figure No.207 Lesson Planning Vs Achievement

A well prepared teacher can deliver organized, meaningful instruction at the classroom. Majority 82% teachers prepared their lesson in advance, 17% teachers planned lesson once a week. Significant difference in achievement was found for each category of lesson planning.

Teacher Consultation with Other Teacher Grade-4

Table 121. Percentage of Teacher Consultation with Others Teachers

Consulting other teachers for the betterment of students	Percentage
Daily	42%
Once a week	44%
After 15 days	7%
Once a month	1%

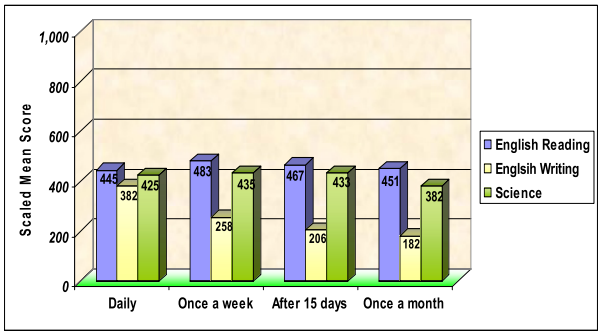


Figure No.208 Teacher Consultation with Others Teachers Vs Achievement

Teachers' discussion among themselves is a very positive professional development approach. 42% teachers reported that they consulted with their colleagues on daily basis for the betterment of their students. Almost all the remaining teachers consulted each other but with different span of time. Scores obtained by the students of teachers who consulted their colleagues were found significant.

Problem-Solving Grade-4

Table 122. Percentage of Problem-Solving by Teacher on Different Timing

Solving academic problems of the students.	Percentage
Daily	69%
Once a week	15%
After 15 days	7%
Once a month	9%

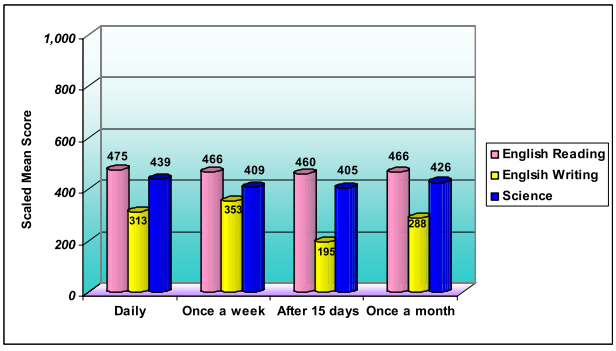


Figure No.209 Problem-Solving by Teacher Vs Achievement

Delivering of instructions alone cannot solve the academic problems of students. Special attention of the teachers can create an atmosphere for better teaching learning process. 69% teachers resolved the academic problems of students on daily basis, 15% did once a week and the remaining 16% did resolve problems on fortnightly and monthly basis. Significant difference in the scores of students was found for each category of teachers.

Parent-School Contact Grade-4

Table 123. Percentage of Parent-School Contact for Child Academics

Parent-School Contact regarding academic performance of the student	Percentage
Weekly	19%
After 15 days	17%
Once a month	40%
Yearly	16%
Never	9%

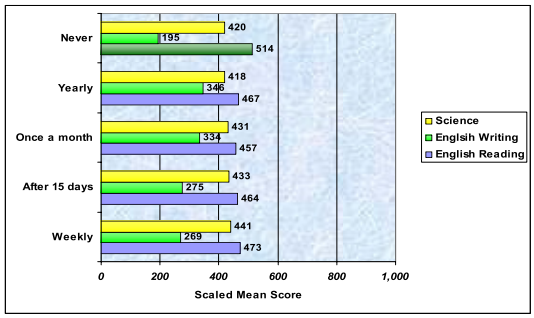


Figure No.210 Parent-School Contact for Child Academics Vs Achievement

Parents' interest in students' learning process through contacting school for knowing the performance is highly fruitful factor. 75% parents were reportedly in contact with schools about the performance of students. Significant difference in the scores of students for each category of parents contacting school was found for the subject of English (Reading) and English (Writing).

Discipline Meeting Grade-4

Table 124. Percentage of Parent- Teacher Meeting regarding child Discipline

Parent-School Contact regarding the discipline of the student in the school.	Percentage
Weekly	33%
After 15 days	14%
Once a month	25%
Yearly	11%
Never	17%

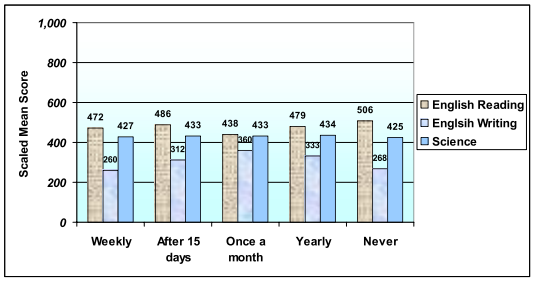


Figure No.211 Parent- Teacher Meeting regarding child Discipline Vs Achievement

On the other hand parents contact with school for their children discipline yielded significant difference in scores for the same two subjects.

Parent-School Contact Grade-4

Table 125. Percentage Parent-School Contact for Child Academics

Parents contact teachers regarding academic performance of children.	Percentage
Always	6%
Often	20%
Sometimes	57%
Never	17%

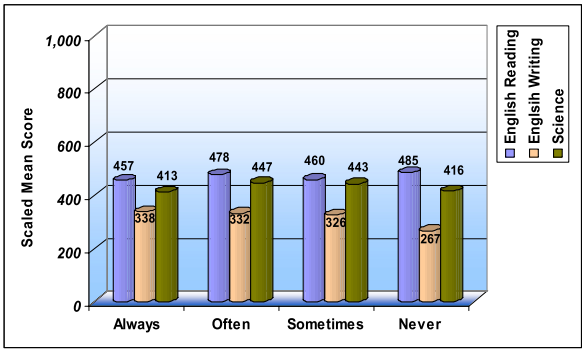


Figure No.212 Parent-School Contact for Child Academics Vs Achievement

For knowing performance of their kids 6% parents were in regular contact with school, 20% parents often asked about performance of their kids from the school, 57% were used to ask sometimes and 17% never took pain. Significant difference in learning achievement was found for all tiers of parents contacting schools for the purpose.

School Rule Grade-4

Table 126. Percentage of School Rule

I follow the school rules and regulations strictly.	Percentage
Always	89%
Often	9%
Sometimes	1%

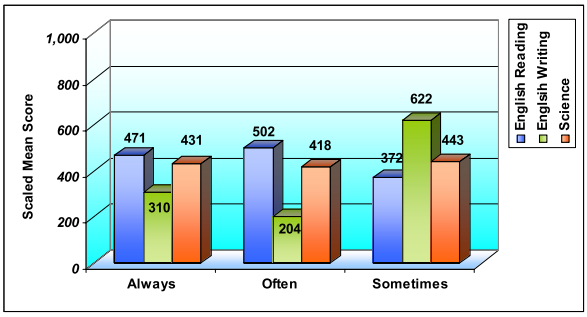


Figure No.213 Follow of School Rule Strictly Vs Achievement

Concerning cooperation of parents with school, especially by following the rules and regulation, a very good percentage (89%) was reportedly 'always' following the school rules and regulations strictly, 10% often and 1% sometimes. One thing was clear from the study that all parents were one way or the other in agreement with the school rules and regulations.

Students Mistake Grade-4

Table 127. Percentage of Students Mistakes

Informing the students individually about their mistakes.	Percentage
Every three Months	91%
Every six Months	5%
Every nine Months	1%
Yearly	3%

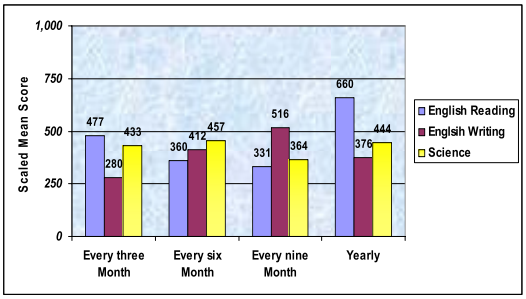


Figure No.214 Students Mistakes Information Vs Achievement

Teacher's majority 91% inform students individually about their homework mistakes after every three month time and 9% teachers inform them over the year. Scores were significantly different for all tiers of teachers pointing out students' homework mistakes to them.

