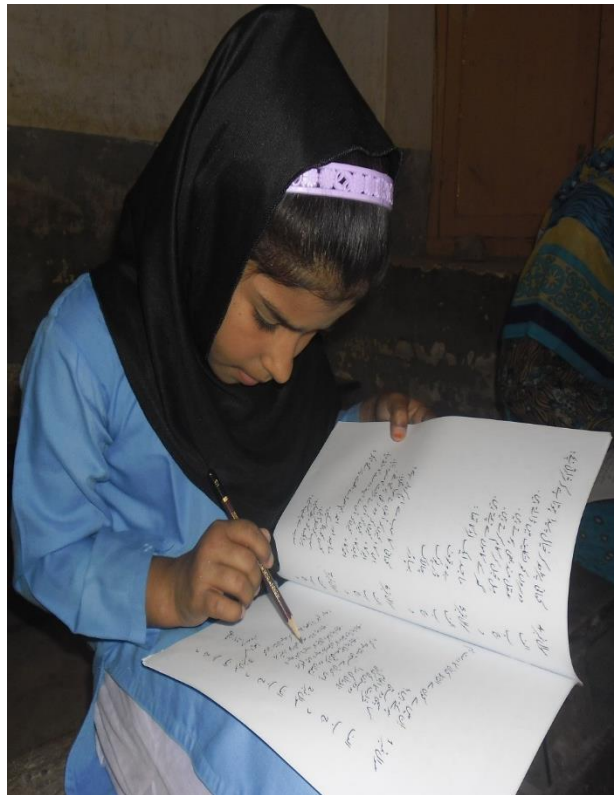




Provincial Achievement Test 2015 Report



Provincial Education Assessment Centre (PEACE), Sindh
June 2015

Provincial Achievement Test 2015 Report

Organized by

Provincial Education Assessment Centre (PEACe)
Bureau of Curriculum and Extension Wing Sindh Jamshoro

Collaboration

European Union & British Council, Karachi

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Khalid Mahmood, PhD

The Consultant

ACRONYM

BC	British Council
BoC	Bureau of Curriculum
BQs	Background Questionnaires
CRQ	Constructed Response Question
CRQs	Constructed Response Questions
CU	Conceptual Understanding
D.I	Discrimination Index
D.Int	Developing Interpretation
DEO	District Education Officer
DFP	District Focal Person
EU	European Union
EX.C & St	Examinee Content and Structure
GECE	Government Elementary College of Education
GoS	Government of Sindh
GU	General Understanding
IRT	Item Response Theory
LMT	Lead Master Trainer
MCQ	Multiple Choice Question
NEAS	National Education Assessment System
PAT	Provincial Achievement Test
P value	Percentage Correct
PEACE	Provincial Education Assessment Centre
PITE	Provincial Institute of Teacher Education
PPS	Probability Proportional to Size
PS	Problem Solving
RSU	Reforms Support Unit
SAT	Scholastic Ability Test
SD	Standard Deviation
SEMIS	Sindh Education Management Information System
SESSP	Sindh Education Sector Support Programme
SLO	Student's Learning Outcome
SPAT	Sindh Provincial Achievement Test
STBB	Sindh Textbook Board
TA	Test Administrator

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EXECUTIVE SUMMARY

Students' achievement and performance measured through a large-scale assessment provide outcome data for decision-making and planning at all levels of an education system. Measuring achievement is important to raising standards and to meeting public expectations that all students receive quality education. To achieve this purpose coupled with revitalization of the Provincial Education Assessment Centre (PEACE) in the province, the Education and Literacy Department, Govt of Sindh, decided to conduct a large scale achievement test of grade IV students in the province. By developing an overall plan for the task, the work was started in May 2014 with technical assistance of Sindh Education Sector Support Programme (SESSP) - a European Union (EU) funded programme. As per plan there were three major phases of the task with hands-on capacity building of the PEACE staff and its allied professionals. During phase-I focus was on development of assessment frameworks for three subjects [science, mathematics and languages (Sindhi/ Urdu/ English)], manuals and guidelines for the Test Administrators (TAs) and district focal persons respectively. Development of assessment items used in the Provincial Achievement Test (PAT) and procedure adopted to conduct it, training of TAs and piloting of developed assessment items, were also part of phase-I. In phase-II the assessment items and the procedure of conducting the test was reviewed in the light of data gathered during the piloting, finalization of assessments of the three subjects and conduct of the large scale assessment. In the phase-III, the concluding phase, conduct of PAT and dissemination of its report were the major activities. **This report focuses on phase III that includes the details of curriculum based test development at PEACE with help of its associates, the basic issues and procedures for selection of sample, particularly problems of low enrolment in some rural areas and application of sampling weights to rectify the imbalances of the population due to low enrolment in rural areas. Results of the PAT 2015, in terms of mean percentage scores and the description of background and context variables on students' achievement are also presented.**

THE PROVINCIAL ACHIEVEMENT TEST 2015

In April 27-30, 2015, PEACE- Sindh conducted a sample based provincial survey at grade 4 in three subjects; science, mathematics, and languages (Sindhi/Urdu and English). A sample of 1656 public schools were selected through stratified random sampling and maximum 20 students were selected through stratified random sampling in all 23 districts of Sindh province. In this way tests were administered in 1617 (out of 1656) schools and the test was taken by 22750 (out of planned 33120) students in total. The selected students participated in the achievement tests for four days (one test per day). The information on a student parent background Questionnaire was also filled out by student as well as parents. Subject Teachers and head teachers also filled their questionnaires (Background Questionnaire) during the assessment.

The purpose of study was to measure the students' achievement and provide suggestions to Sindh Government for improving the quality of education through the development of quality

textbooks, improved curricula and assessment system, and bring improvements in teachers' training.

SUBJECTS WISE RESULTS AT A GLANCE

Following chart gives the overall subject-wise achievement of the students of grade IV in Sindh

Subject	Science	Mathematics	Sindhi	Urdu	English	overall
% Mean Score	40.61	31.64	49.62	39.29	40.31	40.29

The results of survey show that students' overall achievement in grade 4 is around 40% and is below than 50% for every subject. The most difficult subject for the students is mathematics and they have expressed their best understanding in Sindhi language. With respect to gender, there is a significant difference in the achievement of level between boys and girls students in almost all subjects except Sindhi language, where no difference was found. However, boys have performed better than girls in all subject expect English.

SUBJECT WISE MAIN RESULTS OF THE SURVEY

Below are subject-wise key results drawn from the analysis of data gathered from the PAT 2015.

KEY RESULTS SCIENCE

1. Students achieved an overall science mean score of 40.61%, which is below the mean score of 50%.
2. Students performed best in physical science (42.55%) followed by the area of life science (41.91%) and Earth and space science (34.98%).
3. Boys performed better (40.67%) than girls (40.55%) in overall in the subject. The difference between boys' and girls' performance is significant.
4. Students from rural areas performed better (41.6%) than urban (39.68%) areas students in the subject.

KEY RESULTS MATHEMATICS

- Students achieved overall mean score of 31.64%, which is also below the mean score of 50%.
- Students performed better in the area of 'measurement' (38.84%) as compared to other area of mathematics i.e. number & operations (32.81%), geometry (23.63%) and information handling (27.63 %).
- Performance of boys students was better (32.64%) than girls (30.60%) in overall achievements in mathematics. The difference between boys' and girls' performance is significant.

- Students from rural areas performed better (32.67%) than urban (30.65%) areas students. The difference in their mean score is significant.

KEY RESULTS LANGUAGES (SINDHI)

1. Students achieved an overall mean score of 49.62% in Sindhi language, which is much closed to the mean score of 50%.
2. Students perform better in 'reading' where mean score is 58.19% and found difficulties in 'writing' where mean score is 30.46%, which quite low than their score in reading.
3. Students obtained average scores of 57.03% for answering questions about a story; 62.05% for questions about a poem; 60.10% for questions about information provided; 57.51% for vocabulary; 49.17% for their understanding of grammar, 61.86 % for understanding of the Sentence structure.
4. Girls performed better (49.69%) than Boys (49.56%) in Sindhi language.
5. Students in rural areas performed better (50.54%) than urban (48.55%) areas students.

KEY RESULTS LANGUAGES (URDU)

1. Students of Urdu language achieved an overall mean score of 39.29%.
2. Students perform better in 'reading' where mean score is 44.90%, and found difficulties in 'writing' where mean score is 26.74%, which considerably low than their score in reading.
3. Students obtained average score of 40.34% for answering questioning about a story; 48.52% for questions about a poem; 46.05% for questions about information provided; 46.80% for vocabulary; 40.10% for their understanding of grammar, 52.40 % for understanding of the Sentence structure.
4. Boys performed better (39.95%) than Girls (38.96%) in in the language.
5. Students from urban areas performed better (39.77%) than rural (36.28%) areas students.

KEY RESULTS LANGUAGES (ENGLISH)

1. Students achieved an overall reading mean score of 40.31% in English language.
2. Students perform better in 'reading' where mean score is 47.69% and found difficulties in 'writing' where mean score is 21.09%, which is considerably low than their score in reading.
3. Girls performed better than boys in overall English.

KEY RESULTS ON BACKGROUND VARIABLE

1. Students showed better results who taught by father, mother, brother/sister.

2. It was observed that students, who have facilities of the peaceful place and computer/internet for study at home, performed better than those who have not peaceful place and computer /internet at home for study.
3. The students who were appreciated in the class have performed better.
4. The facilities available at schools i.e. drinking water, boundary wall, ceiling fans, playground and toilet have positive impact on students' performance.
5. Students who were taught by use of curriculum, textbooks, lesson plan, AV aids, achieved better score.

The analysis of background and context variables in relation to achievement scores revealed that several variables related to student home background, teaching-learning processes and teaching practices were important in determining students' achievement positively or negatively.

Finally, it would be important to note that the development of a provincial assessment system is a complex and challenging task. The preparation and implementation of the PAT 2015 was carried out under tight deadlines. Furthermore, PEACe sample design in PAT 2015 has posed some logistics problems and for future it should employ some modified design that could reduce some of the problems without compromising the representative or random features of the sample. These constraints were coupled with insufficient staff in the PEACe. To ensure that the assessment was conducted in an efficient and timely manner many of the staff were assigned multiple tasks. E&L Department should, therefore, try to fill staff vacancies at earliest on a permanent basis.

The capacity building that takes place through hands-on work and training with support from Technical Assistance is dissipated when there is rapid turnover of staff. This situation works against sustainability and institutionalization of the PEACe.

PEACe has generated a large amount of data which can be used for research to identify specific variables that are associated with high student achievement. It is proposed that PEACe should coordinate with universities' faculty/department of education to encourage their students for carrying out such studies and explore various options to improve system of education in Sindh by allowing them to use its database for research.

1. INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION AND BACKGROUND

Policymakers and educators have identified a number of approaches to reforming the national/provincial public schools. These range from girls stipend and teacher training initiatives to standards-based accountability systems. The ultimate test of a reform's success is the degree to which student achievement is improved. Consequently, student assessment is at the heart of virtually all educational reforms. Many policymakers want to use tests to assess how well schools fare when compared to schools in the same district or province or in the nation. This information could be used to motivate school personnel, to reward successful efforts, and to indicate where additional resources or changes in practices are most needed. Improvements in the system of education, particularly the curriculum and the instructional strategies are made in light of the feedback provided by the assessment process. Carr and Harris (2001) describe a comprehensive assessment system that draws on data from the state/national level, the district/school level, and the classroom level to a) improve education, b) determine success, and c) provide feedback to relevant stakeholders (e.g., students, teachers, policy makers, administrators, the community).

Government of Sindh, Education and Literacy Department planned to conduct a Provincial Achievement Test (PAT) to help provide information relevant to policy makers and implementers on overall performance of education system and factors that contribute to the performance including especially the quality of textual materials provided to the students.

ROLE OF PEACE IN SINDH EDUCATION AND LITERACY DEPARTMENT

Monitoring student learning outcomes and school performance is multifaceted, and the practice of monitoring varies substantially across countries. This multifaceted monitoring can include large scale national, sub-national or international assessments, public examinations, school-based assessments and classroom assessments, which can be standardized or non-standardized (Clarke, 2012). Many countries establish national/sub-national monitoring systems like Provincial Education Assessment Centre (PEACE) to collect information on student learning outcomes and to develop indicators of school performance at national and sub-national (including local and school) levels for comparing, benchmarking and developing interventions as well as policies to improve educational outcomes.

1.2 SINDH PAT

PEACE Sindh is a part of the Bureau of Curriculum (BOC), entrusted to carry out educational assessments on an annual basis. For the purpose, Government of Sindh (GoS) allocates a specific budget under the overall budget of Reforms Support Unit (RSU). Nonetheless, the PEACE activities were not being carried out owing to various reasons including the annual plan of PEACE not put in place. Although a multi-year plan had been under discussion to operationalize PEACE but that was not endorsed by RSU. Accordingly, the budget released by Finance

Department to the RSU could not be further disbursed to the PEACe. Discussions were held on operationalizing PEACe, in the last quarter of the fiscal year 2013/14. It was agreed, in principle, that EU TA would work with PEACe and RSU teams to come up to an agreed with an operational plan, for the last quarter of the fiscal year at the earliest along with working out the detailed activities plan for conducting the PAT in the financial year 2014/15.

OBJECTIVES OF SINDH PAT

The purpose of carry out the task through PEACe was two folded:

I. To facilitate GoS in:

- a. evidence-based decision making,
- b. reviewing the textbooks implemented for curriculum 2006 and create research based data on the effectiveness of the new textbooks.
- c. planning teacher capacity building to facilitate delivery of new curriculum, and
- d. resource allocation for education sector.

II. To operationalize PEACe.

To achieve these objectives, it was decided to conduct assessment of grade IV students, as for academic year 2014-15 the new textbooks were distributed up till this grade only. Following subjects were assessed:

1. Mathematics
2. Science
3. Languages
 - a. English
 - b. Sindhi /Urdu

PHASES OF SINDH PAT

A consultant was hired to support PEACe team to not only carry out the assessment task (Terms of Reference are attached as Appendix 1) but also develop capacity of PEACe team to perform on such tasks in future. The entire exercise was divided into six stages:

Phase-I

Stage 1. Planning of assessment

Stage 2. Development of assessments

Stage 3. Piloting of assessments

Phase-II

Stage 4. Review and finalization of assessments in the light of piloting

Phase-III

Stage 5. Conduct large scale assessment

Stage 6. Report dissemination

The entire process for these three stages is depicted in the Fig.1

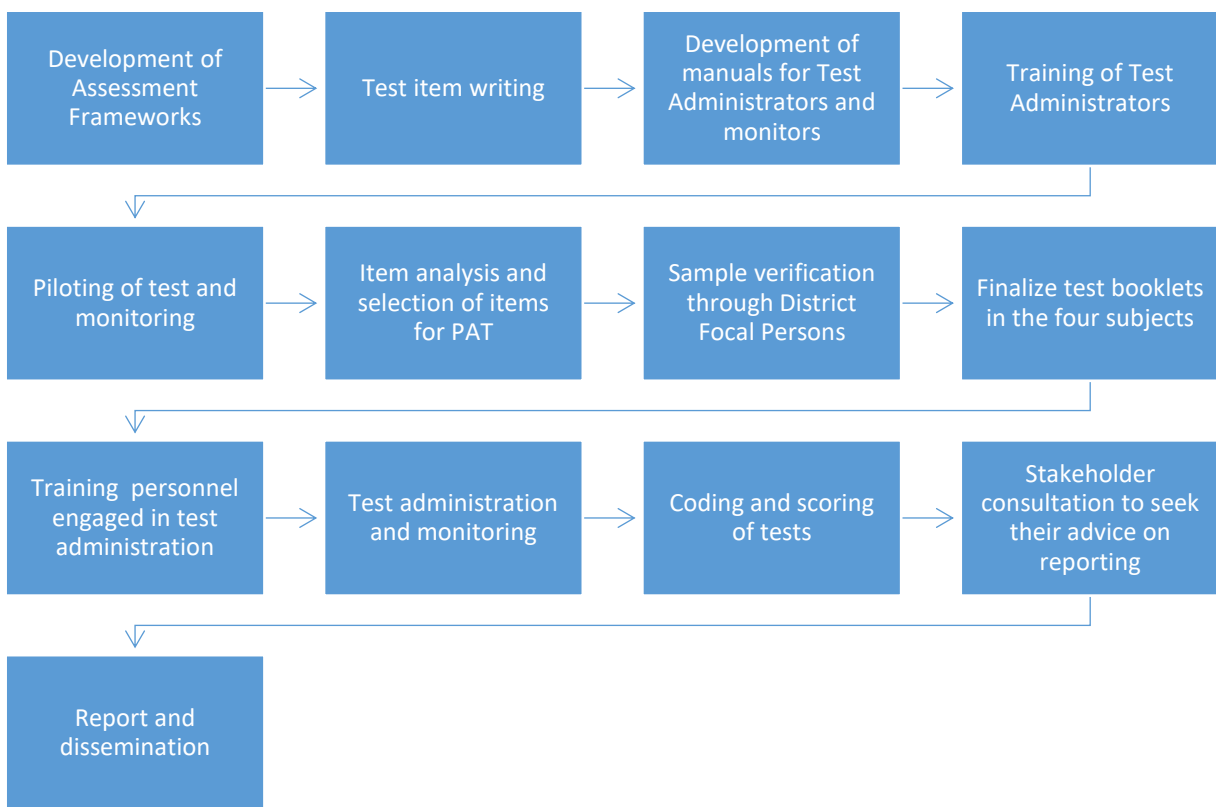


Figure 1.1 Process for developing assessment booklets for PAT

2. METHODOLOGY

BRIEF OF KEY STAGES OF SINDH PAT-2015

There is a wealth of assessment methods and variety of instruments or achievement tests which are used to assess students' achievements. The choice of assessment methods needs to be aligned with the overall goals of curriculum. Broadly speaking, there are two types of assessments which are generally used for measuring students' performance; the essay type assessment and/or objective type assessment. In general, it is relatively easy to construct essay type or constructed response question in short span of time but scoring of such items becomes problematic because of subjectivity and time involved in evaluating students' responses. On the other hand, hard labour and effort as well as professionalism are involved in developing objective type assessments, but this labour is compensated while scoring such items, which is easy and does not involve any subjective element. In large scale assessment, whether regional, national or international, generally objective type assessments are used which includes matching exercises, Constructed Response Questions (CRQs), Supply Type Questions, and Multiple Choice Questions (MCQs). For the planned large scale assessment, it was decided to use CRQs requiring answers in two-three sentences and MCQs to test the writing skills and the coverage of the whole curricula taught to the students respectively.