In-Service Training Grade 4

Table 128. Percentage of In-Service Training

Have your teaching abilities increased by attending the professional training courses during service?	Percentage
Almost	54%
Some extent	28%
Never	17%

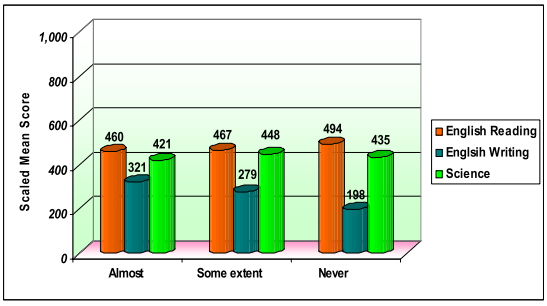


Figure No.215 Professional Courses Vs Achievement

Organizing refresher courses for the teachers for the enhancement of their professional capabilities to meet the requirements of the time is highly important in all times. The professional training courses always increase competence of 54% teachers, 28% said 'to some extent' and 17% could not benefit from the training courses. The significance in the scores was found for two subjects English (Writing) and Science.

AV-Aids Facilities Grade-4

Table 129. Percentage of AV-Aids Facilities

AV Aids	English		Science	
	Yes	No	Yes	No
Syllabus	92	8	92	8
Text Book	96	4	97	3
Teachers Guide	75	5	76	24

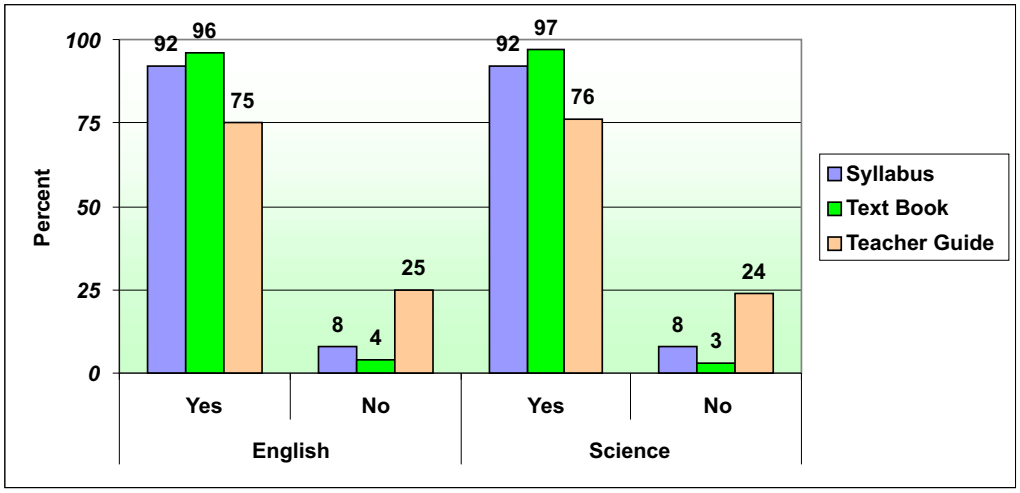


Figure No.216 Percentage of AV-Aids Facilities

The teachers' instructions at classroom cannot be effective until they have the facility of teaching aids. More than 92% teachers had their own syllabus and textbooks and 75% teachers had their own teaching guide. The remaining teachers are required to be equipped with these essential teaching aids for making their instructions more effective.

Comments of Teacher Grade-4

Table 130. Percentage of Comments of Teacher

Comments of teacher in percentage	Always	Often	Sometimes	Never
Follow the school rule and regulation strictly	89	9	1	0
Take part in staff meeting	88	11	1	0
Constructive proposal in the staff meeting	62	30	8	1
Head master follow the rule and regulation very well	84	13	3	0
Take personal interest in the education standard of the school	87	13	0	0
Head master tries for better administration of the school	86	11	3	0
Head master guidance in the teaching	62	26	10	3
I complete course in time	76	20	4	0
Revision of course after completion	80	16	4	0

- 88% teachers took part in school staff meetings.
- 62% teachers used to give constructive proposals during staff meeting.
- 84% teachers commented that their head teachers try to do better admin, teacher guiding and follow the rules and regulations very well.
- 76 80% teachers completed course in time and revised it before examinations.

Teacher Assignment for the Betterment of Students Grade-4

Table 131. Percentage of Teacher Assignment for the Betterment of Students

How many time teacher perform task for the betterment of students	Every three Month	Every six Month	Every nine Month	Yearly
Sending the progress report of the student to the parents.	68	13	5	14
Explaining mistakes in homework before the whole class.	89	6	3	2
Informing the students individually about their mistakes.	92	5	1	2
Providing a lecture on a particular topic by some visiting person.	28	26	10	36
Teachers evaluate the academic activities of the students	80	9	4	6

- 68% schools sent progress reports of the students to their parents on quarterly basis.
- 89% Teachers explained mistakes in homework before the whole class on quarterly basis.
- 92% Teachers Informed the students individually about their mistakes on quarterly basis.
- 28% schools arranged guest speakers on different occasions.
- 80% teachers evaluated their students' performance on quarterly basis.

Teacher Assessment of Students Grade-4

Table 132. Percentage Teacher Assessment of Students

How teacher assess the students activities	Always	Often	Sometimes
Teachers evaluate the academic activities of the students	80	9	4
evaluate the performance of the students through verbal test	61	34	5
evaluate the performance of the students through written test	45	47	8
evaluate the performance of the students through homework	73	21	6
evaluate the performance of the students on the basis of performance in the class	48	38	13

- 73% teachers assessed performance of their students 'always' through the quality of homework.
- 48% teachers 'always' evaluated performance of the students on their performance in the class.

In-Service Science Training Grade-4

Table 133. Percentage of In-Service Science Training

Topics	Yes %	No %
science content	45	55
D technical education of science	25	75
science syllabus	43	57
use Sc kit	21	89
regarding science experiments	28	72
Regarding making the teaching of science interesting in the class room	51	49

The science teachers' majority could not get chance for attending courses on various science content areas. The institutions responsible for teachers' training may look into the matter for evolving a comprehensive training strategy for imparting training to 100% teachers.

In-Service Science Teacher Training Grade-4

54% teachers reported that the in-service training increased their teaching abilities 'almost' in the subject.

28% were of the view 'to some extent' and 17% teachers found these training workshops useless.

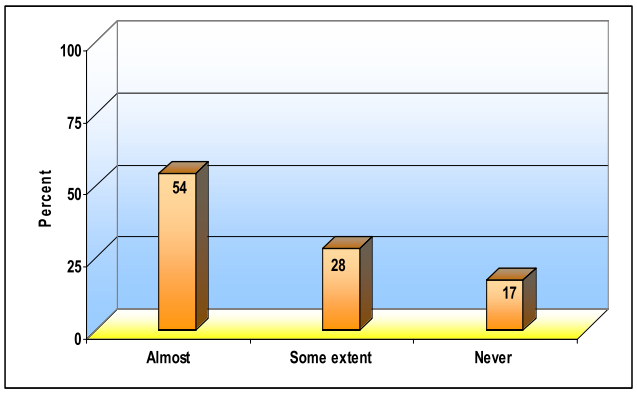


Figure No.217 Percentage of In-Service Science Teacher Training

Teacher Opinion Grade-4

Table 134. Percentage of Teachers' opinion for Science Contents

Topics	Percentage	
	Easy	Difficult
Scientific experiments	76	24
Solar system	73	27
Chemical reactions	38	62

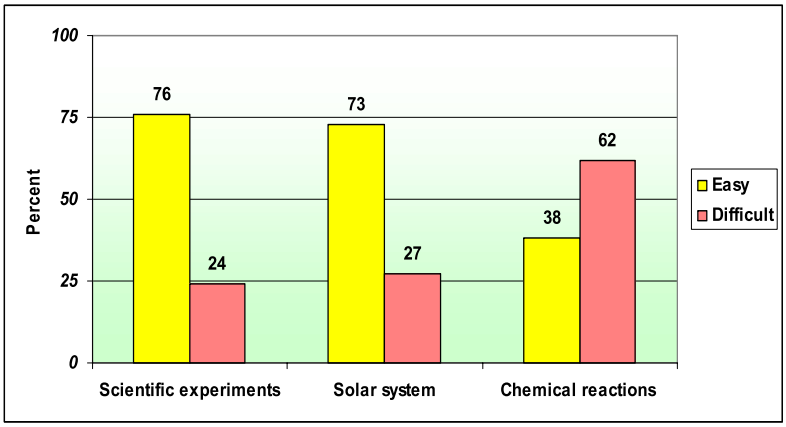


Figure No.218 Percentage of Teachers' opinion for Science Contents

The hardest area appeared to the science teachers was 'chemical reactions' as 62% were found uncomfortable in teaching the concepts properly. Around 25% were found again having difficulty in teaching 'scientific experiments' and 'solar system'.