Below is a brief of some key stages:

2.1 TESTS AND OTHER INSTRUMENTS DEVELOPMENT

To measure students' learning achievement and to obtain information on factors that have been found to affect the quality of student learning, two different kinds of instruments were used for the assessment of grade 4 students in PAT 2015. These were:

- Achievement tests in subjects of Science, Mathematics and Language (English, Sindh/Urdu),
- Student, parents, teacher and head teacher Background Questionnaires

Achievement tests were developed on the basis of the National Curriculum, 2006 (books printed by Sindh Textbook Board in 2014 on the curriculum). The following processes were adopted to develop the achievement tests:

- Competencies based on the first three levels of the cognitive domain of Bloom's Taxonomy (Knowledge, Understanding and Application) were developed for four subjects, keeping in view the content areas and SLOs of the national curriculum;
- A table of specifications was designed for the tests which included content, learning outcomes, number of items and type of item;
- Multiple Choice and Constructed Response items were developed to provide better standardization of test setting and marking;

Separate background questionnaires were developed for head teachers, teachers, students, and parents. These questionnaires contained questions to identify the association of various personal, home, school, teaching and community variables with student achievement. For

example, the basic dimensions of this dataset included parental education and occupation; supporting inputs from home and community; students attitude towards school and teachers; the teachers’ qualification and teaching practices, and multi-grade teaching etc.

As a planning tool, assessment frameworks were developed for mathematics, science and languages. Apart from other instructions, each of the frameworks introduces a *two-dimensional matrix*- a *table of specifications*, based on Bloom et al.'s (2002) taxonomy. The principle was to categorize SLOs into *content*, meaning the specific subject matter to be conveyed, and *behaviour*, explained as, what the student should do with the textbooks. Presenting these in a matrix produced cells combining every behaviour category with every content category, generating a “blueprint” to ensure content validity; that all aspects (cells) were included in the assessment. This helped in differentiating “simple” from “advanced reasoning” and therefore was used as an expression for *cognitive demand*. The framework model set a standard that was used by PEACE across all subjects. Fig. 2.1 gives the outline of the table used for the subject of mathematics. This framework had a “content” dimension named *strands* and a “behaviour” dimension named *mathematical abilities*.

Content Strand

	Number & Operations	Measurement	Geometry	Information handling	Algebra	Logical Reasoning
Remembering						
Understanding						
Application						

Figure 0.1 Sample Table of Specification for the subject of mathematics

Assessment frameworks including table of specifications were developed for Mathematics, Science and Languages (Sindhi/Urdu and English), tests which included test content, learning outcomes and the number of items. Test specification for all subject are found in Appendix 2. Some examples of the test items are given in Appendix 3.

Test items were developed through the assessment expert having the broad knowledge of the subject as well as assessment experience of the working with PEACE. Items were developed as according to given criteria and follow the level Boloom’s Taxonomy in the subject of Mathematics, Science, English and Languages (Sindhi/ Urdu) on the basis of the National Curriculum, 2006 as according to table of specifications of each subject area for the Grade -IV, Mathematics, Science, English and Languages (Sindhi/Urdu). Multiple Choice Questions (MCQs) and Constructed Response Questions (CRQs) were developed. The selected items were finalized for pilot test with two different test booklet A and booklet B in each subject in accordance to subject related test specification. MCQs and CRQs development forms have been given in Appendix 4.

Background Questionnaires were developed for students, parents, teachers and head teachers. These questionnaires contained questions to identify the effects of on students achievement, for example, parents qualification, parent occupation, teacher qualifications (Academic & Professional), continuous professional development programs, teaching experience of the teacher, giving homework, facilities at home & school, living in a rural area as compared with an urban area, quality of Textbooks, Social connection within and outside family and student attitudes regarding Mathematics, Science, English and Languages (Sindhi/Urdu) and their teaching.

Guideline for the District Focal Person was provided for conducting the uniform testing procedure and fully understood their role in the district for test administration. TA's guide lines for conducting the test was developed by PEACE subject specialist with the objective to conduct the test in similar manner

2.2 PILOT TEST, ITEM ANALYSIS FINALIZED TEST

All students of Sindh province who had completed their grade IV and were studying in grade V in May 2014, were the population for the piloting of subject-tests of SPAT. All 23 districts of Sindh were included in the piloting and from each district, 6 government schools were randomly selected with even distribution in terms of gender and locale. From each school 10 students were included in the planed sample. In this way, all the achievement tests and the background questionnaires were piloted in 2014 on a sample of 1380 students of 138 government schools.

To facilitate systematic conversion of test responses from booklets to computer, these tests were first marked, coded and scored manually followed by data entry in the computer. Classical item analyses were conducted (using ITEMAN and ConQuest software) to select items for PAT 2015. Based on **Item difficulty (P-value)** and **discrimination Index (item effectiveness)**, items from the pilot-tests were selected and modified (if required) in the light of the item analysis results. Items were selected on the basis of item statistics (difficulty, discrimination indices) and professional evaluation of item content by subject specialists. Some new items were also developed to improve the item pool and formats and to meet requisite number of items, additional test items were also developed for such sections of the pilot tests, where less number of items conformed to criteria laid down for item-selection.

2.3 SAMPLING

A stratified two-stage sampling procedure was adopted for the selection of 1655 schools from the entire province for large scale testing for the four strata i.e. 1) Urban Boys Schools, 2) Urban Girls Schools, 3) Rural Boys Schools, 4) Rural Girls Schools. Total 72 schools were selected from each district with equal proportion from the each strata with maximum 20 students from each school. So the sample was consisted of 33,120 students. Mixed schools¹ (Rural/Urban) with 50 percent or more girls were defined as a 'girls' school', and those with less than 50 percent girls were defined as 'boys' school'. In order to draw an adequately representative sample of the province, the list of Government schools in the Sindh Education Management Information System (SEMIS) database

¹ Girls and boys student are enrolled in such schools

was used as the sampling frame. In this regard SEMIS 2012-13 data² for grade 2 was used and it was considered as measure of size (MoS) for the identification of the sample school. The unit of the sample was a primary school and/or school with a primary section.

The grade 2 enrolment was used as measured of size because the current grade 4 students were in grade 2 at the time the 2012/2013 Census of schools. The strata are defined as the cross-classification of district by location (Rural/Urban) and by school gender (Boys/Girls) resulting in 92 primary strata. At the first stage, schools with Grade were selected with Probability.

A stratified, random sampling procedure was used with two explicit strata, location (rural/urban) and gender (girls/boys, and mixed). After completing the sample process, sample was sent to district authority and District Focal Person nominated by the PEACe for verification of the school enrolment either boys or girls, medium and location. Replacement schools was given for those schools that were not meeting the criteria. However, the list of replacement schools was also shared with the DEOs for verification before administration of the test.

2.4 ORIENTATION OF THE SUPERVISORY STAFF ENGAGED IN THE CONDUCT OF THE TEST

2.4.1 MEETINGS WITH DEOs, REGIONAL DIRECTORS AND DISTRICT FOCAL PERSONS

One day meetings were arranged with all DEOs, Regional Directors and District Focal Persons to:

- create awareness about Large Scale Testing 2015 in Sindh
- share information about the functions and activities of PEACe
- discuss their role and responsibilities during the Large Scale testing 2015 in their respective district

2.4.2 TRAINING OF THE LEAD MASTER TRAINING

One-day orientation workshops were organized by PEACe at two centres, Hyderabad and Sukkur, for the training of Lead Master Trainers (LMTs), to ensure the uniformity in administering the test in the entire province. The training focused on guidelines given in TA Manual. Following are the key points discussed during the training:

- Objectives of Provincial Achievement Test 2015
- Role of LMTs during the TAs' training in the district
- Outline of the orientation workshop of LMTs regarding TAs training

Following documents were shared by PEACe during the training of LMTs

- Training schedule for district
- TA Manual

² This is most recent verified data available with SMIS.

Total 92 LMTs (36 at Sukkur and 56 at Hyderabad) were trained.

2.4.3 TEST ADMINISTRATORS TRAINING AND ISSUES PERTAINING TO THEIR CONDUCT

The tests were administered by teachers (TAs) in the districts according to the instructions in the Test Administration Guideline Booklet developed for SPAT. The TAs were trained by LMTs in their respective district. Total 1655 TAs were trained (72 from each of 22 districts except Umerkot where the number was 71)

2.5 MONITORING OF TEST ADMINISTRATION

The main objective of monitoring the provincial assessment was to ensure the validity of the PAT data. The monitors consisted of 23 district focal persons who ensured the distribution and collection of the test instruments. PEACe, BoC, PITE and District Education Authority were involved in the overall monitoring. The monitors monitored the assessment activity and reported back to PEACe on 'to what extent' the TAs followed the guidelines given during their training. Monitoring form has been given as Appendix 5.

2.6 SCORING, CODING, DATA ENTRY & DATA CLEANING

For test scoring and coding sheets were developed to transfer PAT data into the Excel Sheets. Each possible answer was given a specific code.

Manual test scoring and coding was conducted by elementary college faculty, teachers (from both public and private) in the Hyderabad at a centre.

Checking the data was an onerous task, it was not possible to double check every single sheet. The data of two students out of 20 students on a scoring sheet was re-checked by supper checkers designated from the PEACe programme team. Discrepancies identified in the sheets were rectified where possible or the data was discarded due to its lack of reliability. After checking the scoring and coding sheets data was sent to data enter operator. After cleaning the data on Excel sheets, it was transported to SAS program for data cleaning.

2.7 QUALITY ASSURANCE IN MARKING THE ASSESSMENTS

To ensure the quality, centralized coding and marking of all the scripts was undertaken in the office of PEACe. Senior staff member of PEACe worked as in charge with responsibilities to;

- Develop scoring plan, prepare scoring sheets and proposed the name of scorer subject wise for approval.
- Marking and coding methodologies were developed on paper sheets. As mentioned above each possible answer was given a specific code.

- One-day briefing was given to all scorers and coders to guide them on how to enter the data on the scoring sheets before the start of the marking and coding process.
- Monitor the scoring process and take decision in case of anomalies.
- Maintain record of used/unused/rejected bags.

A report was prepared by each scorer at the end of scoring process that was shared with the PEACe Coordinator. The data of one student out of 10 students on each scoring sheet was super checked by PEACe. Where mistakes were found the scorer employed were asked to recheck their sheets and correct the mistakes. Finally the data was then entered into Excel sheets by data entry operators. Finally the data was entered on Excel sheets by four data entry operators. The data entered was super checked by PEACE specialists and the remaining inconsistencies in the manual checking were identified and rectified.

3. UNDERSTANDING PAT 2015 RESULTS

Students' achievement is assessed in terms of their scores on the science, mathematics and language tests. These scores provide a measure of how well the students answer items based on the enacted curriculum. After completion of the data entry process on the excel sheet, data was cleaned by the SAS program and then data is converted into SPSS file format. SPSS is used for basic descriptive/ summary statistics, compare mean, correlation and Z-Test analysis.

The following software were used for data analysis:

- SPSS (Version 20.0)
- ITEMAN (classical Item analysis for pilot)
- ConQuest (for IRT Item analysis for pilot)
- SAS Program
- Excel (for Data Entry)

3.1 RELIABILITY OF TESTS

Cronbach Alpha provides a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency is determined before a test can be employed for research or examination purposes to ensure validity. In addition, reliability estimates show the amount of measurement error in a test. Put simply, this interpretation of reliability is the correlation of test with itself. Squaring this correlation and subtracting from 1.00 produces the index of measurement error. For example, if a test has a reliability of 0.80, there is 0.36 error variance (random error) in the scores ($0.80 \times 0.80 = 0.64$; $1.00 - 0.64 = 0.36$). As the estimate of reliability increases, the fraction of a test score that is attributable to error will decrease. It is of note that the reliability of a test reveals the effect of measurement error on the observed score of a student cohort rather than on an individual student. If the items in a test are correlated to each other, the value of alpha is increased. Following table gives Cronbach Alpha, calculated for the tests administered in PAT.

Table 3.1 test-wise value of Cronbach's Alpha for test reliability

Subject	Cronbach's Alpha
Science	.910
Mathematics	.880
Sindhi	.954
Urdu	.932
English	.932

All the tests have Cronbach's Alpha value above than the threshold suggested by the experts i.e. 0.7.

3.2 THE NORMAL CURVE

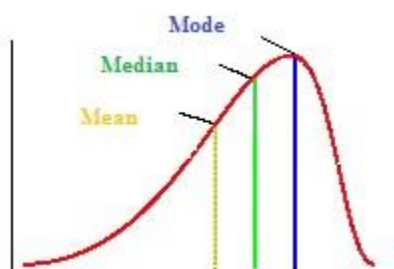
The graph of the normal distribution depends on two factors - the mean and the standard deviation. The mean of the distribution determines the location of the center of the graph, and the standard deviation determines the height and width of the graph. When the standard deviation is large, the curve is short and wide; when the standard deviation is small, the curve is tall and narrow. All normal distributions look like a symmetric, bell-shaped curve, as shown below.



The curve on the left is shorter and wider than the curve on the right, because the curve on the left has a bigger standard deviation.

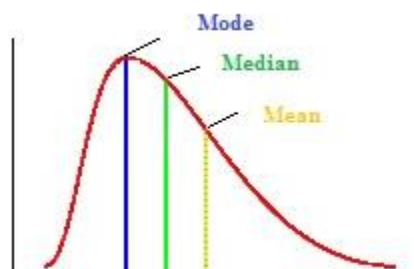
Skewed data often occur due to lower or upper bounds on the data. That is, data that have a lower bound are often skewed right while data that have an upper bound are often skewed left.

A **left-skewed distribution** has a long left tail. These distributions are also called *negatively-skewed* distributions because there is a long tail in the negative direction on the number line. The mean is also to the left of the peak.³



Left-Skewed (Negative Skewness)

A **right-skewed distribution** has a long right tail. These distributions are also called *positively-skewed* distributions because there is a long tail in the positive direction on the number line. The mean is also to the right of the peak.



Right-Skewed (Positive Skewness)

3.3 SIGNIFICANCE LEVELS

To check whether differences in reported scores could have occurred by chance alone, significance tests are reported. A probability where is $p < 0.05$ means that the difference could

³ adopted from <http://www.statisticshowto.com/skewed-distribution/>

occur by chance alone in only 5 out of 100 students; where it is $p < 0.01$ the difference could occur by chance alone in only 1 out of 100 students (significant difference) and where it is 0.00 there is a highly significant difference.

3.4 MAJOR THEMES OF THE REPORT

Results are presented as percent mean scores and percentage. The achievements of students have been discussed under the following headings:

- Overall student achievement
- Student Achievement by Location
- Student Achievement by Gender
- District results
- Differences between student achievement in each district and the rest of the districts
- Student overall achievement according to Content Domain, aspect of learning, grammar and purpose of writing in the languages
- Student achievement According to Content Domain in the area of Mathematics & Science
- Background Questionnaire Results

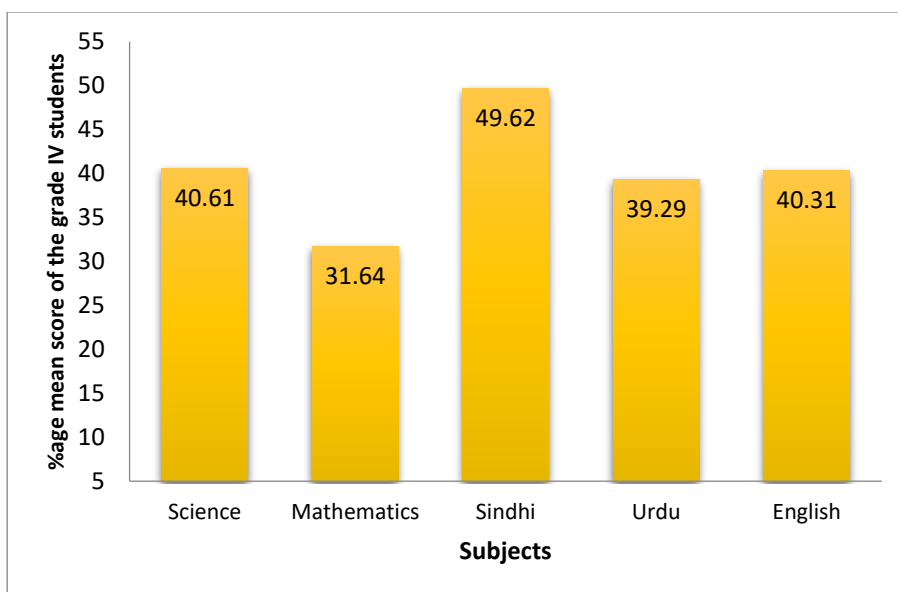
To make the scores meaningful and to establish a relationship between student achievement and through the various variables, Pearson Correlation Coefficient and to compare mean, Z-test were used.

4. DATA ANALYSIS AND FINDINGS

This report presents the Provincial results of the PEACe assessment of science, mathematics and languages achievement of a representative sample of grade 4 students in government schools.

4.1 STUDENT'S OVERALL ACHIEVEMENT IN SCIENCE, MATHEMATICS, SINDHI, URDU AND ENGLISH

Grade 4 students' overall achievement in a percentage mean score is given the following graph.



5.

Figure 4.1 Comparison of overall achievements of students in assessed subjects

Grade 4 students achieved mean score in language Sindhi 49.62%, it shows that the students performed relatively better in the Sindhi language than other subjects. However, students performed also well in science, English and Urdu as compare to the mathematics, in which overall achievement is very low i.e. 31.64% only. It is notable in none of the five subject, the mean score is equal of greater than mean score of 50%

In languages, on the reading test lower ability students managed to answer correctly items requiring information or knowledge of facts from a given piece of text. However, students found language questions at the understanding level most difficult to answer correctly. In writing, the tasks students found most difficult were different kinds of writing (persuasive and narrative writing tasks) handwriting and items requiring knowledge about language (grammar and use of masculine, singular plural).

5.1 SUBJECT WISE OVERALL PROVINCIAL STUDENTS ACHIEVEMENT

3.1.1. SUBJECT SCIENCE

Overall achievement of the students in the science is mean score of 40.61 %, which is below the mean score of 50% and it indicates that the students are weak in the subject. The figure below shows that distribution of score is to great extent, normal, which means that most of the students are around the mean.

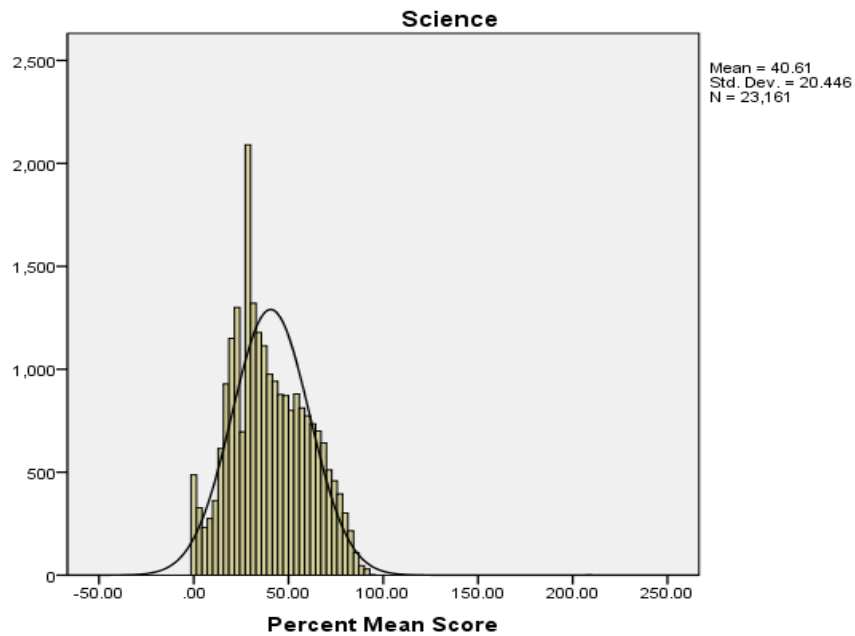


Figure 4.2 Overall students' achievement in Science

STUDENT'S ACHIEVEMENT IN SCIENCE BY CONTENT DOMAIN

Following figure gives comparison of the students' overall achievement in major content areas:

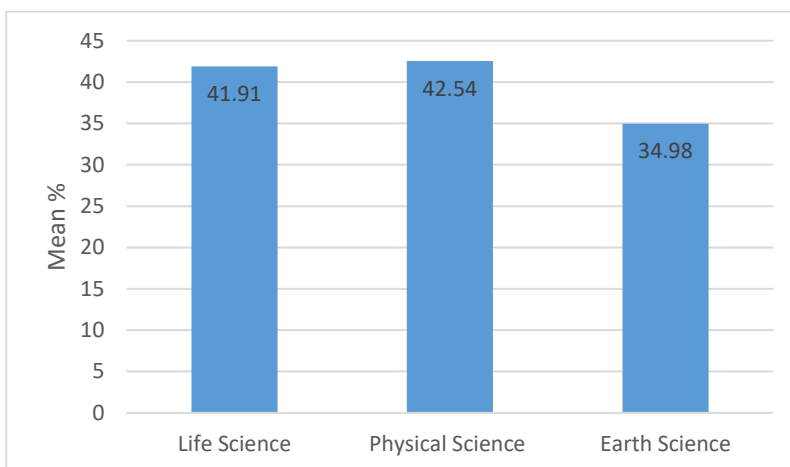


Figure 4.3 Overall students’ achievement in Science by Content Domain

Students of grade IV performed best in physical science (42.55%), followed by life science (41.91%), and earth and space science (34.98%). It implies that the content domain which was found difficult for student was earth and space science.

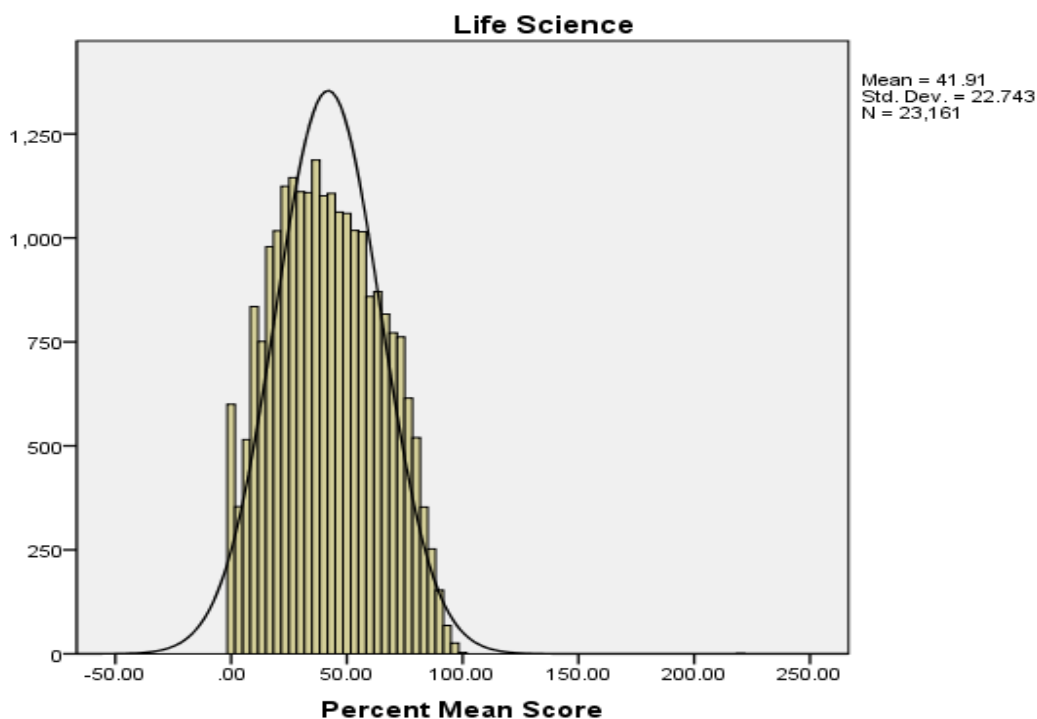


Figure 4.4 Overall students’ achievement in Life Sciences

Figure 4.4 shows the spread of achievement of the students in the life science. The curve discloses that the students are slightly weak in life science. The distribution of score is normal on the curve, which means that most of the students gathered with percent mean score.

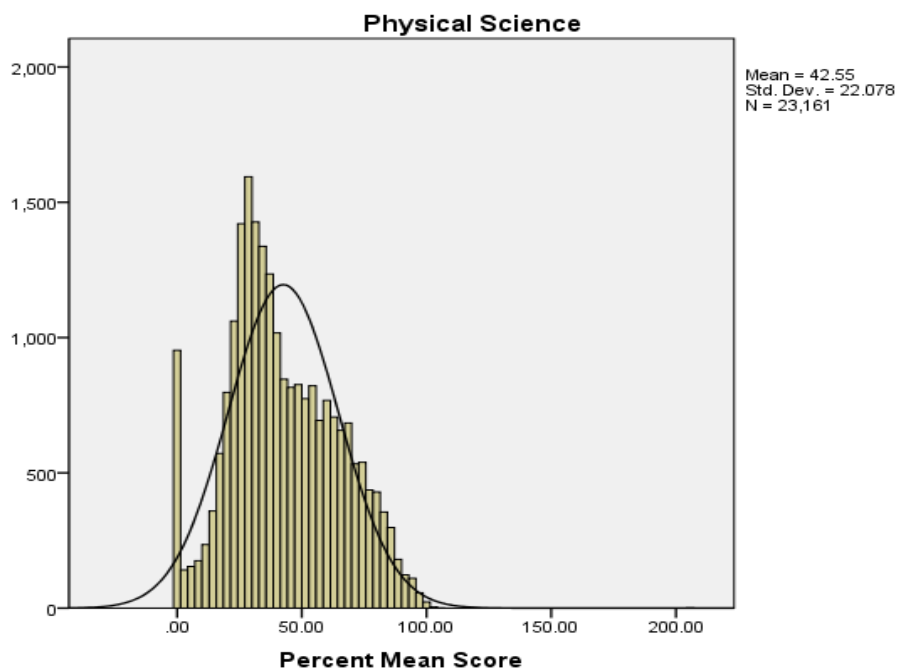


Figure 4.5 Overall students’ achievement in Physical Sciences

Figure 4.5 presents the achievement of the students in the Physical science is 42.55%. Furthermore majority of the cases are on the lower side as expressed by the curve which indicates score of the students is below than 42.55%.

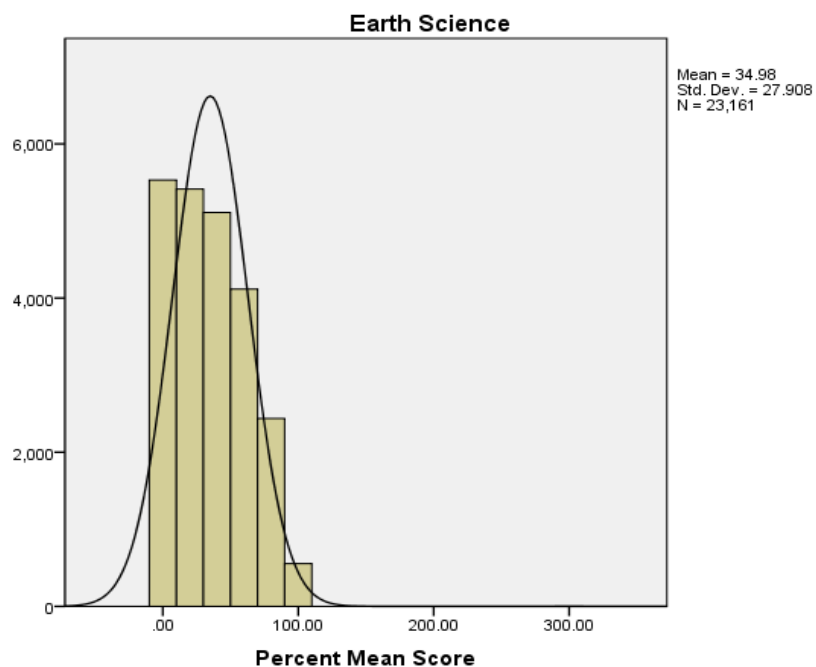


Figure 4.6 Overall students’ achievement in Erath and Space Science

Figure 4.6 indicates shows the achievement of the students in the Earth and Space sciences is 34.98%, which shows that the students are weak in this area of the discipline. The curve also tipoffs that distribution of the achievement score is normal, which means that most of the students gathered with mean which implies that majority of the students are poor in this area in comparison to other learning area of science.

It is interesting to note that there was no significant difference between the achievement of students in Sindhi medium and Urdu Medium schools in Science.

3.1.2. SUBJECT MATHEMATICS

Overall achievement of the students in the mathematics is 31.64 %, which shows that the students are weak in mathematics. The survey 2015 also revealed that the percentage mean score has declined to that of the provincial results produced by PEACE in 2009 whereby provincial student achieved a mean score of 44.7%.

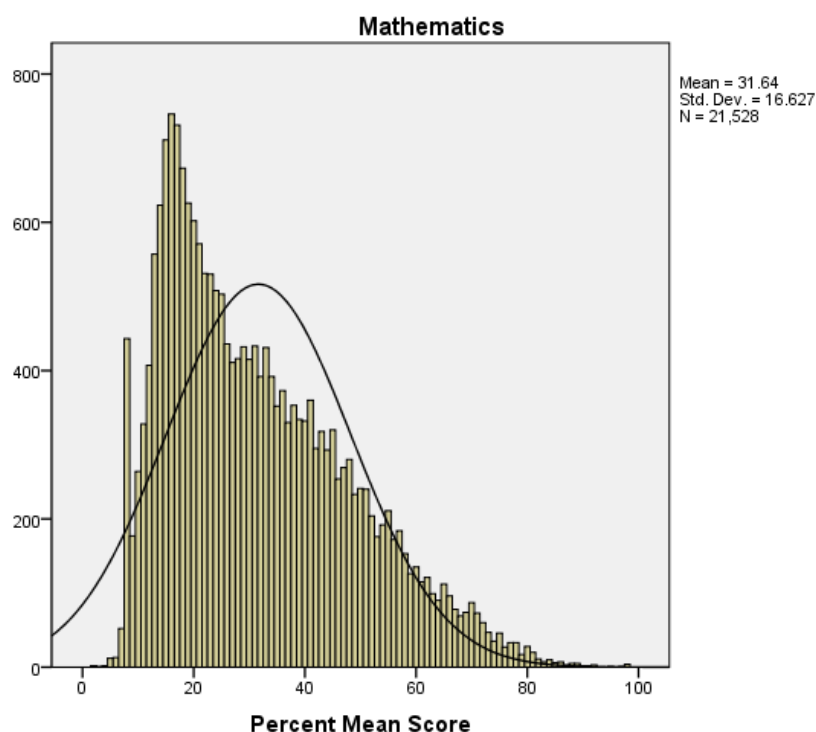


Figure 4.7 Overall students' achievement in Mathematics

In mathematics, the score is negatively skewed, which means that most of the students have achieved low score in mathematics.