Instructions of Teacher in the Science Subject Grade-4

Table 135. Percentage of Instructions of Teacher during Teaching

Areas	Always	Often	Sometime	Never
Asking questions about the lesson taught.	77	21	2	0
Doing an experiment on your own	15	47	36	2
Preparing charts of various things.	15	45	39	1
Thinking over various factors.	38	46	14	2
Deeply observing the earth and the solar system	21	35	40	5
Reading in small groups.	46	41	10	2
Exercising co-curricular activities in small groups.	31	44	22	2
Asking the students to ask for explanation if that do not understand any topic.	52	34	13	1

- 98% teachers reported students' difficulty in lesson during the instructions.
- 62% teachers emphasized on the students for doing the practical themselves.
- 60% teachers involved students for preparing wall charts on various concepts.
- 56% teachers directed their students to observe deeply the movement of earth and the solar system in the light of information given in the textbook.
- 87% teachers used to divide students into small groups for 'group learning', and for exercising co-curricular activities in small groups.
- 86% teachers encouraged students for asking questions if they did not have clarity on the topic.

In- Service English Training Grade-4

Table 136. Percentage of In- Service English Training

Topics	Yes	No
English prose	24	76
English functional	28	72
Curriculum of English	43	57
English to create positive criticism	27	73
Development of problem solving technique	32	68
English exercise	35	65

The professional training for in-service teachers remained a weak component for all subjects and grades assessed in NAT 2014. At the average 70% teachers did not get an opportunity to have in-service professional training on various topics of English.

English Teaching Grade-4

Table 137. Percentage of English Teaching

Topics	Easy	Difficult
Prose story	70	30
Prose dialogue	60	40
Poetry general	48	52
Funny poems	72	28
Grammar parts of speech	79	21
Grammar idioms and phrases	46	54
Grammar pronunciation	70	30
Grammar sentence making	74	26

Teaching English was found still the hardest area for some teachers in different content areas. The hardest areas were 'prose dialogue', 'poetry general' and 'grammar, idioms and phrases'. The other areas were less hard.

Instructions of Teacher in the English Subject Grade-4

Table 138. Percentage of Instructions of Teacher during Teaching

Areas	Always	Some times	Never
Asking questions about lesson	89	10	1
Writing of a story on their own	18	69	13
Participation in drama	9	48	43
Participation in speech	24	62	14
Participation in puppet show	9	29	62
Small group study	52	44	4
Practicing extra-curricular activities in small group	32	60	8
Request for concept clarity again	62	33	6

- 89% teachers encouraged students for asking questions during the instruction if they found something difficult.
- 18% teachers persuaded students to 'write stories at their own'.
- 9% teachers encouraged up their students to participate in 'dramas' and 'puppet show'.
- 32% teachers wanted their students to be participating in speech competition and in other co-curricular activities.
- 52% teachers laid emphasis on study in 'small groups'.

CONSTRAINTS AND LESSONS LEARNT

Education is such an important part of human life that without it living is almost impossible, particularly in today's world of knowledge. To know how well our education system is working, a national assessment was carried out to measure the performance of the students having completed certain levels of schooling.

To carry out national level assessment is a complex and challenging task. It involves the training of staff, development of the test frameworks and items, the organization of the assessment instrument booklets as well as the printing, collating, distribution and collection of the assessment instruments throughout Pakistan under tight deadlines.

A cycle of activities, that takes at least 04 years in well-established assessment systems around the world, was completed by NEAS in less than two years, from instrument development to the launch of assessment report NAT-2014, with the logistic support of PEC, PEACEs and AEACEs. The constraints faced during NAT-2014 were met with the professional approach. Incomplete team of NEAS was supported by assigning multiple tasks to different staff having expertise in the other areas.

Besides other problems, a potent problem of low student enrolment was faced especially in rural/hilly areas of Pakistan specifically in girls' schools. Many schools had less than 5 students at grade 4 level. In some areas, replacement of selected sample school was made with the 'reserved sample school' due to inaccessibility and security reasons. Hence, the representation of the sample is, to some extent, debatable.

The transportation of the assessment materials to arrive in the provinces and areas to enable training and testing to take place was difficult. The return of the assessment instruments after completing the testing process was also not easy, particularly from remote areas. Many formalities were hindrance in the smooth conduct of national assessment. Some major constraints are highlighted below for more clarity of the audience.

- Limited financial resources
- Incomplete NEAS team
- Tight schedule of the National Assessment
- Low enrollment
- Security and access problems
- Power outages
- Administrative approvals
- No back up technical staff in case of illness etc of the existing one.
- Fewer working hours (most of the time NEAS staff remained stuck due to frequent power outages. At times power supply remained suspended for the whole day due to the construction work on the Metro Bus project).

Lessons Learnt

A good assessment system can be established only when people and institutions are ready to learn lessons from the past experiences. (The maintenance of credibility demands rectification of the lacunas on priority). NEAS has learnt the following lessons from the national assessment NAT-2014:

- Ensure to have fresh database from the NEMIS for sample purpose.
- Administrative approvals may be obtained for various activities at the planning phase of the national assessment.
- Necessary measures need to be taken to have a complete team of experts for execution of the national assessment.
- Close Liaison with the PEC, PEACEs and AEACEs for national assessment through their administrative Secretaries.
- Decentralized assignments for marking, coding and data entry.
- Appointment of test administrator from nearby area of sample school as spreading of sample over a large area causes logistic and other problems.

Section - III

ASSESSMENT

IS

THE KEY

TO

HEALTHY EDUCATION

CONCLUSION

Education was placed on the concurrent list in the Constitution of 1973. The devolution of education to the provinces under the 18th amendment put the routine work on halt for a transition period. The national assessment, otherwise regularly conducted, was suspended for a period of six years. NEAS, with logistic support of PEC, PEACEs, AEACEs, successfully completed fifth cycle of national assessment in 2014. The NAT-2014 findings, presented in the report was an endeavor by NEAS to establish a new benchmark of students learning achievement at Grade-8 in Urdu (Reading) Urdu (Writing), and Mathematics and at Grade-4 in English (Reading), English (Writing) and Science to measure increase or decrease in the learning achievement of students in terms of scaled mean score. This attempt would help Ministry of Federal Education and Professional Training, Provincial and Area Education Departments to improve various components of education system in the light of correlation between the learning achievement and background variables for all six subjects, three each for Grade- 8 & 4. This study helps us know the positive or negative association of background variables contributory to learning achievement or not, but the emerging trends necessitated to be deliberated on with greater attention.

The average scores in all six subjects show that the overall performance of students at national level is not encouraging as the scaled mean score achieved by the students remained considerably lower than the set scaled mean score of 500 in all subjects, except the score of Urdu (Reading) which was 526, slightly above the mean score. The performance of the students from Punjab remained marvelous as compared to that of the students from the three provinces and four areas in the subjects of Urdu (Reading), Mathematics for Grade-8 and English (Reading) and Science for Grade-4. The performance of students from Punjab in Urdu (Writing) and English (Writing) was surprisingly much lower than the rest of the students. The performance of the urban students was better as compared to the rural students. Boys were ahead of girls in achievement of scores in Grade-8 but the girls were found better performers in Grade-4. The majority of students remained unable to have a slot among the 'proficient' and 'advanced' students.

The learning achievement of the students was seen in the context of different factors having positive and negative impact on the overall performance. In most of the cases the background variables like corporal punishment, use of writing board, teaching kits, teacher guide, use of local language for teaching, various concepts, questioning in class, multi-grade teaching, homework, correction of homework, parents and teachers' qualification, parents-school contact in some cases etc had and in some cases did not have positive correlation with the learning achievement of students to make significant difference among the students, but this does not mean that they had no significance at all.

NEAS tests were designed in such a way as to measure the cognitive abilities of the students in the basic three tiers, starting from knowledge and going up to "understanding" and "application". An overwhelming majority of the students were able to solve low cognitive skill questions but they were unable to answer questions where high order thinking was involved. Inference can be drawn from the situation that students are habitual crammers and they find it to their benefit as the system hinges on only reproducing information based on memorization. The Ministry of Federal Education and professional Training , Provincial and Area Education Departments are required to play a vital role in uplifting the quality of education by addressing weaker areas identified in the report and by further strengthening the areas reported as comparatively better. Since discrepancies were found in the correlation of scores with the background variables, it invites the attention of the social scientists, the students from the Institute of Education Research (IERs) and from the Colleges of Education to step forward for carrying out detailed, in-depth researches on the available data of NEAS, especially on the variables, which were meant for

positive correlation for the learning achievement but adverse results were achieved. NEAS believes that the report would provide foundation for gathering the evidences at large scale to make the system achieve the goal of education which is “quality learning”.

The National Assessment was initially designed for grade-4 and grade-8, but, as it was delayed and conducted in May 2014, the assessment was carried out on grade-5 and grade-9 as the students had recently completed the courses of grade-4 and grade-8 respectively.

RECOMMENDATIONS

GRADE-8

1. Since the Curriculum 2006 emphasizes upon higher order and problem solving exercises in students' assessment and evaluation, it is therefore recommended that while conducting routine tests, formative and summative assessments and undertaking final evaluation of students, teachers should proportionately add questions on higher sub-categories of cognitive domain such as analysis, synthesis, critical thinking and problem solving abilities.
2. Subject teachers may be recruited to teach Mathematics, Science and Computer at Elementary level.
3. Teachers may group students in a way that high achievers may join low achievers to support in learning.
4. The findings show that the students who are self-motivated learners find limited opportunities to have help from different sources to perform better than others. This trend indicates that students may be encouraged, promoted and motivated for adopting self-learning habits. This can be achieved through guidance from parents and teachers.
5. It is recommended that parents be involved in school activities/ uplifts and in students' performance appraisal through parent-teacher committees and their meetings be held regularly.
6. Some kind of check on the students on late coming, incomplete homework or causing discipline problems in school/classroom has positive impact on the performance of the students and hence it is recommended that it may continue but corporal punishment may be discouraged in schools at levels. It should be remembered that "*what is taught with love lasts forever.*"
7. It is recommended that use of information and communication tools such as computers, laptops, tablets, multimedia kits, TV, radio etc. may be promoted in schools as these tools are now widely available at homes and their use at home by the students has shown positive impact on their performance as learners. This may be promoted through policy reforms.
8. Assigning homework to the students is one of the most prevailing strategies of teachers in schools and it has also shown positive impact on the performance of the students. However it is recommended that home assignments may include a variety of activities such as problem solving and critical thinking exercises/short projects.
9. Use of local language in teaching/ instructions in the classroom in the subjects of Urdu and Mathematics has shown positive impact on the performance of students irrespective of the textbook language. It is therefore recommended that teachers may be instructed and encouraged to use the local language in teaching for making reader-text connections for conceptual clarity.
10. Students who have been participating in school games, debates and speech competitions, scouting/ girls guide have performed better in their studies. It is recommended that co-curricular activities be promoted and made part and parcel of the school's annual calendar and appropriate budget be allocated for these activities as provided in the National Education Policy 2009.
11. Use of supplementary reading material has shown significantly positive impact on the achievements of students; hence it may be encouraged and promoted. It is recommended that

use of other textbooks, teachers' manual, students' workbooks developed and approved by the textbooks boards, should be promoted and used.

12. The teachers, who possess postgraduate qualifications (M.Ed.), have performed well in students' performance achievement. It is recommended that the recommendations of NEP 2009, regarding teacher, may be enforced in letter and spirit.
13. Younger teachers with 5 to 10 years of teaching experience have performed well and hence it is recommended that teachers with age below 50 may be provided with subject upgrading training and opportunities for participation in similar training programs within and outside the country.
14. Rural students' performance as evident from the data analysis is comparatively on the lower side. Considering different factors, it is proposed that students in rural areas may be given an increased exposure of writing activities.
15. Teachers may promote and encourage use of dictionary at home among students. This is proved from the findings that the students using dictionary have better learning achievements.
16. Model writing exercises on randomly selected topics related to students' environment may be arranged for the students. Writing competitions within classes and schools can also be conducted and students may be encouraged to participate. Home assignments that promote writing skills may also be given frequently with appropriate weightage and properly checked for guidance of students.
17. Better scores are reflected where teachers use learning aids and provide feedback to students on their work frequently. These practices may be encouraged at wider level. Heads of schools may realize their role as supervisor and academic leader
18. Schools where Head Teachers at least provide monthly assistance and facilitation to teachers in their planning and academic affairs seem to be producing better scores. The Administration may devise some SOPs for schools to promote such practices among all schools as a regular feature.
19. Availability of Libraries in schools and their frequent visits by the students has positive impact on scores. Schools may evenly distribute periods of instructions for all levels students to visit library. The provisions of National Scheme of Studies in this regard are effectively utilized. In schools where libraries are not available due to space constraints or other reasons, the concept of mobile libraries may be introduced.
20. Parents may be encouraged by management to provide their kids appropriate arrangements for study at home. This may include provision of suitable seating arrangement and environment. It may be ensured by keeping close contact with home.
21. The data trends show that educated parents provide better learning for children at home. The SMC/management may take steps in promoting awareness amongst parents for improving their educational qualifications and motivate them for paying attention towards conducive learning environment at home.
22. Findings point out that the writing scores are overall lower than reading in Urdu. The scores even depress to lowest ranking which is alarming. Further investigation may be carried out to understand factors deeper on lowest mean scores for writing skills.

GRADE-4

1. It was observed that repeaters' level of achievement is comprehensively lower than the other students. So it is recommended that special support for confidence building to actively participate in the learning process may be provided.

2. Almost all students did not perform well in writing as compared to reading skills. It is recommended that emphasis on writing skills may be increased at the level of curriculum, textbooks, classroom practices and examinations. In this regard, innovative and contextual writing tasks may be more meaningful.

3. Urban students performed better than the rural students in reading skills. It has been observed that urban students have more exposure to a variety of reading materials in their social settings. It is recommended that teachers and head teachers may provide supplementary reading materials to enhance their reading skills.

4. Teacher/parents may persuade students to adopt self-learning habits at home. Administrative measures may be taken to utilize time allocated in the National Scheme of Studies (2007). Additional readers may be provided to nurture this habit. Students may be encouraged to watch specific /informative TV programs as it enhances reading comprehension, observational skills and analytical power.

5. Corporal punishment should be avoided at all cost. Corporal punishment leads to psychological disturbances and even drop-outs. Educational managers may ensure that learning environment is free from corporal punishment.

6. Students need to be given regular but suitable homework and head teachers may ensure that assigned tasks are properly checked as it is a significantly useful activity. In this regard, head teachers may off and on verify. Teachers may provide feedback to students on the assigned homework. It is established fact that if home work is not checked students lose interest in doing assigned activities.

7. Special efforts may be made to clear the concepts of students through contextual analogies and examples from practical life. Teaching must be related to real life.

8. Schools may be encouraged to engage all students in a variety of co-curricular activities and enhance learning achievements. Cordial atmosphere in schools and classrooms needs to be provided to build confidence among the students for putting new ideas and discussion for concept clearance.

9. Parents' queries and questions about their wards must be properly responded by the teachers/ head teachers. Parents' trust in schools' leadership may make students honest and hardworking.

10. A variety of teaching methods including cooperative learning/group work may be widely practiced as it has a significant impact on students' learning. It has been globally acknowledged that cooperative learning is a very effective teaching technique.

11. Guidance and counseling may be part of school program by enabling all students to tackle problems and challenges in an effective way.