STUDENT'S ACHIEVEMENT IN MATHEMATICS BY CONTENT DOMAIN

Overall students performed best in Measurement and Number theory followed by the content areas of Information Handling and Geometry. Figure 4.8 gives the comparison of the major content areas taught in Grade IV.

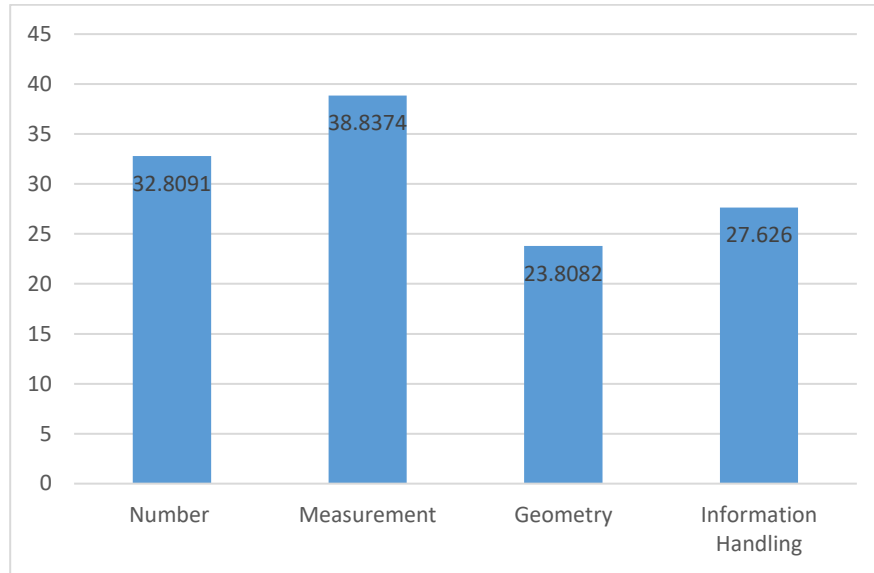


Figure 4.8 Overall students' achievement in Mathematics by Content Domain

Below is the major area-wise detail of the students' achievement.

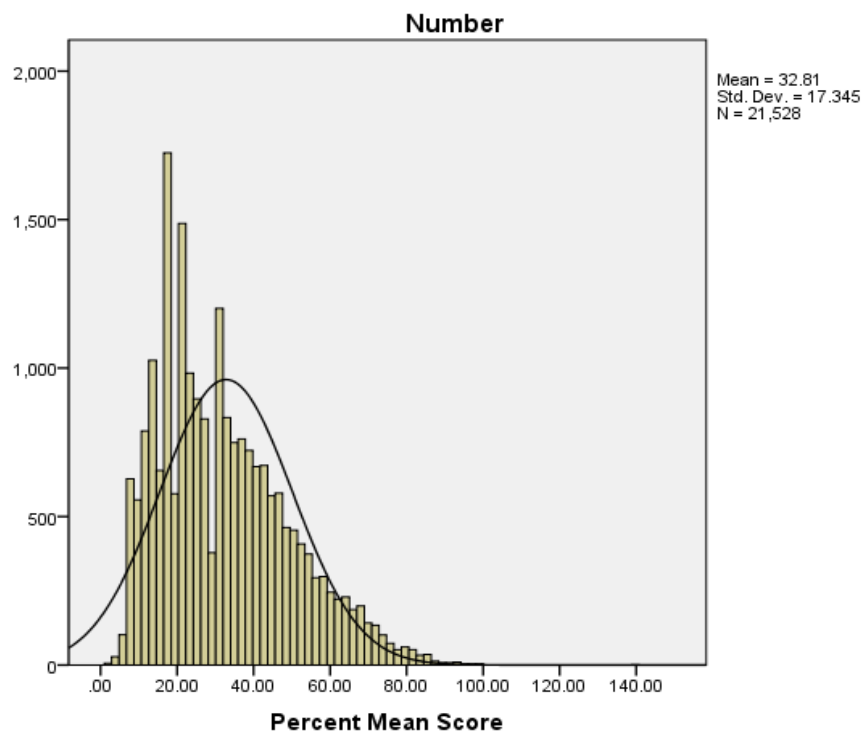


Figure 4.9 Overall students' achievement in Numbers and Operations

Figure 4.9 demonstrates the achievement of the students in the Number and Operation is 32.81%, which mean that the students are weak in this area. Furthermore the achievement score is negatively skewed, which means that majority of the students achieved low score in this area.

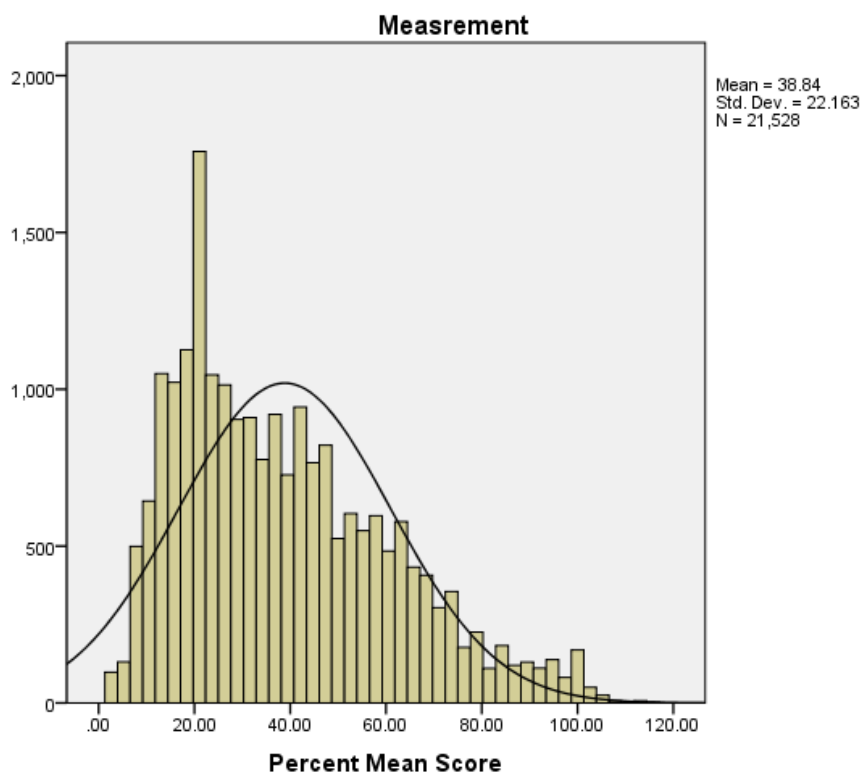


Figure 4.10 Overall students' achievement in Measurement

Figure 4.10 shows the achievement of the students in the content area 'Measurement' is 38.84%, the score is significantly low than threshold of 50%. In this case, again, the achievement score is the negatively skewed, which implies that majority of the students achieved low score in this area.

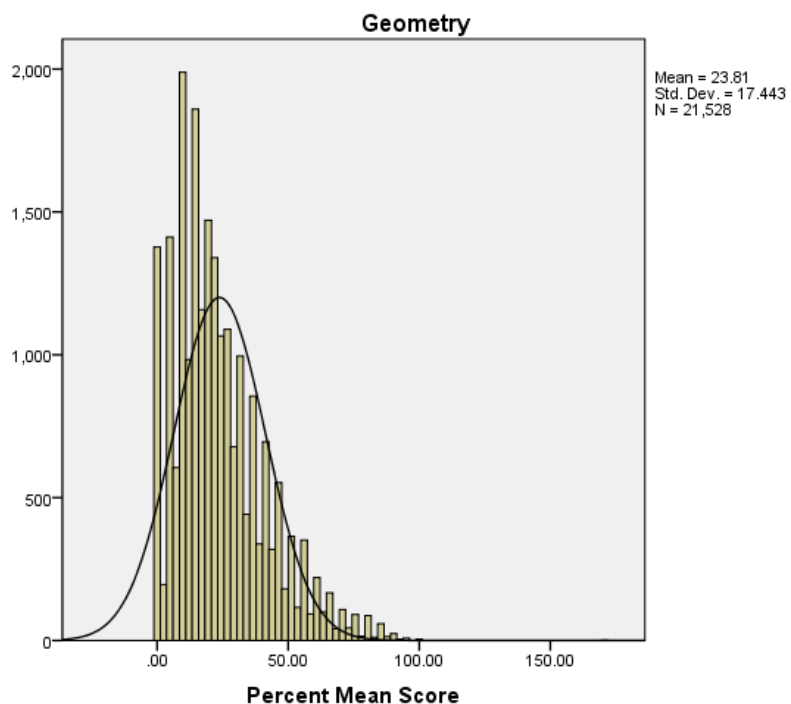


Figure 4.11 Overall students' achievement in Geometry

Figure 4.11 reflects that the achievement of the students in the Geometry is 23.81%, which the lowest mean score within the content areas of mathematics. The bell curve is also telling the same story as for the rest of content areas.

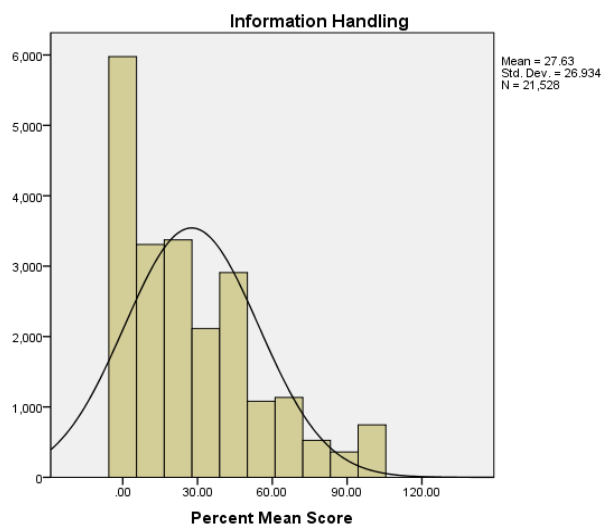


Figure 4.12 Overall students' achievement in Information Handling

Figure 4.12 shows that score is the negatively skewed, which implies that majority of the students achieved low score in Information Handling.

It is notable there was no significant difference between the achievement of students in Sindhi medium and Urdu Medium schools in Mathematics.

3.1.3. LANGUAGE SINDHI

Achievement of the students in Sindhi language is 49.62 %, which is the highest in comparison to not only other two languages but also than the subjects of science and mathematics. It shows that the students have well performed well in language Sindhi. Furthermore the achievement score is normal on the curve, which means that most of the score around the mean. There is an improvement in the result of overall language (reading and writing)

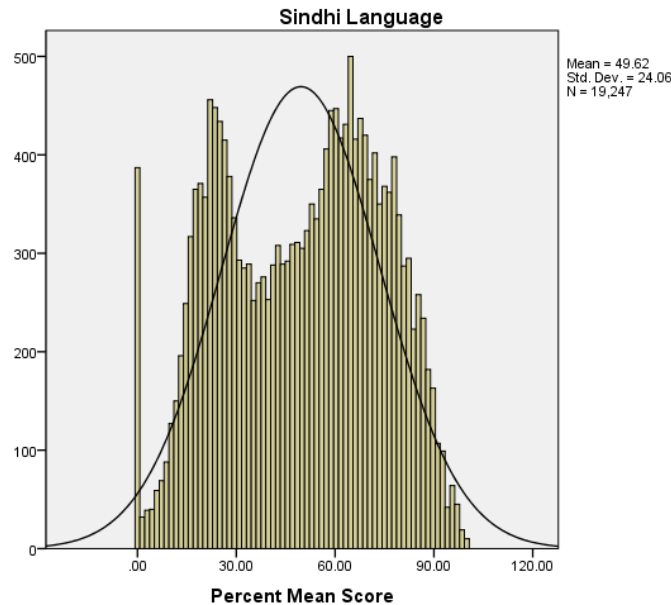


Figure 4.13 Overall students' achievement in language Sindhi

STUDENT'S ACHIEVEMENT IN SINDHI E LANGUAGE BY ITS ASPECTS

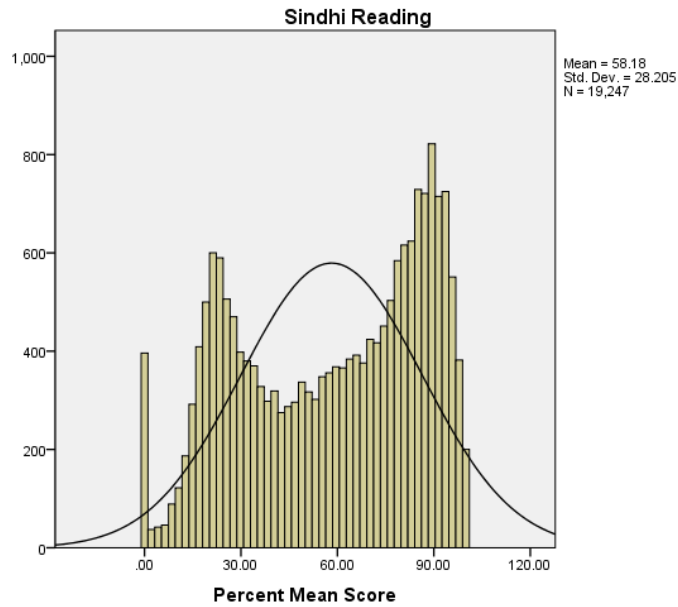


Figure 4.14 Overall students’ achievement in language reading (Sindhi)

Figure 4.14 presents the achievement of the students in the Sindhi Reading is 58.18%, that means the students are performing well in reading the language. Also score is in the positively skewed, that means, most of the students have obtained high score in reading.

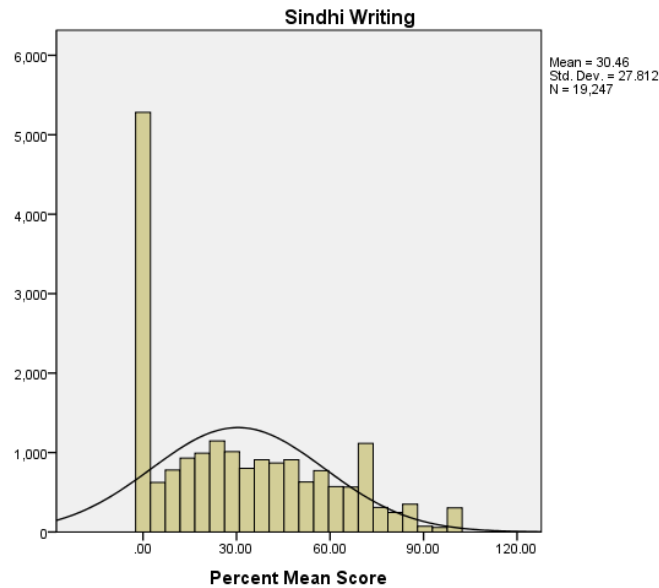


Figure 4.15 Overall students’ achievement in language writing (Sindhi)

Figure 4.15 illustrate that the achievement of the students in the Sindhi writing is 30.46%. The score is quite low than the reading. It reflects that that the students are weak in writing. Here

the curve is again negatively skewed, which means that most of the students having low score in writing the language.

3.1.4. LANGUAGE URDU

Overall achievement of the students in the Urdu is 39.30%, which is quite low as compared to Sindhi language. Figure 4.16 also shows that score is in the normal curve, which means that most of the students gathered with mean.