12. SMCs/PTAs may meet regularly to discuss curricular, co-curricular and other administrative issues to improve the overall image of the institution. Schools' achievements may be properly disseminated / illustrated to enhance the satisfaction of parents/guardians so that a sense of ownership for the school among parents may be produced.

13. Basic facilities play catalytic role to achieve desired learning outcomes in the given period. These facilities may be provided to all schools. Schools may have attractive getups and learning environment to reduce absenteeism and to enhance zeal and zest among the students.

14. Curriculum may be made available to all teachers in a way that they understand the spirit of curriculum for effective content delivery in the classroom.

15. Individual accumulative performance record of students may be maintained in schools for providing scaffolding and guidance & counseling and future planning.

16. 'Morning Assembly' must be regular feature of a school as it contributes to teach values, attitudes and discipline.

17. Plantation campaigns in schools may be ensured twice a year. It may not only beautify school environment but also inculcate positive attitude among students. Through such campaigns schools can inculcate civic responsibilities among students.

18. Since the textbook is the only learning tool in schools; therefore textbooks may be timely supplied to all students. Educational managers may establish a fool - proof mechanism for timely supply of textbooks with monitoring measures.

19. Professional development forums within schools may be meaningful, innovative effort may be made to achieve the desired learning outcomes and developing personalities of students. Particularly, newly appointed teachers must be oriented about schools' organizational culture.

20. A transparent and effective mechanism to deal with day to day issues may be established in schools so that all stakeholders remain on the same page.

Section - IV


Assessment determines career
NEAS

ANNEXES

ANNEX-I

INSTRUMENT DEVELOPMENT

Instrument development is a continuous, long term project for an assessment study. NEAS, with the assistance of subject experts from Curriculum & Textbook Wing, Islamabad, and Federal Directorate of Education, Islamabad compiled test booklets for Grade-8 & Grade-4 in the subjects of Urdu & Mathematics and English & Science respectively. All the subjects had one to three versions of the test booklets. Before administering test booklets at large scale, the items were piloted over a relatively small sample of 1000 students from 50 schools of District Abbottabad, Islamabad Capital Territory and Swabi. The items of the booklets were initially developed by the Subject Specialists of NEAS. At the next stage, the items were reviewed in a series of workshops organized by NEAS at Islamabad in 2013.

The workshop was organized with the following objectives:

- to have review of all items by the subject experts who were not part of item writing process.
- to develop technical capacity and sustainability for test development, which is part of continuous capacity building.
- to develop & review test specifications according to the weightage identified in the assessment frameworks & national curriculum documents.

Among highly significant features of all NEAS workshops, one of the most valuable and interesting features was that participants were chosen on the basis of subject specialization. The outcome of the workshop was the review of test specifications and 500 items for each subject. These specifications and test items were used for the pilot testing of Urdu (Reading, Writing) & Mathematics for Grade8 and English (Reading & Writing) & Science for Grade-4 in April 2013. The National Achievement Test -2014 was held accordingly on the completion of academic year in 2014. Interestingly, all tests were developed for the first time in NEAS, based on National Curriculum 2002-2006.

The foundation step of the assessment was the development of assessment frameworks for developing item specifications; items and tests. The assessment frameworks consisted of two dimensions – the content dimension and the cognitive dimension. The content domains define the specific subject matter covered by the assessment, and the cognitive domains define the sets of abilities and skills expected of students as they engage with the subject content (e.g. knowing facts and procedures, using concepts, solving problems, reasoning). Each content domain has several topic areas (e.g., number is further categorized by whole numbers, fractions and decimals, integers, and ratio, proportion, and percent; reading is further categorized by reading for information, reading to find the main idea, identifying genres, vocabulary, punctuation etc.). Achievement tests were developed on the basis of the National Curriculum, 2002-2006. On the other hand items were based on the first three ability levels, conceptual understanding, procedural knowledge and problem solving in Mathematics and in Languages {Urdu (Reading) & English (Reading)}. Generally NEAS measures the following aspects of reading in the context of literary experience, information, and performing a task:

- Forming a general understanding
- Developing interpretation

- Making reader/text connections
- Examining content and structure

In Languages {Urdu (Writing) & English (Writing)} the following three purposes for writing were identified:

- narrative writing – telling a story
- informative writing – informing the reader
- persuasive writing – persuading the reader

The specification table provided a guideline to the development of a comprehensive reliable, valid and practical test for the pilot testing in 2013. The same tests were later reviewed and finalized in Islamabad based workshops followed by final review by technical working group, comprising of the potential item writers, in a series of meetings held at NEAS, Islamabad.

It is pertinent to mention that the development of test specifications and frameworks were essential if the testing activity measures the elements for which it is being constructed. A test has to have a clearly stated purpose and should clearly describe the content areas and the grade level for which it has been developed. Also the length of time required for the test should be determined as this would have a direct effect on the number of items in the test and also the breadth of the curriculum to be tested. NEAS calculated time for each test of NAT-2014 on the basis of timing inferred from the pilot study of 2013.

The development of a test specification ensured that the test measured a representative sample of the curriculum content and its objectives. It ensured that the curriculum content was more likely to be assessed in a balanced way. Writing a test specification required:

- A list of all Student Learning Outcomes (SLOs) and hierarchy. The framework is developed on the basis of three levels of achievement –Knowledge consists of the simple recall of specific information; comprehension enables the students to demonstrate their understanding of the knowledge obtained and application is the students' ability to use their knowledge and understanding in different contexts and situations.
- The content of the subject areas.
- The weightage to be given to each of the SLOs.

Test specifications, test items and test development were based on assessment frameworks. The review process of test items and tests itself refers to the assessment frameworks. The test items consisted mainly of multiple choice items with some constructed response items (only for writing test). The main reason for this was that multiple choice items were easily marked and coded while constructed response items required a lengthy of training and exemplification of the acceptable answer for a national standard to be achieved through well-defined rubrics. A team of credible markers has been established in NEAS and its associated centres after ten years of rigorous efforts.

A series of workshop was held in 2013 to review the items in Urdu & Mathematics for Grade-8 and English & Science from the pool of items developed by the NEAS Subject Specialists, and special workshops were organized for the subject of English (Reading & Writing) as it was introduced in national assessment for the first time. Two parallel tests for Mathematics, three test booklets for Urdu (Reading) and two test booklets for Urdu (Writing) were designed for Grade-8. Similarly three parallel booklets each for English (Reading) & Science and one booklet for

English (Writing) for Grade-4 were introduced in NAT-2014. All tests were so designed that the items tested the key competencies, and only those competencies were included that could be tested in a pencil and paper test. The weightage given to the specific content areas was according to the weightage given in the National Curriculum 2002-2006.
The tests were further reviewed and printed for pilot testing in 2013. Time and financial constraints forced NEAS to organize pilot test over a small easily approachable sample. Pilot testing was a prerequisite for the NEAS to ensure that the demands of the tests were appropriate and also to identify items which were reliable, valid and discriminated appropriately.

A sample of 1000 students from two districts of Khyber Pakhtunkhwa and ICT took part in the pilot testing in 2013 in Urdu & Mathematics for Grade-8 and English & Science for Grade-4. From the results of the statistical analysis of the pilot items analyzed on SPSS and ConQuest software, items were selected and few additional items for specific SLOs were developed to 'fill in the gaps'. After item selection and writing additional items, formats for large scale testing were developed and administered for national assessment in 2014 to a representative sample size of 5600 students for each Grade-8 & 4. The items were then organized into:

- three test booklets for Urdu (Reading) Grade-8,
- two for Urdu (writing) Grade-8,
- two booklets for Mathematics for Grade-8
- three booklets for English (Reading), Grade-4,
- one for English (writing) Grade-4,
- two booklets for Science Grade-4

These test booklets were developed and given a unique identification code so that students would not be able to copy from each other. The test booklets looked alike at appearance but the inside text of each version of the test booklet contained 100% different items from the other version of the booklet.

The background questionnaires for Student/Parent, Teacher and Head Teacher were also developed. These questionnaires looked for such things as school conditions and climate; teachers and teaching practices; Supporting Inputs for schools; and, students' home backgrounds. Difficulties were encountered in constructing some of the questions, as well as in ensuring sufficient coverage of each background and context variable in relation to the reduced length of the questionnaires this time as compared to the questionnaires used in previous assessments. The length of the questionnaire and a test together to answer was really tough for the students, teachers and head teachers. The management of administering the assessment tools by all test administrators in the tight schedule was appreciable.

The distribution of assessment materials to the Provincial/Area Education Assessment Centres (PEACEs AEACEs), which were managing further distribution of materials and training of Test Administrators under tight deadlines, was a challenging task. All the materials arrived for the NAT-2014 assessment well in time but there were on-time delivery in case of remote areas of Sindh and Baluchistan as the deadlines for delivery were very short.

These problems were not directly linked with instrument development but were directly linked with test administration of NAT-2014 to some extent. To make these problems known to the stakeholders was deemed necessary for their understanding the assessment activities cycle. A few major difficulties experienced in NAT-2014 assessment process are listed below:

- limited time span for NAT-2014 as the financial year was approaching to closure,
- availability of already trained personnel,
- abrupt power outages,
- time constraint for data entry, verification and cleaning,
- time taken to answer the background questionnaires,
- three subjects each for two grades and three background questionnaires.

Some of the pages given below from different subjects instruments used in NAT-2014 include the title page, a portion of instructions for the students as well as a solved sample question to give an understanding to the students about the test. To make them more confident and relaxed for the test, mandatory 03 exercise questions were also given to solve with the help of test administrators before moving on to the actual test. The test time, 90-120 minutes at least, started after finishing exercise questions by the students. The test administrators were asked to ensure that every sample student went through the sample and exercise questions.

ANNEX-II

THE NATIONAL SAMPLE

NEAS agreed in principle to design a sample equally representing all explicit strata. The sample design for NAT-2014 was comparatively small in size because of available budget. The initial planned sample size was 8000 students for each Grade-8 & Grade-4. The sample size was later reduced to 5600 students for each grade-level due to 30% cut on the allocated budget of FY 2014-15.

The national sample design was based on the following basic parameters:

Explicit Strata: The total number of explicit strata was 32, the explicit strata include 4 provinces & 4 areas, rural & urban and boy & girl.

Stratum Size: The stratum size gives a picture about the participation of every single segment of the population at the average.

Total National Sample Size: 11200 students were planned for NAT-2014, 5600 students for each Grade-8 & Grade-4 from all over Pakistan. 5219 students (93%) and 4287 students (77%) of the planned sample size for Grade-8 and Grade-4 took part in the national assessment respectively.

NEAS kept in mind the following basic and operational principles of the sampling for NAT-2014 sample design:

Basic Principles

i) Sampling requires a **frame**, a list from which the sample can be selected

ii) Ideally, a frame consists of a complete population list, from which the sample can be selected at random.

iii) In the case of education, the ideal frame would involve identifying all the schools with relevant students, and gathering a list of students from each.

iv) Schools are picked up from the sampling frame through a 'random number'. Fixed number of students were chosen through similar 'random number table' for every single sample school.

v) A random sample was the best way to estimate population parameters. But it was not necessarily best for all purposes. In comparing sub-populations (e.g., boys with girls), it was best to have equally precise estimates from each sub-population. This was only the case when the samples were of equal size, regardless of the sizes of the different sub-populations.

vi) Therefore, dividing the total population into separate strata according to the sub-groups for which we were required to report reliable estimates was not possible.

vii) This, therefore, determines the explicit strata in our sample – Province/Area, boys, girls, urban, rural.

viii) There were also implicit strata – for example, different types of school – that were not major dimensions for analysis, but it was important to ensure that the diversity of the stratum was well represented.

Operational Principles

ix) In practice, the best available frame comes from the NEMIS. It consists of a list of schools, rather than individual students.

x) We, therefore, select schools, and ask the schools to select the students following a standard procedure.

xi) The frames come from NEMIS in the form of an MS Access database, from which NEAS extracted an MS Excel worksheet for each area.

xii) This contains all the background information needed for both selecting the sample and contacting the schools.

Table 139. NEMIS Database Showing Number of Schools Grade-8

Province/area	Rural		Urban		
	Boy	Girl	Boy	Girl	Total
AJK	821	798	47	58	1724
Baluchistan	900	436	249	192	1777
FATA	448	163	-	-	611
Gilgit Baltistan	272	121	37	36	466
ICT	61	70	27	37	195
Khyber Pakhtunkhwa	2678	1470	273	222	4643
Punjab	5648	5832	1106	1329	13915
Sindh	2008	923	764	709	4404
Total	12836	9813	2503	2583	27735

Table 56. Gives the total number of Middle, Higher and Higher Secondary schools functioning in Pakistan. Province/Area-wise figure of the schools can also be perused in the opposite columns of rural & urban with further breakup of boy & girl.

Table 140. NEMIS Database Showing Number of Students Grade-8

Province/area	Rural		Urban		
	Boy	Girl	Boy	Girl	Total
AJK	17488	12529	2108	1815	33940
Balochistan	12452	3914	11549	7970	35885
FATA	9917	2419	-	-	12336
Gilgit Baltistan	5090	1871	1061	1075	9097
ICT	2777	3455	3284	3606	13122
Khyber Pakhtunkhwa	108808	49967	21924	17858	198557
Punjab	233138	155393	12092	120170	520793
Sindh	91695	28514	41403	50250	211862
Total	**481365**	**258062**	**93421**	**202744**	**1035592**

The total figure of enrolled students at Grade-8 in the NEMIS database was 1035592. Punjab has the highest enrollment 520793 and the lowest enrollment as per NEMIS database is 9097 of Gilgit Baltistan.

Table 141. NEMIS Database Showing Number of Schools Grade-4

Province/area	Rural		Urban		
	Boy	Girl	Boy	Girl	Total
AJK	2719	2821	122	153	5815
Balochistan	7507	2671	929	460	11567
FATA	2517	1735	-	-	4252
Gilgit Baltistan	722	232	70	69	1093
ICT	111	108	53	33	305
Khyber Pakhtunkhwa	14022	7433	797	508	22760
Punjab	26430	23909	2610	3065	56014
Sindh	28836	8054	2777	1744	41411
Total	82864	46963	7358	6032	143217

Throughout Pakistan the functional primary schools are 143217 as indicated in the NEMIS database. Rural boy & girl schools are 129827 (91%) of the total registered Govt. primary schools. The figure for the urban schools in Pakistan is nine times smaller than that the figure of rural schools.

Table 142. NEMIS Database Showing Number of Students Grade-4

Province/area	Rural		Urban		
	Boy	Girl	Boy	Girl	Total
AJK	24984	22891	1373	1541	50789
Balochistan	39723	22330	17036	12159	91248
FATA	27957	19930			47887
Gilgit Baltistan	7574	3095	838	1089	12596
ICT	7558	8473	970	674	17675
Khyber Pakhtunkhwa	242235	117515	26409	10319	396478
Punjab	429009	329672	85554	108482	952717
Sindh	247716	62598	70286	45674	426274
Total	**1026756**	**586504**	**202466**	**179938**	**1995664**

The table 142. Indicates the total enrolled population 1995664 students at Grade-4. The total rural population of Grade-4 students is 1613260, which is 81% of the total students on roll. The urban students enrolled at Grade-4 are 382404.

Table 143. Location Wise School Sample Grade-8

Province/Area	Planned		Achieved	
	Rural	Urban	Rural	Urban
AJK	5	4	5	4
Balochistan	12	11	12	11
FATA	9	0	9	0
Gilgit Baltistan	4	5	4	5
ICT	6	5	6	5
Khyber Pakhtunkhwa	27	11	26	11
Punjab	43	42	42	40
Sindh	23	17	23	16
Total	129	95	127	92

The sample proposed and planned for NAT – 2014 at grade 8 level comprised of 224 schools. Out of the total sample of schools, 129 were rural area schools and 95 schools were representing the urban population.

The number of school wherefrom the students were actually assessed was 219 (98% of the total sample). The test administrators could reach 127 (98.44%) rural schools and 92 urban schools out of 95 proposed planned samples for grade 8 level urban area schools. The urban assessed schools were 97% of the planned sample.