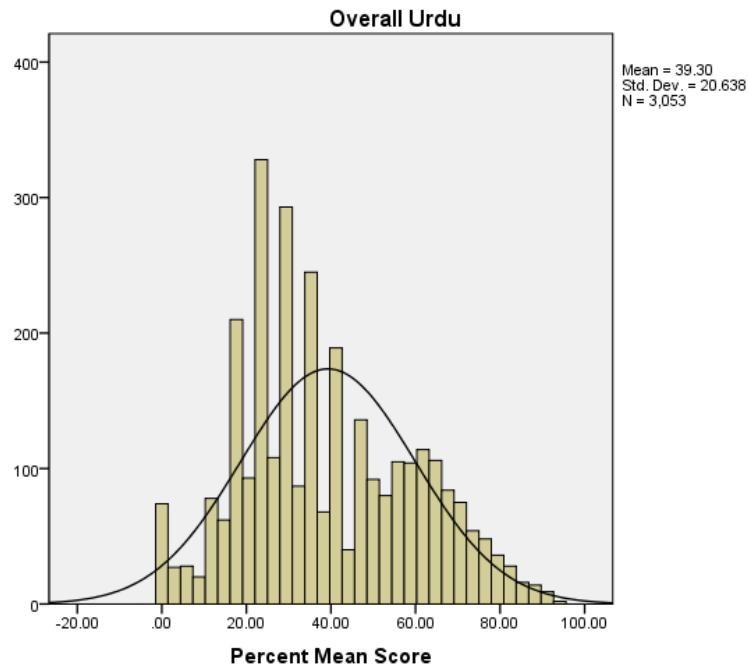


Figure 4.16 Overall students' achievement in language Urdu

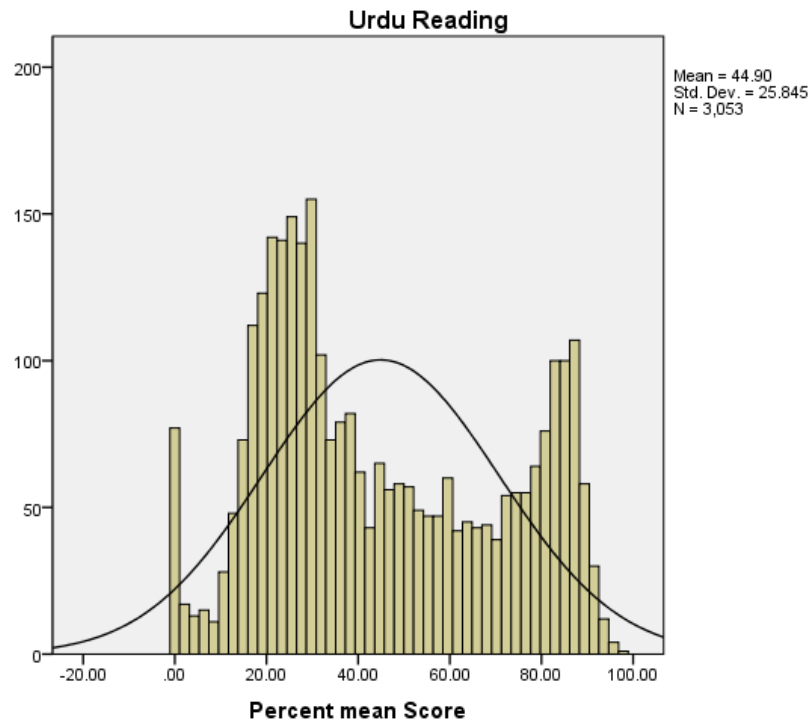


Figure 4.17 Overall students' achievement in language reading (Urdu)

Figure 4.17 reveals the achievement of the students in the Urdu Reading is 44.90%, which is better than the overall score gained by the student in Urdu test. Furthermore, the score is negatively skewed, which means that most of the students have low scores in reading.

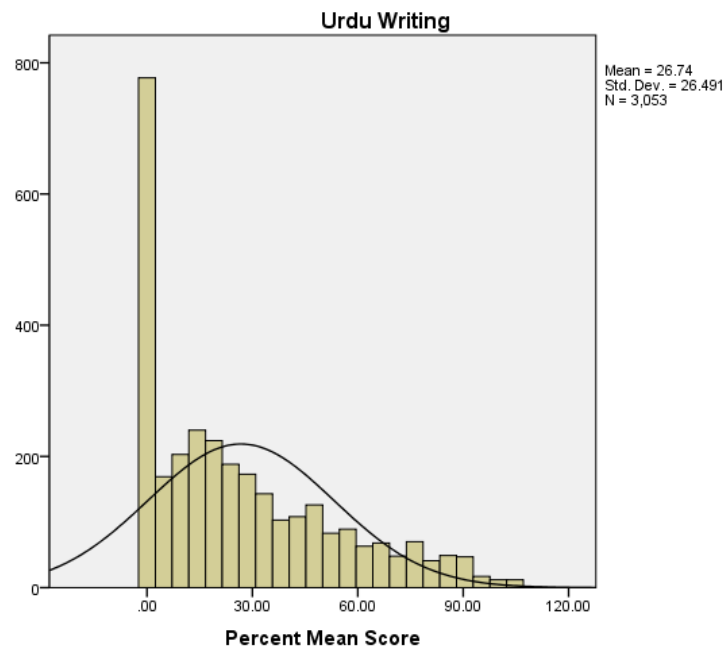


Figure 4.18 Overall students' achievement in language writing (Urdu)

Figure 4.18 gives the achievement of the Grade IV students in the Urdu writing and it is 26.74% which is quite low than the overall achievement of the students. It means that the students are very weak in writing as compared to reading in Urdu Language. These results are consisted with Sindh language. Furthermore score is in the negatively skewed, which means that most of the students achieved low score in writing.

3.1.5. SUBJECT ENGLISH

Figure 4.18 exposes achievement of the students in the English, which is 40.31 %. The score is better than Urdu (which is unusual) but quite low than Sindhi (which is quite usual). The figure further shows that the score is in the normal curve, which means that most of the students gathered with mean.

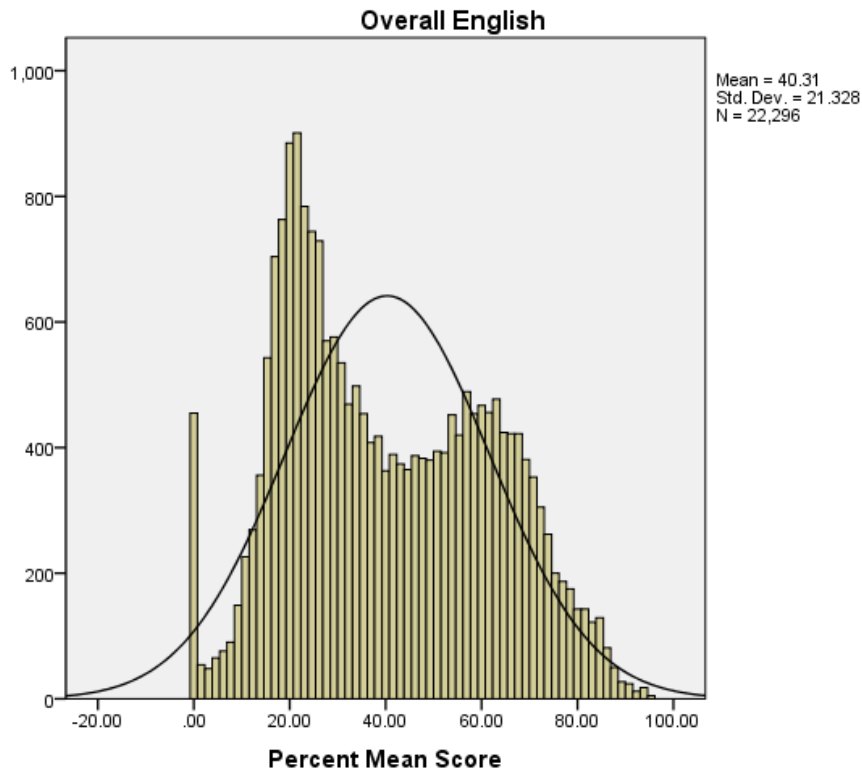


Figure 4.19 Overall students' achievement in subject English

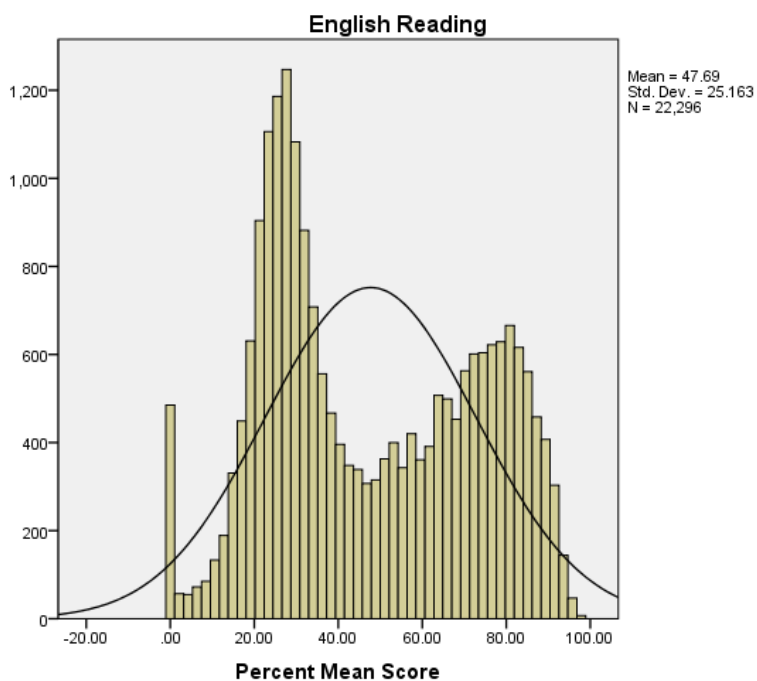


Figure 4.20 Overall students' achievement in reading English

Figure 4.20 gives a picture of the students' achievement in the Reading and it is 47.69%. It implies that the students are performing well in reading as compared to other aspects of the language. Since score is in the negatively skewed, which means that most of the students achieved low score in reading.

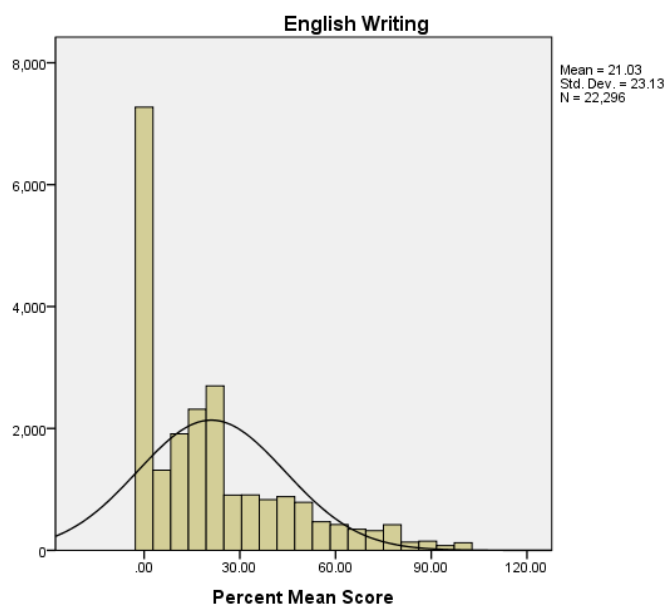


Figure 4.21 Overall students' achievement in writing English

Figure 4.21 gives the achievement of the students in the writing, and it is 21.09%, which is quite low with regard to reading. It shows that the students are very weak in writing. The figure further shows that the score is negatively skewed, which means that a majority of the students have low scores in writing.

5.2 COMPARISON OF STUDENT'S OVERALL ACHIEVEMENT IN THE THREE LANGUAGES

In the following paragraphs, a comparison of the students' achievements in the three languages has been given.

5.2.1 OVERALL STUDENT LANGUAGE ACHIEVEMENT BY SKILL/AREA (READING AND WRITING)

The provincial results of languages reveal that students achieved a better mean score in the area of reading for languages Sindhi (58.18%), followed by English (47.69%) and Urdu (44.9%). However, the order has changed in the area of writing as the student achieved a better mean score in the area of writing for languages Sindhi (30.46%), followed by Urdu (26.74%) and English (21.03%). The comparison is given in table 4.1.

Table 4.1 Student Achievement in Sindhi, Urdu and English by Skill/Area

Skill	Sindhi % Mean Score	Urdu % Mean Score	English % Mean Score
Reading	58.18	44.9	47.69
Writing	30.46	26.74	21.03

Comparison with the survey conducted by PEACE for language in 2010 shows that students achieved a better score in the area of reading and has increased from 46.2% to 58.18%, whereas the percentage mean score in writing has lowered from 41.71% to 30.46%.

5.2.2 STUDENT'S ACHIEVEMENT IN SINDHI, URDU AND ENGLISH BY CONTENT

During the survey 2015, three reading contents were used to measure students' reading comprehension skills.

- In Sindhi language, students of grade IV performed better in poetry and reading. However, Informative and Prose (Story) reading was a relatively difficult learning aspect for students of grade IV.
- In Urdu language, students of grade IV performed better in poetry and reading. However, like Sindhi language, Informative and Prose (Story) reading was a relatively difficult learning aspect for the students.

- In English language, students of grade IV performed better in poetry as compared to prose (story) and reading for information.

The complete comparison has been given in table 4.2

Table 4.2 Student's Achievement in Sindhi, Urdu and English by Content

Content	Sindhi % Mean Score	Urdu % Mean Score	English % Mean Score
Prose (Story)	57.02	40.35	44.52
Poetry	62.05	48.53	51.73
Reading for information	60.11	46.05	44.01

5.2.3 STUDENT'S ACHIEVEMENT IN SINDHI, URDU AND ENGLISH BY ASPECT OF LANGUAGE

In Sindhi and Urdu languages, the students of grade IV performed better in sentence structure, whereas vocabulary and grammar was relatively difficult aspect of language for them. In English, the students' performance was better in Vocabulary and Grammar as compared to sentence structure. The complete comparison is given in table 4.3.

Table 4.3 Student's Achievement in Sindhi, Urdu and English by Content Aspect of Language

Aspect of Language	Sindhi % Mean Score	Urdu % Mean Score	English % Mean Score
Vocabulary	57.71	46.8	53.26
Grammar	49.17	40.11	48.35
Sentence Structure	61.86	52.41	44.56

5.2.4 STUDENT'S ACHIEVEMENT IN LANGUAGES BY PURPOSE OF WRITING

Three purpose of writing were tested in all the three languages (Sindhi, Urdu and English) to measure measures' writing skill of students.

Table 4.4 Student's Achievement in Sindhi, Urdu and English by Purpose of writing

Purpose of writing	Sindhi % Mean Score	Urdu % Mean Score	English % Mean Score
Narrative	29.29	25.55	12.41
Informative	36.23	32.21	45.87
Persuasive	25.86	18.81	15.45

Table 4.4 depicts that students found the writing tasks difficult, especially the persuasive and narrative writing tasks.

5.3 STUDENT'S OVERALL ACHIEVEMENT WITH RESPECT TO GENDER

The achievement of boy students (40.67%) was slightly higher than girl students (40.55%) in the subject of science but statistically the difference between their performances is highly significant. The results were same for mathematics subject. However, the difference is significant in this case.

Girl students (49.69%) performed slightly better than boy students (49.56%) in the language Sindhi. However, statistically the difference is not significant. The achievement of girls was higher in the subject of English also. However, the difference in performances is significant.

The achievement of boy students was higher (39.95%) than girl students (38.96%) in the language Urdu. The difference between boys' and girls' performances is significant.

5.4 STUDENT'S OVERALL ACHIEVEMENT WITH RESPECT TO LOCALE

It was noted that students in rural areas performed better in science subject compared with students' in urban areas. The difference between rural and urban students' performances is significant. The case was same for mathematics.

It was observed that students in rural areas (50.54%) performed better in language Sindhi compared with students in urban areas (48.55%). The difference between rural and urban students' performance is significant. The case same for English, as the students in rural areas (26.88%) performed better in the English compared with students in urban areas (25.55%). The rural score is highly significant.

For Urdu language the case was reverse as compared with Sindhi and English Languages; which is logical, in the scenario of Sindh. It was noted that students in urban areas (39.77%) performed better in the Urdu compared with students' in rural areas (36.28%). The difference between rural and urban student performance is highly significant.

5.4.1 SUBJECT AND DISTRICT-WISE STUDENTS' ACHIEVEMENT

Table 4.5 highlights districts-wise performance of grade 4 students in all the five subjects.

Table 4.5 District and subject-wise Student's Achievement

District	% Mean Score				
	Science	Mathematics	Sindhi	Urdu	English
Badin	36.87	27.82	45.86	40.01	37.94
Dadu	41.14	33.90	53.16	-	45.75
Hyderabad	36.06	24.40	44.14	40.11	35.53
Thatta	39.78	31.40	43.16	49.80	35.65
Mirpurkhas	42.74	30.63	51.23	36.42	41.22

District	% Mean Score				
	Science	Mathematics	Sindhi	Urdu	English
Tharparkar	39.12	34.35	50.39	-	36.49
Sanghar	44.00	33.72	52.32	46.83	43.82
Karachi	41.00	32.91	55.67	44.71	47.22
Jacobabad	41.03	32.02	49.41	-	39.08
Larkana	36.59	26.53	46.86	-	36.06
Shikarpur	40.00	28.80	47.39	26.51	32.27
Khairpur	44.66	35.55	50.89	-	43.09
Nausheroferoz	47.60	37.94	53.53	40.62	47.71
Shaheed Benazirabad	36.98	31.48	46.11	46.77	38.40
Sukkur	36.96	27.48	43.15	28.65	35.00
Ghotki	39.52	29.65	47.73	-	40.15
Umerkot	43.34	37.38	54.73	36.11	49.29
Jamshoro	41.01	35.89	54.38	21.35	46.17
Matiari	44.09	33.42	56.41	38.91	46.11
Tandoallahyar	38.93	27.54	49.62	37.33	33.86
T.M Khan	40.19	29.08	49.21	45.15	38.21
Kashmor	43.93	38.21	54.80	-	42.59
Kambar	37.99	29.65	44.60	-	35.90
Overall % Mean Score	40.61	31.64	49.62	39.30	40.31

Note: The highlighted scores in the table are the ones, where the mean score for the subject in the district was more than the overall mean score in the province.

- represents a district from where no student taken the test of the subject

For the subject of science, 11 out of 23 districts (highlighted in green) achieved scores above the average performance of Sindh province as a whole. The district achieved the highest score in science was Nausher Feroz (47.60%) whereas the lowest score was found for Hyderabad (36.06%).

In the subject of mathematics, students from 11 districts achieved higher mean scores in mathematics (highlighted in yellow) as compared with the rest of districts in the province. The district achieved the highest score in mathematics was Kashmore (38.21%) whereas the weakest score was found in Hyderabad (24.40%).

In the language Sindhi, students from 11 districts achieved higher mean scores in Sindhi (highlighted in turquoise) as compared with the rest of the province (49.62%). The district which achieved the highest score in language Sindhi was Matiari 56.41% whereas the weakest score was found in Sukkur 43.15%. Moreover, the district Tando Allahyar achieved the same mean score (49.62%) to provincial percentage mean score.

In the language Urdu, It was observed that 8 out of 15 districts (highlighted in pink) achieved scores above the mean performance of Sindh province. The district, achieved the highest score in language Urdu was Thatta (49.80%) whereas the weakest score was found in Jamshoro (21.35%).

In language English, it was observed that 10 out of 23 districts (highlighted in gray) achieved scores above the mean performance of Sindh province as a whole (40.31%). The district which

achieved the highest score in English was Umerkot (49.29%) whereas the weakest score was found in Shikarpur (32.27%).

5.5 BACKGROUND VARIABLES AND ITS IMPACT ON STUDENTS' ACHIEVEMENTS

Findings of earlier research in the field of achievement testing and educational research indicate that students' achievement is determined by:

- Student characteristics such as the home background and attitudes towards education;
- The teaching and learning process and teaching practices such as teacher attitude, order and discipline, the variety of teaching strategies, the assignment of homework and providing feedback to students on their work;
- School conditions and climate such as effective leadership, the general facilities of the school, the organized curriculum, flexibility and autonomy;
- Supporting inputs such as parent and community support and effective support from the education system.

Besides testing the students in the two subject areas (mathematics and science) and two languages (Sindhi/Urdu and English) throughout Sindh, background data was collected from the students, parents, teachers and head teachers to investigate the impact of background on achievement of students in different subjects. The details of the achievement of students in the subjects and languages with respect to different aspects of their background are discussed in the following sections.

5.5.1 STUDENTS' SUBJECT LIKENESS

A favorite subject has a positive correlation with students' achievement in the subject. Figure 4.22 depicts that 55.3% of the student reported that their favorite subject is the languages Sindhi/Urdu.

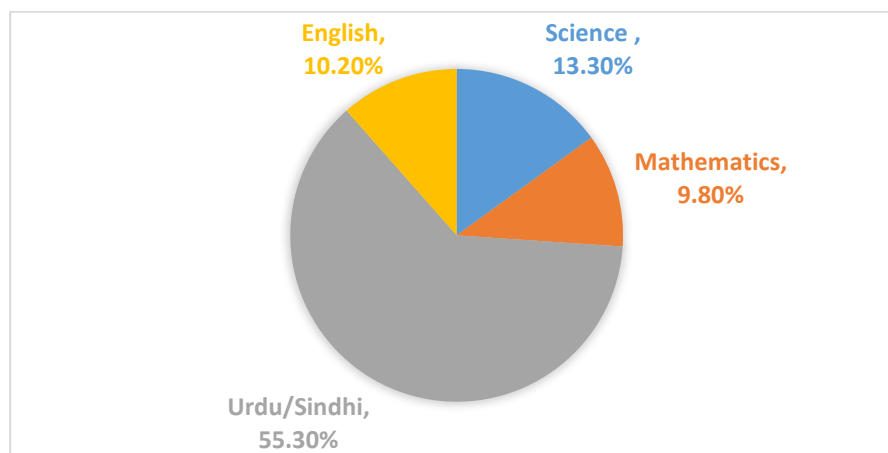


Figure 4.22 Subject likeness by the students

This likeness has positive correlation with the students' achievements in language Sindhi. Similarly, only 9.8% (lowest number) students like the mathematics and hence achieved lowest mean score among the assessed subject.

5.5.2 STUDENTS' OPINION ABOUT THEIR TEXTBOOKS

Most of the student reported that the existing books of the Science, mathematics, Sindhi, Urdu and English for the grade 4 are easy to understand. Figure 4.23 gives the complete comparison.

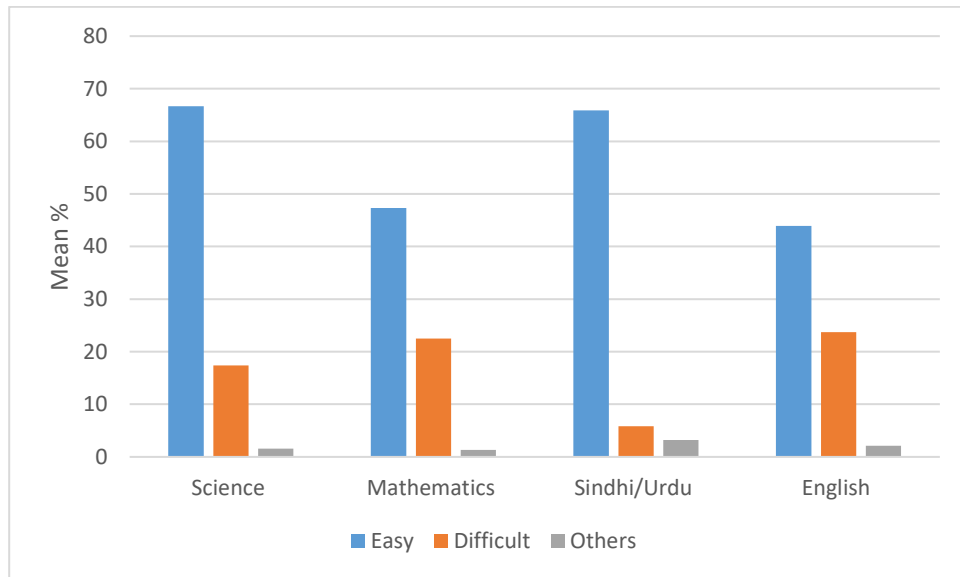


Figure 4.23 Students perception about the textbooks contents

5.5.3 FACILITIES AT HOME TO FASTER LEARNING

While responding to the question about the availability of facilities at home to foster their learning, 62.7% of the students reported that they have peaceful place at home. The achievement of these students was better compared with those who had not it. The same case for the other facilities. Similarly 21.4% students who reported that they had computer/internet facilities at home for the study, a positive correlation is found to their achievements in all the assessed subjects. Figure 2.24 gives the complete picture of available facilities at home to foster the students leaning.

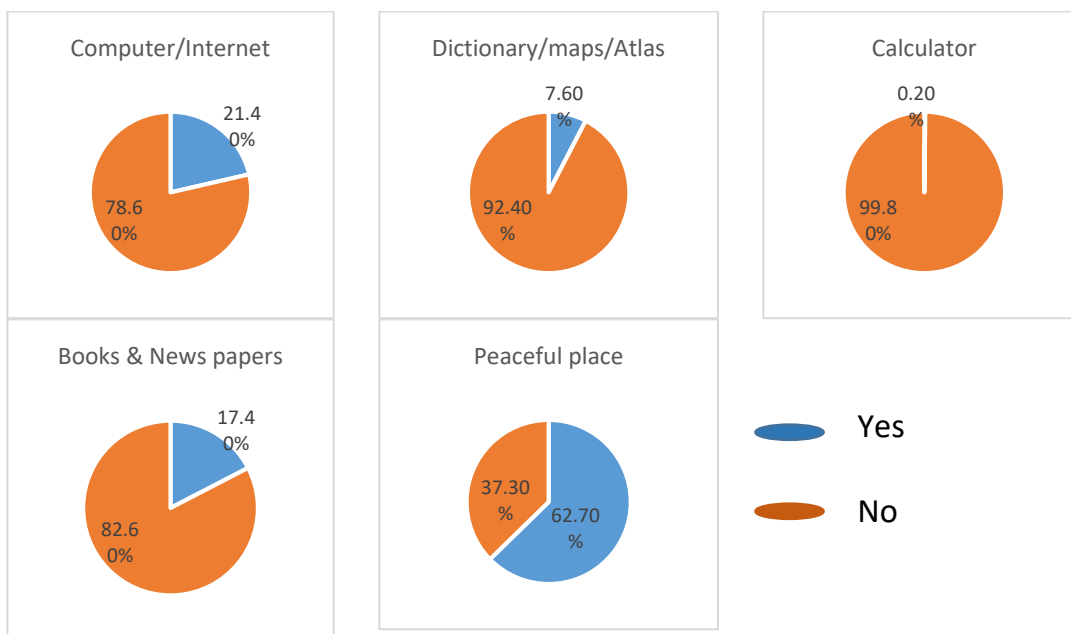


Figure 4.24 Facilities at Home to foster learning

5.5.4 TEACHING/GUIDANCE AT HOME

Students' achievement scores appear to be affected by family support. Response to the question regarding support/guidance for study at home from father, mother brother/sister and tutor is given in Figure 4.25.

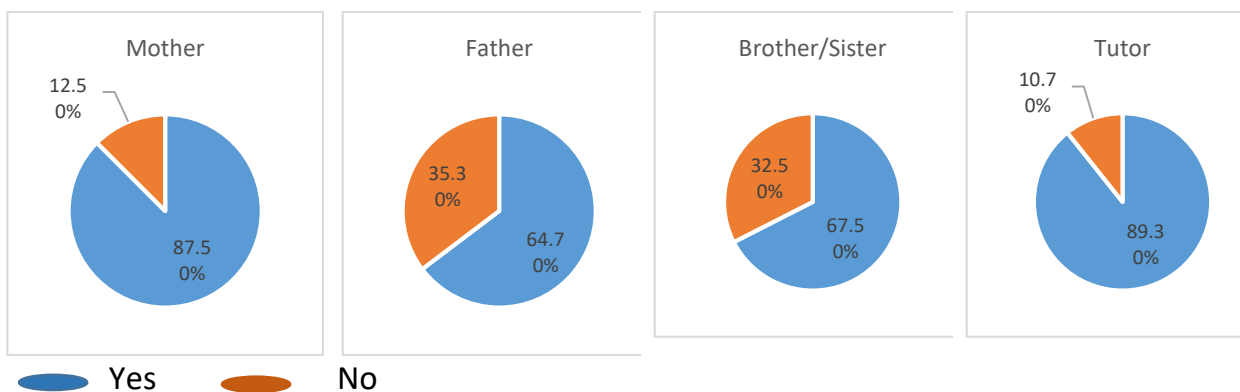


Figure 4.25 Source of guidance at home

In each case, more than 65% students reported that the guidance has been provided by Mother, father, brother/sister and/or tutor. This support has a positive impact in all subjects. It was interesting to note that students getting help from brothers/sisters scored higher as compared to students getting help from father and/or mother.

5.5.5 FREQUENCY OF HOME WORK AND TIME SPENT ON IT

Student response to the question regarding the frequency of homework is shown in table 4.6.

Table 4.6 Frequency of home work

Frequency	Average % for the subject of			
	Science	Mathematics	Sindhi/Urdu	English
Daily	61.4	55.2	62.5	53.7
Once or twice in a week	15.4	9.8	5.2	8.7
Once or twice in a month	2.9	1.2	2.9	2.9
Never	2.0	3.0	1.5	2.6

Most of the students reported that they receive homework on daily basis in all subjects, the Pearson Correlation coefficient shows that the positive effect in most of the cases, which means that homework has the positive effect on the achievements of the students.

Student response to the question regarding the time, they spent on their homework is graph figure 4.26.

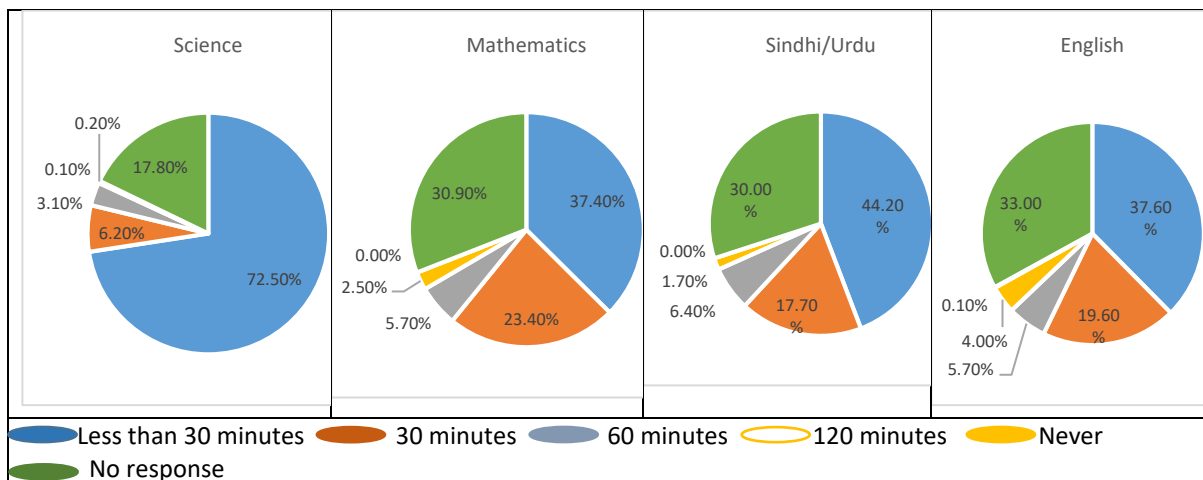


Figure 4.26 Time spent on home work

It was found that majority of the students spent less than 30 minutes in completing their homework. This time duration has a little effect in science, whereas, same amount of has a better impact on student achievement.

5.5.6 INTEREST OF PARENTS IN THEIR CHILDREN’S STUDY

A question was asked about the interest of parents in their children’s study. Most of the students reported that their parents ask about their study in all subjects but statistic show that effect of asking about study has positive impact in English & science only and in Sindhi /Urdu has no impact. Student response to the question is shown in the figure 4.27.