Table 144. Location Wise Student Sample Grade-8

Province/Area	Planned		Achieved	
	Rural	Urban	Rural	Urban
AJK	125	100	90	123
Balochistan	300	275	303	206
FATA	225	0	204	16
Gilgit Baltistan	100	125	154	54
ICT	150	125	90	177
Khyber Pakhtunkhwa	675	275	658	231
Punjab	1075	1050	1076	938
Sindh	575	425	426	473
Total	3225	2375	3001	2218

The school sample planned for NAT – 2014 comprised of 224 schools. A maximum of 25 students were selected on random basis from each planned school. The rural schools planned were 127 and students sample planned was 3225 (57.58%) for rural schools. The number of student sample planned for urban 95 schools was 2375 (42.41%). Thus a total of 5600 students were planned from 224 schools.

An overall student sample achieved for grade 8 was 5219 (93.19%). Out of 3225 planned rural students sample, the number of students achieved was 3001 (93.05%). In case of urban student sample achieved, the figure was 2218 (93.38%). In general the student sample achieved for grade 8 with reference to the location rural and urban is satisfactory.

The student sample of Grade-8 with reference to location has its own significance as the population of Pakistan is divided into rural and urban basis. Since the provision of facilities to both urban and rural areas is not equal due to numerous unavoidable circumstances, one of which is the financial budget allocation for the uplift of physical facilities for the schools, the performance of the students is thus affected, so having a look on the sample in that context is very important. The total number of students participating in sample was 5219 in NAT – 2014 out of which 3001 students were from rural areas of Pakistan and 2219 from urban areas of the country. The assessed rural student sample was 58% of the students who participated in NAT – 2014, and 42% were urban students.

Table 145. Gender-Wise School Sample Grade-8

Province/Area	Planned		Achieved	
	Boy	Girl	Boy	Girl
AJK	5	4	5	4
Balochistan	13	10	13	10
FATA	5	4	5	4
Gilgit Baltistan	5	4	5	4
ICT	6	5	6	5
Khyber Pakhtunkhwa	25	13	25	12
Punjab	43	42	42	40
Sindh	24	16	23	16
Total	126	98	124	95

Due weightage was given to the strata, gender in the NAT – 2014 sample. A total sample of 224 schools was planned. Out of these 126 (56.25%) were boy schools and 98 (43.75%) were girl schools. The gender representation was given on the basis of actual population. The same principle was kept in mind while planning sample on gender basis for the provinces and areas. The highest boy and girl sample schools were chosen 43 and 42 respectively from Punjab. The lowest gender sample was taken for AJK, FATA and Gilgit Baltistan.

The school sample achieved was 219 (97.76%) in total. The boy schools achieved were 124 (56.62%) of the achieved sample. The girl sample achieved was 95 (43.38%) schools. The highest school sample was achieved from Punjab both for boys and girls. The lowest school sample achieved for gender was from AJK, FATA and Gilgit Baltistan.

Table 146. Gender-Wise Student Sample Grade-8

Province/Area	Planned		Achieved	
	Boy	Girl	Boy	Girl
AJK	125	100	114	99
Balochistan	325	250	363	146
FATA	125	100	150	70
Gilgit Baltistan	125	100	92	116
ICT	150	125	177	90
Khyber Pakhtunkhwa	625	325	591	298
Punjab	1075	1050	987	1027
Sindh	600	400	533	366
Total	3150	2450	3007	2212

One of the explicit strata in NAT – 2014 study was the gender of the students. The gender, boys and girls, was given due weightage in the sample proportionate to the actual population. The overall students assessed were 5219 out of 5600 total students, which was 93% of the total. The boys assessed were 3007 of the total student sample, which was 58% of the student sample. The girls assessed were 2212 in number and were 42% of total assessed student sample.

Overall 5600 students were planned for grade 8 from 224 schools with the selection of a maximum of 25 students from each school. The boys sample planned comprised of 3150 (56.25%) and girls was 2450 (43.75%). Since the sample was based on PPS, therefore, the highest sample both for boys and girls was taken from province of Punjab, which was 37.94% of the total planned sample. The lowest sample for NAT – 2014 was from three areas, AJK, FATA and Gilgit Baltistan with 4.01% of the planned students' sample.

During the NAT – 2014 the students assessed were 5219 (93.19%) of the planned students sample. The boy student sample assessed was 95.46% of the planned sample for boys and the girls assessed were 90.28% of the planned sample for girls. The boy sample achieved was 5.18% higher than the girls.

Table 147. Location-Wise School Sample Grade-4

Province/Area	Planned		Achieved	
	Rural	Urban	Rural	Urban
AJK	5	4	5	4
Balochistan	11	10	11	10
FATA	9	0	9	0
Gilgit Baltistan	6	5	6	5
ICT	5	6	7	4
Khyber Pakhtunkhwa	18	18	15	17
Punjab	50	41	49	39
Sindh	19	17	16	14
Total	123	101	118	93

In NAT – 2014 the total sample planned for grade 4 was 224 schools. Due representation was given to the rural and urban schools as per the actual number of schools. The rural schools planned were 123 (54.91%) of the total sample and the urban schools were 45.08% of the total sample. One of the basic features of the NAT – 2014 school sample was that the urban participation from FATA is zero as no urban area existed there.

During NAT – 2014 at grade 4 level 211 (94.19%) schools were achieved. 118 schools were from rural areas of Pakistan, which were 95.93% of the rural planned sample. The urban schools reached were 93 (92.07%) out of 101 planned schools sample. The rural schools assessed during NAT – 2014 were 3.86% more than the urban schools.

Table 148. Location-Wise Student Sample Grade-4

Province/Area	Planned		Achieved	
	Rural	Urban	Rural	Urban
AJK	125	100	103	94
Balochistan	275	250	183	176
FATA	225	0	88	25
Gilgit Baltistan	150	125	111	137
ICT	125	150	88	140
Khyber Pakhtunkhwa	450	450	505	267
Punjab	1250	1025	1071	818
Sindh	475	425	248	233
Total	3075	2525	2397	1890

The number of students planned for NAT – 2014 at grade 4 level was 5600 from 224 schools. The number of rural students was 3075 (54.91%) of the total students sample, and urban students sample was 2525 (45.09%) of the total students sample. The highest number of students at grade 4 for both rural and urban was from Punjab. The lowest participation of rural and urban students was from AJK. There was no urban student from FATA as none of the area from FATA was declared as urban.

Table 149. Gender-Wise School Sample Grade-4

Province/Area	Planned		Achieved	
	Boy	Girl	Boy	Girl
AJK	5	4	5	4
Balochistan	11	10	11	10
FATA	5	4	5	4
Gilgit Baltistan	6	5	5	6
ICT	5	6	7	4
Khyber Pakhtunkhwa	20	16	19	13
Punjab	52	39	51	37
Sindh	21	15	16	14
Total	125	99	119	92

The boys and girls at grade 4 level in NAT – 2014 were given weightage in the sample on the basis of their actual enrollment. The boy schools planned were 125 (55.80%) of the total sample of 224 schools. The planned sample for girl schools was 99 (44.20%).

The schools assessed at grade 4 level during NAT – 2014 were 211 (94.19%) of the total sample. The boy schools assessed were 119 (95.20%) of the total sample for boy schools. The girls' schools reached in NAT – 2014 were 92 (92.92%) out of 99 girls sample schools. The data collected from boy schools was 2.28% more than the girl schools.

Table 150. Gender-Wise Student Sample Grade-4

Province/Area	Planned		Achieved	
	Boy	Girl	Boy	Girl
AJK	125	100	84	113
Balochistan	275	250	218	141
FATA	125	100	63	50
Gilgit Baltistan	150	125	101	147
ICT	125	150	103	125
Khyber Pakhtunkhwa	500	400	431	341
Punjab	1300	975	1011	878
Sindh	525	375	261	220
Total	3125	2475	2272	2015

At Grade-4 level, a total sample of 5600 students was planned. Out of the total planned sample 3125 (56%) students were boys and girls were 2475 (44%). The number of achieved boy sample was 2272 which was 73% of the planned boy sample. Similarly the assessed figure of girl students was 2015 and were 81% of the total girl planned sample. The participation rate of girls was 8% more than that of the boys.

ANNEX-III

TEST ADMINISTRATION

The test administration of NAT-2014 took place simultaneously on 26-27 May 2014 in AJ&K, FATA, Gilgit Baltistan, ICT, Khyber Pakhtunkhwa and Punjab. In Sindh it was done on 28-29 May, 2014 and in Baluchistan it was conducted a little later on 2-3 June, 2014 due to some administrative problems on the side of PEACEs. Purposely 448 test administrators were trained, each for one sample school, throughout the country. The lead master trainers were trained on May 10, 2014 in accordance with the instructions incorporated in the Test Administration Guideline Manual at Islamabad. They were responsible for imparting similar training at various convenient training centres. The NEAS,FDE, C&TW,PEC, PEACEs, AEACEs staff and senior officers of the education departments and other representatives, monitored the test administration throughout the country.

For uniformity of test administration in NAT-2014 assessment, training was provided to the Test Administrators from Department of Education, and teacher training colleges. Majority of TA's already remained involved in assessment studies with NEAS in the past which minimized error margin to great extent.

Some of the difficulties identified in the test administration are as follows:

- It was observed with great concern that some of the Test Administrators did not follow the guidelines of test administration imparted during training as well as incorporated in the manual.
- Some of the Test Administrators did not always appreciate the need for the assessment to be conducted in a rigorous manner.
- Test Administrators did not always use the examples in the test booklets to familiarize the students with the test methodology;
- After the devolution of MoE, arrangement of required test administrators for NAT-2014 assessment was a tough task due to the approaching summer vacation in schools, marking of papers and preparation of SSC & FA/F.Sc results by the teachers for the Board of Intermediate and Secondary Education (BISE) etc.
- Communication problems occurred due to poor mobile signals in some remote sample school areas where the tests were administered. The officials of PEC, PEACE, AEACEs and the officials of NEAS could not be contacted easily.

ANNEX-IV

MONITORING NAT-2014

To enhance the validity and reliability of the data collection, monitoring was undertaken in two areas:

- Monitoring the test administration of NAT-2014 national assessment randomly by the senior officers of the NEAS, FDE, C&TW, PEC, PEACEs, AEACEs, Provincial/Area Education Departments and,
- Monitoring the marking and coding of the assessment instruments NAT-2014.

Monitoring the Test Administration of NAT-2014

The main objective of monitoring the NAT-2014 national assessment was to ensure the validity of the assessment data. It was important that all aspects of the assessment were standardized, including the administration of the assessment instruments.

The monitors consisted of the experts from NEAS, FDE, C&TW, PEC, PEACEs, AEACEs, Provincial / Area Education Departments. The monitors monitored the assessment activity and reported back to the NEAS on how the test administrators followed the guidelines given during the test administration training.

Monitoring the Marking and Coding of the Assessment Instruments

Marking and coding of all the scripts of Urdu (Reading & Writing) & Mathematics for Grade-8 and English (Reading & Writing) and Science for Grade-4 in NAT-2014 national assessment was undertaken in NEAS. Clear and comprehensive instructions regarding the marking and coding were given to the personnel involved.

The responsibility of the monitors was to:

- Ensure that the marking and coding was conducted in an efficient and fair manner.
- Provide support to those markers and coders who were having some difficulty.
- Identify marking and coding discrepancies and correct them where possible.
- Take a 25% sample of the marking and coding sheets to identify the validity of the marking and coding.
- Ensure that the correct code was used on the coding sheets.
- Ensure that no malpractice took place such as the deliberate alteration of a mark to inflate or deflate a student's original marks.
- Ensure that the assessment instruments were complete and returned appropriately when the marking and coding was completed.
- Clear understanding of rubrics and award of codes.

Some of the difficulties identified in these activities were:

- Monitors are required to be assigned sample school for monitoring. Only high level officers may be at liberty to monitor schools of their own choice convenient to them.
- Test Administration Monitors need to be given a structured monitoring form as to how they should behave/react if they observe that the assessment instruments were not being administered appropriately.
- There was a need for the training of the markers and coders to be more rigorous.
- There was a need to raise the percentage of monitoring of both the assessment booklets and coding sheets as 25% students on coding sheets was not sufficient to ensure that the marking was being conducted efficiently and fairly.
- Monitoring forms need to be revised in the light of monitors' practical experience.
- Monitoring reports need to be compiled properly for appropriate decision making for the future national assessments.
- Percentage of monitors needs to be increased to reach the remote and hilly sample schools as well.

ANNEX-V

MARKING AND CODING ASSESSMENT INSTRUMENTS

The team of NEAS Subject Specialist plan different strategies for marking & coding the assessment instruments. For NAT-2014 national assessment, marking and coding methodologies were developed by each of the subject specialists for his respective subject including rubrics for the constructed response items (mostly for Urdu & English Writing). For the constructed response items given in the tests of Urdu & English Writing general criteria was set with clear rubrics and prompts and agreement was reached as to what was acceptable for a code to be allocated.

Coding sheet for Urdu (Reading & Writing) & Mathematics for Grade-8 and English (Reading & Writing) & Science for Grade-4 were developed for markers and coders using the Excel program. Each possible answer was given a specific code. Where a student had not answered a code of 8 was given and where a student has not yet reached the question a code of 9 was given.

Final year students of Bachelor of Science Education programme from the Federal College of Education, Islamabad were hired for the manual marking and coding. This involved marking and coding of approximately 57036 scripts in all six subjects and two grades. They were instructed on how to enter the data on the coding sheets before the start of the marking and coding process. They were paid for the completion of each booklet. Due to the large volume of work to be completed in a limited time, delays and problems in marking and coding and later in data entry were encountered due to power outages.

The staff of the NEAS was involved in the monitoring of this activity, checking 25% of the data. Checking the data involved taking every sheet and checking 6-7 out of the 25 students on each sheet. This was too onerous task even then every single sheet was checked. Where mistakes were found the markers and coders employed were asked to recheck their sheets and correct the mistakes.

When some of the NEAS monitoring staff rechecked the data, it was found that:

- There were mistakes in the manual data entry. The codes were not accurately entered;
- As only 6-7 students out of 25 were checked on each sheet. It was ensured to check 25% of the total data.
- There were also some mistakes in the data entry of the scores but these were negligible and data was cleaned before carrying out its analysis.
- When the SPSS data was checked the missing figures were deleted.
- Duplicate Case ID's were also carefully checked.

The process of marking and coding test booklets was a demanding task. The difficulties that have arisen from the methodology used for marking and coding should be reviewed. The process of marking and coding could be standardized by making lessons learnt part of the next cycle of data marking and coding. During the markers' and coders' training – besides explaining the methodology, trial runs of entering the data should take place and where the scorers and coders have difficulty their participation should be discontinued. As well as the monitoring of the scoring and coding should be much more rigorous and manageable with 25% students at random on every single coding sheet were monitored.

ANNEX-VI

ITEM AND BACKGROUND DATA ANALYSES

In normal practice data analyses takes place in three Phases:

- Phase-I includes item and reliability analysis of the pilot data for selection of test items.
- Phase-II consists of Microsoft Excel for sample selection.
- Phase-III Sample Weight is applied in Excel; while, Phase-III consists of achievement and background data analysis to determine the correlates and determinants of achievement among the students population.

To have a better understanding of softwares used for each phase of analysis, the description of softwares is given below:

Phase I: Microsoft Excel
This was used at the stage of sample selection and was quite helpful in basic arrangements of sampling frames, calculations of sampling intervals, generating random number seeds and sorted lists of sampled schools.

Phase II: Item Analysis
Item analysis was carried out using the following programs:

i) **SPSS** was used mainly for data input and some basic descriptive and graphical analysis to supplement ITEMAN outputs.

Phase III: Achievement and Background Data Analysis

ii) **WINSTEPS** was based on Rach IRT analysis. NEAS used WINSTEPS for one parameter (item difficulty) IRT analysis as a basis for scaling from NAT 2005. IRT parameters were sample independent and provide the basic statistical information about each individual item.

iii) **AM** software by American Research Institute was used for a limited range of analysis at NEAS. Particularly AM was used for application of tests of significance, and computation of raw frequencies. The program has a provision for automatic weighing and estimation of standard errors using Jackknife.

iv) **ConQuest** software by Australian Council for Educational Research (ACER), Australia was used for IRT analysis especially item statistics i.e. item difficulty, correlation, discrimination, Item Characteristics Curve (ICC), test information curve, differential item function (DIF).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