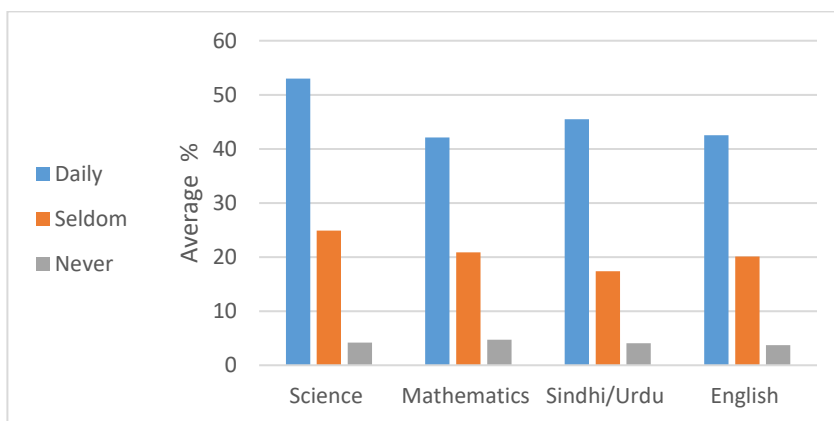


Figure 4.27 Frequency of enquiring of parents from their children about the study

5.5.7 ACTIVITIES / RESPONSIBILITIES AFTER SCHOOL TIMING

In response to the question ‘what do you do after school timing’; 58.7% of the students reported that they do home chores after school timing and 39.9% reported that they play games. The complete data is given in Figure 4.28.

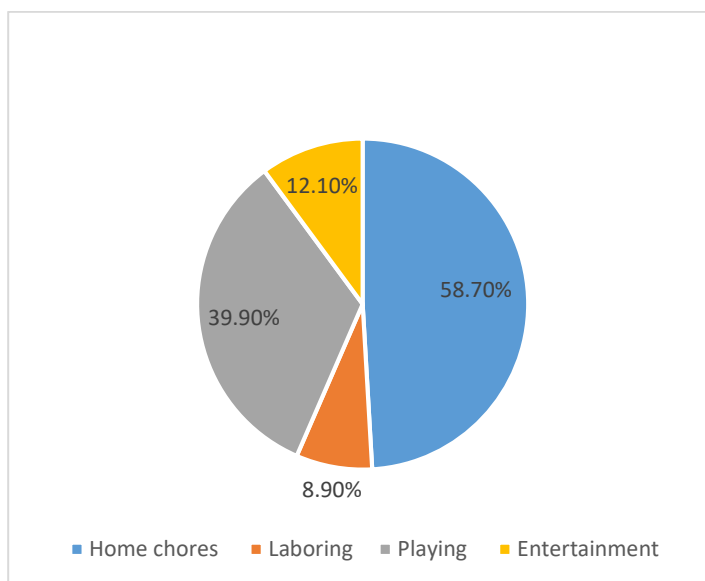


Figure 4.28 Activities/responsibilities after school time

It was found through correlational statistics that the playing and entertainment has positive effect on students’ study, whereas, home chore and laboring has the negative affect otherwise.

5.6 TEACHER, HEAD TEACHER, THEIR PRACTICES AND STUDENT’S ACHIEVEMENTS

5.6.1 TEACHER QUALIFICATION

Complete data of teachers’ qualification who teach grade 4 is presented in figure 4.29.

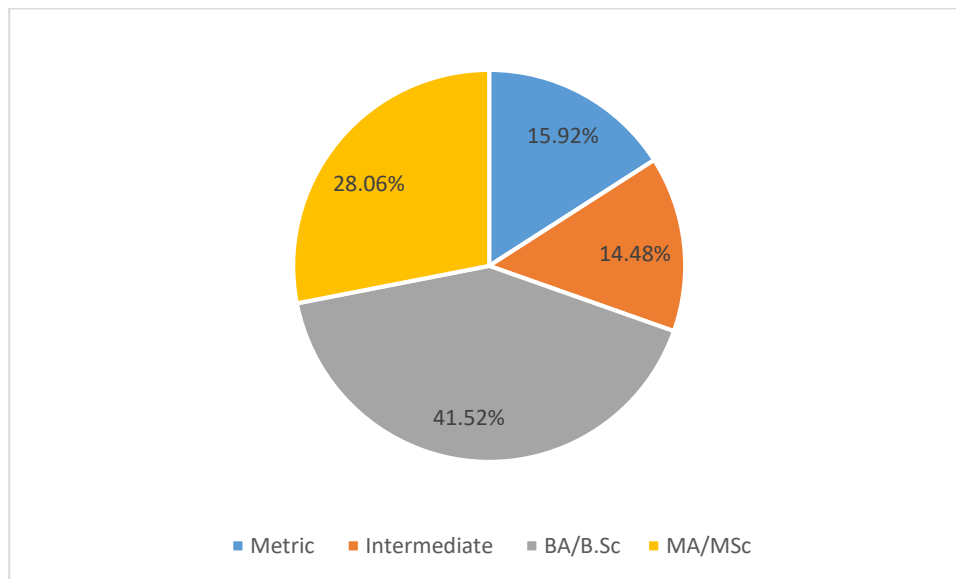


Figure 4.29 Teacher academic qualification

Data show that the 41.53% of the teachers are BA/BSc and 28.06% are MA/MSc, which means that most of the teacher reported graduate or post graduate. Positive correlation was found between students’ performance and teacher qualification, it means that there is positive impact of the teachers’ high academic qualification on the achievement of their students. However, still a significant number of teachers (more than 15%) are only matriculated.

5.6.2 TEACHERS’ PROFESSIONAL QUALIFICATION

Data given in Figure 4.30 reflects that 41.17% of the teachers are still PTC, whereas a considerable number (36.62%) possessed B. Ed and (13.89%) M.Ed. it means that majority of the teacher highly professionally qualified.

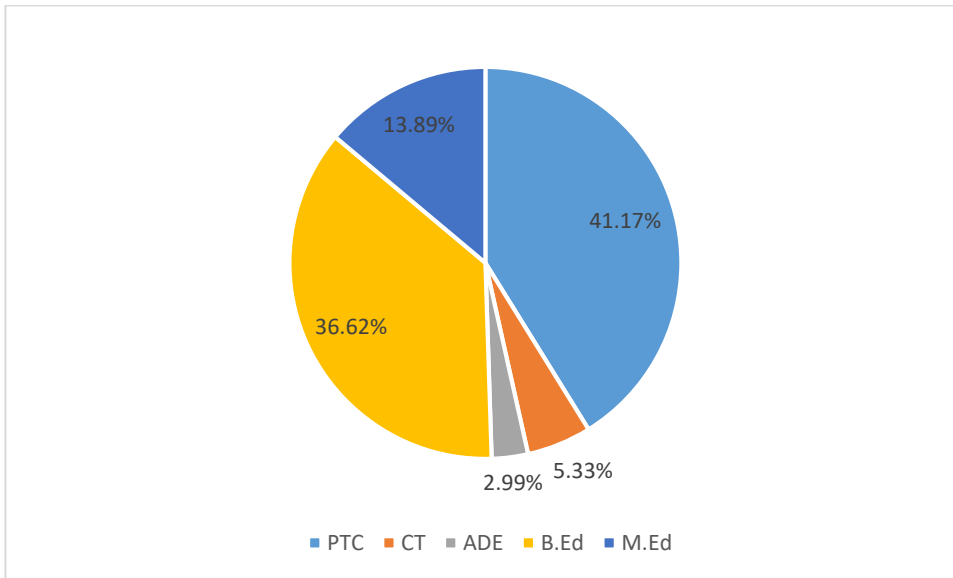


Figure 4.30 Teacher professional qualification

However, it was found that teachers’ professional qualification have no significant effect on students achievement.

5.6.3 UNDERSTANDING OF THE CURRICULUM

The figure 4.31 shows that 52.25% of the teachers have the knowledge of the curriculum to some extent and 25.81% reported that they do not have any understanding of the curriculum, which is an alarming situation.

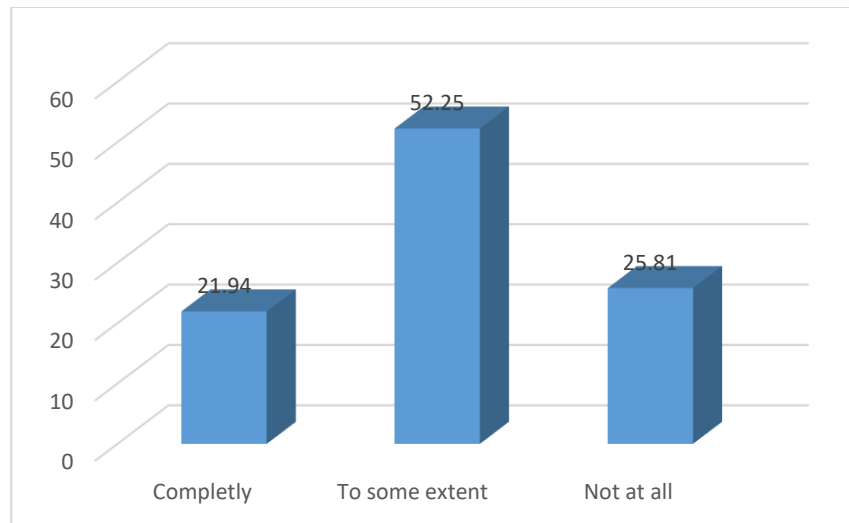


Figure 4.31 Understanding of the curriculum

It was found that students who were taught by a teacher with complete knowledge of curriculum, perform better in the achievement tests.

5.6.4 ACADEMIC QUALIFICATION OF HEAD TEACHER

Figure 4.32 shows that majority of head teacher possess academic qualification either BA/BSc (48.77%) and/or MA/MSc (26.41%).

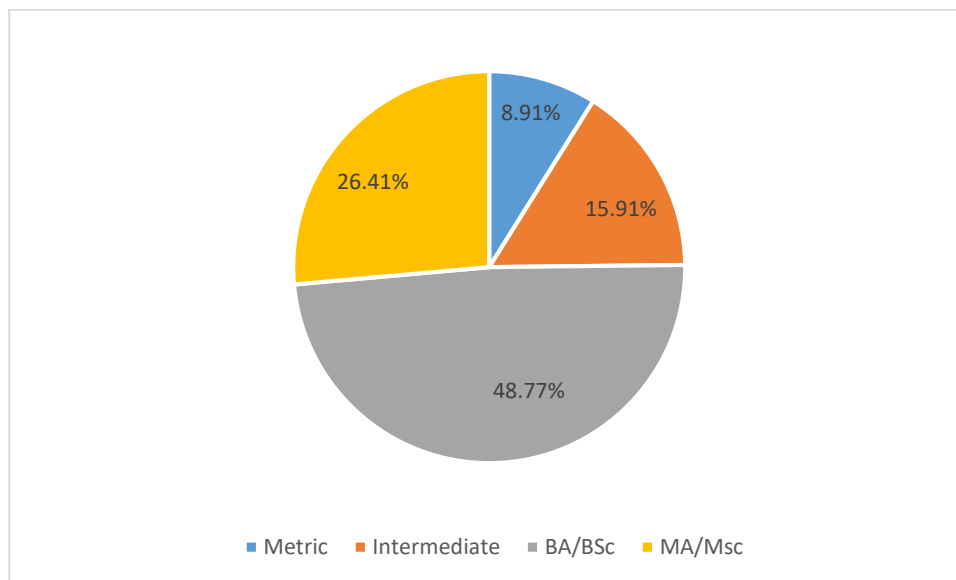


Figure 4.32 Academic qualification of Head Teacher

Analysis of the data informs that head teacher academic qualification have no significant effect on student achievement.

5.6.5 PROFESSIONAL QUALIFICATION OF HEAD TEACHER

Figure 4.33 gives the distribution of the professional qualification of the head teachers working in/for primary schools. Majority of these head teachers have professional qualification either PTC (46.32%) and/or BEd (34.29%).

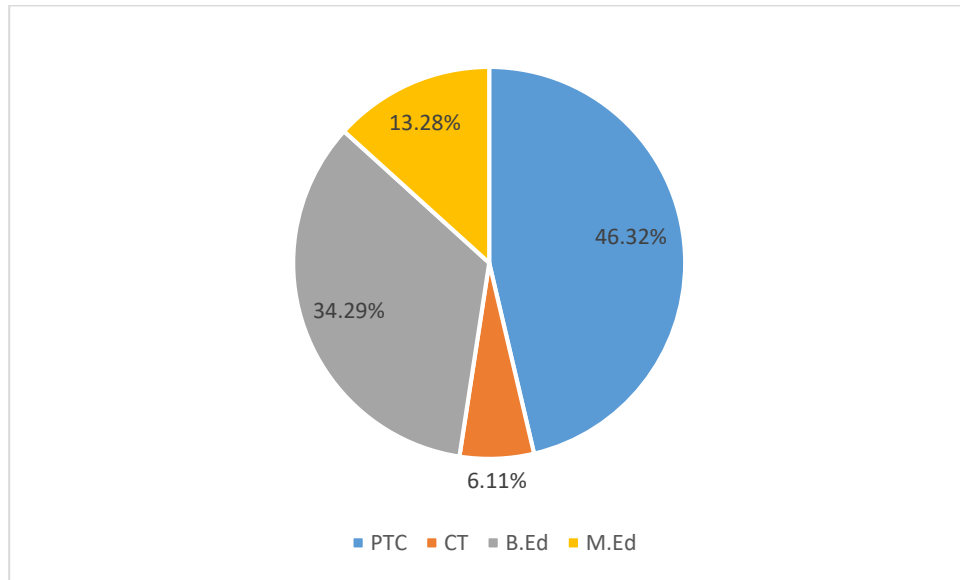


Figure 4.33 Head Teacher professional qualification

Analysis of the data informs that professional qualifications of the head teachers have no significant effect on student achievement.

5.6.6 MULTIGAME TEACHING

Figure 4.34 discloses that majority of the teacher (63.85%) reported that they were using for multi⁴ grade teaching.

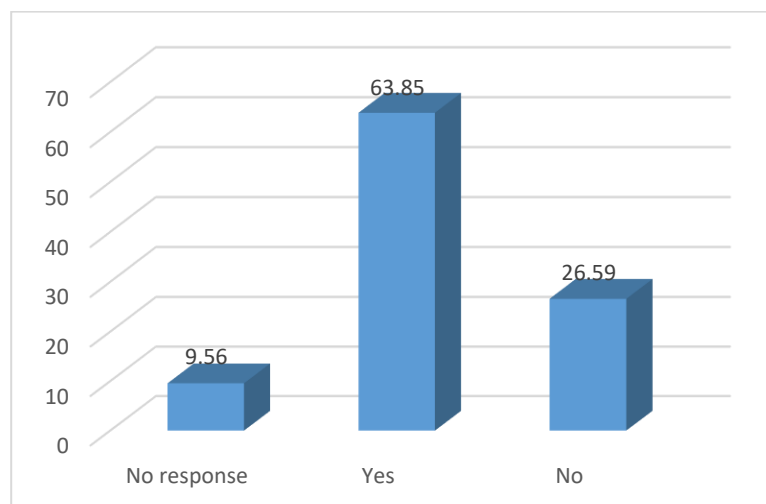


Figure 4.34 Multigame teaching

⁴ A teacher teaches more than one grade simultaneously.

Data analysis establishes that multi grade teaching have a negative effect on student achievement. Students whose teachers took more than one class at the same time scored lower than those whose teachers taught single classes. The same result had been reported in language survey 2010 in Sindh under PEACe. These differences however, were not significant statistically for either subject.

5.6.7 USE OF TEACHING AIDS BY TEACHERS

Student response to the question ‘to what extend their teachers use teaching aids’ is shown in the Figure 4.35:

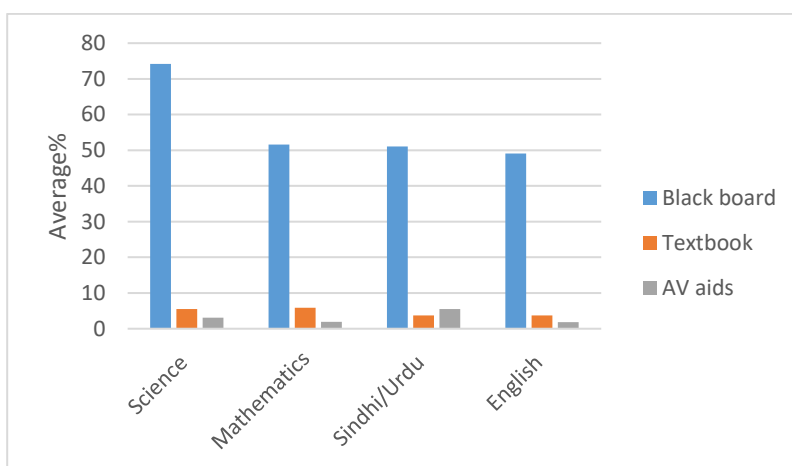


Figure 4.35 Use of teaching Aids by teachers

It was found that student showed better result where teaching aids was used as compared to black board and textbook in all subject.

5.6.8 PARTICIPATION CO-CURRICULAR ACTIVITIES

Students participating in co-curricular activities performed higher on the tests as compared to those who did not participate in these activities. The mean percentage of raw frequencies on the co-curricular activities reveal that majority of students participate in the Competition of Hamd/Naat and Education Visit. The complete data is given in figure 3.36

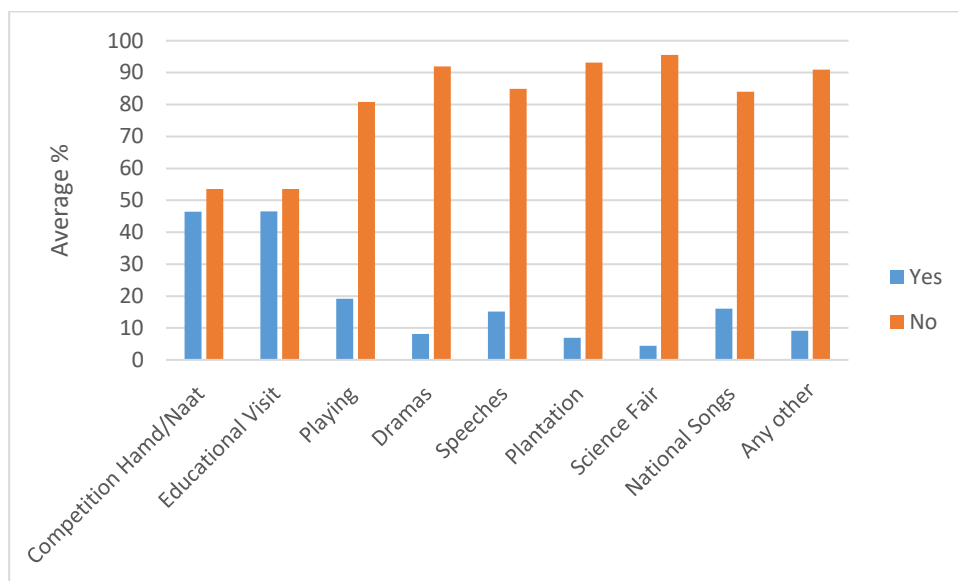


Figure 4.36 Participation Co-Curricular Activities

It is important to note that majority of the students reported that they do not participate in the Co-Curricular activities in the schools. It might be due the students are not interest in or such opportunities are not available to them.

5.6.9 FEEDBACK ON HOMEWORK BY TEACHER

In the response of the question about feedback on homework by teacher with the options ‘daily, once or twice in week, once or twice in month and never. The data has been presented in figure 4.37. Majority of the students reported that their teacher provides feedback. Students who reported getting homework scored significantly higher in the tests.

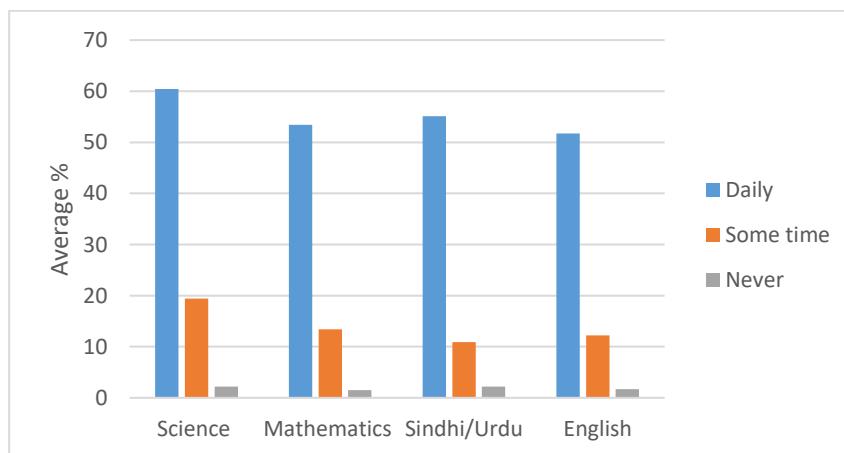


Figure 4.37 Feedback on homework by Teacher

5.6.10 FACILITY AT SCHOOL

In response to the question about the ‘availability of basic facility in the school’, majority of the students reported that drinking water, boundary wall, fans, playing ground and toilet are available in the school, Student’s responses has been given in figure 4.38.

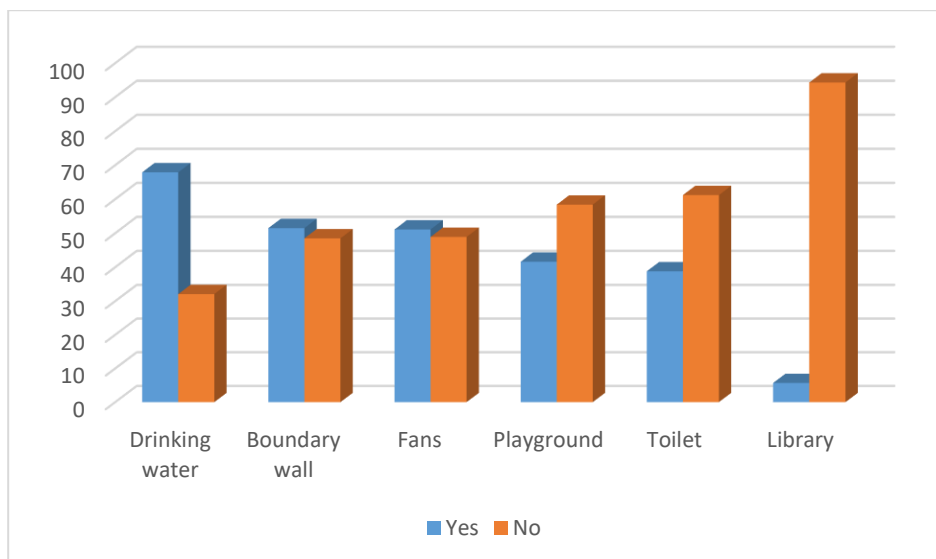


Figure 4.38 Availability of Facility at School

Coefficient of correlation calculated, shows a positive effect on the overall performance of the students in the tests.

5.7 BACKGROUND INFORMATION- PARENTS

5.7.1 PARENT EDUCATION

It was observed that most of the parents (Father/Mother) are illiterate and very few are found primary education only. In some cases father and mother are graduates and post graduates but.

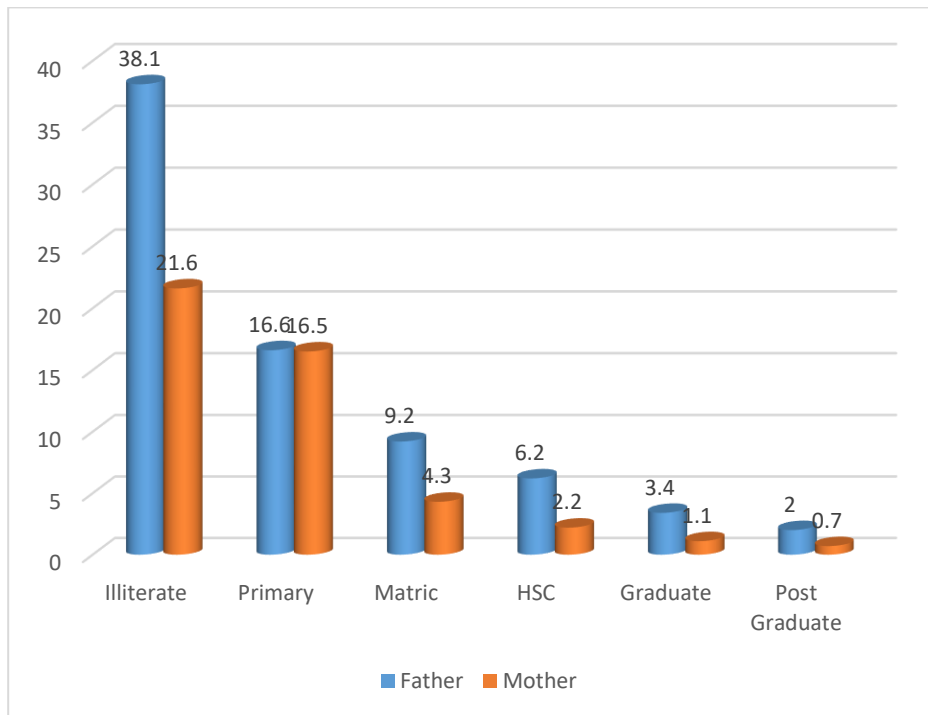


Figure 4.39 Parent Education

Analysis of data exposes that parent’s qualification has no significant effect on student achievement.

5.7.2 PARENT OCCUPATION

There is no positive correlation was found between performance of students and occupation of the parents. Parent’s response to the question is shown in the figure 4.40:

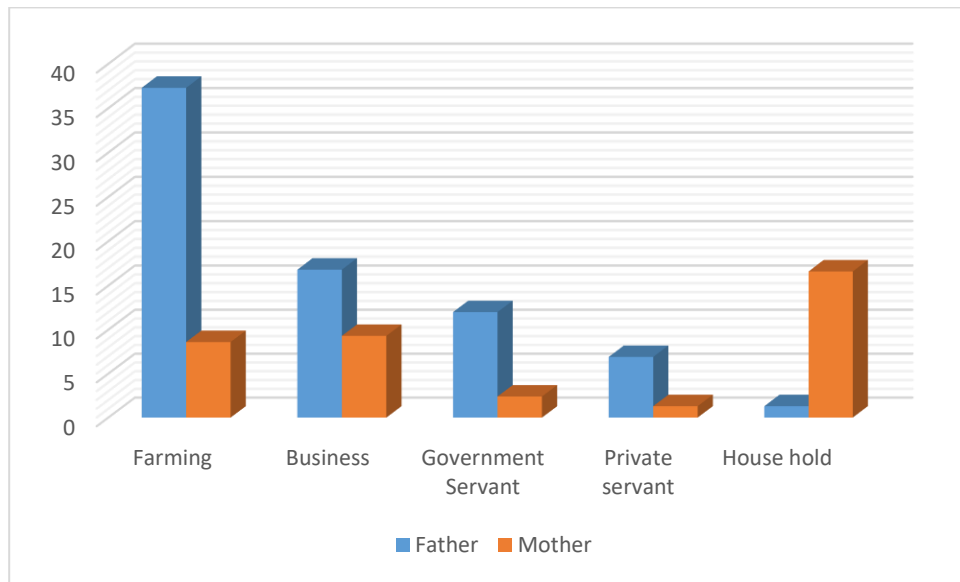


Figure 4.40 Parent occupation

5.7.3 PARENTS' OPINION ABOUT TEXTBOOKS

The parents response regarding existing textbook are given in figure 4.41, which shows that existing textbooks for grade –IV are easy to understand and informative.

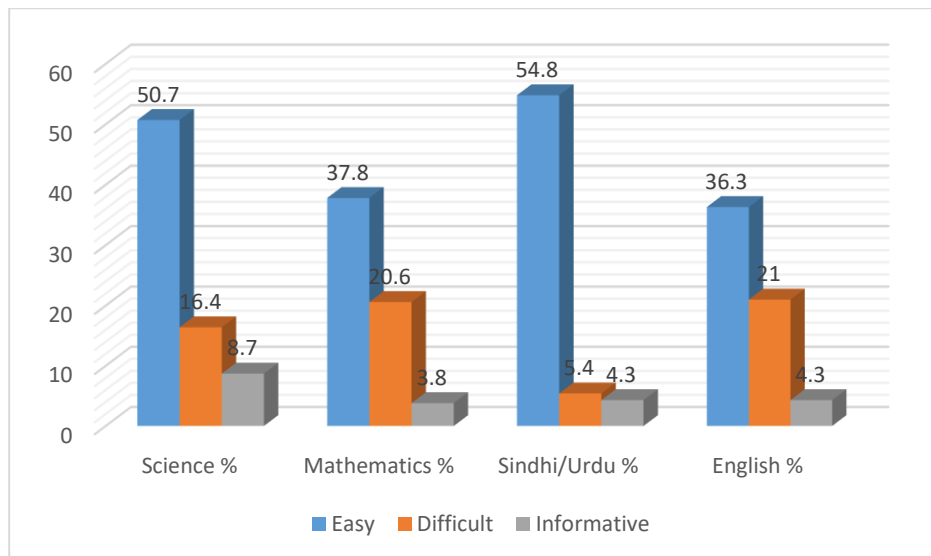


Figure 4.41 Parents' opinion about textbooks

5.7.4 FAMILY SIZE

Family size with the option, 3-persons, 4-persons, 5-persons & more than 5-persons did not appear to have impact on student achievement. Student's response to the question is shown in table 4.7:

Table 4.7 Family size of the students

Number of persons	No response	3-persons	4-persons	5-persons	More than 5-persons
Average % of respondents	16.5	5.9	7.5	12.6	57.6

5.7.5 MEAN USED AND TIME CONSUMED FOR REACHING AT SCHOOL

In the response of the question, 'How to go to school' with the options 'on foot', 'personal conveyance', and 'by van/bus'; majority of the students (78.3%) reported that they go to schools on foot and it consumes not more than 15 minutes. The complete data set has been given in tables 4.8 and 4.9

Table 4.8 Means used for reaching at school

Means used to reach at the school	No response	On foot	Personal conveyance	Van/bus
Average % of students used the mean	10.1	78.3	8.6	3.0

Table 4.9 Time consumed for reaching at school

Time consumed used to reach at the school	No response	15 minutes	15-30 minutes	30 minutes to 1 hour	More than 1 hour
Average % of students	9.3	64.9	19.0	4.7	1.2

6. KEY ISSUES, CHALLENGES, LESSONS LEARNED, RECOMMENDATIONS AND WAY FORWARD

6.1 CONSTRAINTS/ISSUES/PROBLEMS CONFRONTED DURING THE IMPLEMENTATION OF PAT 2015

6.1.1 PERTAINING TO PEACE

- 1 Although PEACe has been working on assessment for the last 10 years, there had been great turnover in the institution. This situation coupled with non-functionality of the PEACe has adversely affected its staff's capacity. There is significant number of staff who are new comers at PEACe that has increased capacity gap of the institution to perform in the field.
- 2 The major challenge during the item development stage and test-administration was the time allocated for the activities. This challenge put an extra pressure on the PEACe team and also forced the team to compromise on some quality checks.
- 3 The teams had to work in hot weather in long power breakdowns that had affected the quality of the output of the teams.

6.1.2 PERTAINING TO SAMPLING

- 4 Use of Grade 2 enrolment from the 2012/2013 SEMIS data was an issue.
 - 4.1 The Grade 2 enrolment was used because the current Grade 4 students were in Grade 2 at the time of the 2012/2013 Census of Schools. However, this did not provide accurate information about the current information about the student's enrollment. Schools with small grade IV enrollments in the remote areas, and some discrepancies between the SEMIS data and the actual enrolments posed logistic problems at the time of the administration of assessments, even after the physical verification by the district focal persons.
 - 4.2 There were a significant number of schools in the sample, where actual enrollment was very low in comparison to the SEMIS data. This situation hampered meeting the target number of students in the survey

6.1.3 PERTAINING TO TEST ADMINISTRATION

- 5 The training of TAs was in a rush and it was confined to a day-long training that did not leave room for hands-on practice. This resulted in lacking TA understanding to conduct test according to guidelines provided by PEACe in TA manual. Resultantly, even all assessments Booklets for each subject were packed on Booklet A & Booklet B in alternate sequence; TA had difficulty to arrange them before distribution to students in case of any mistake made at the time packing the tests for the field. The situation became worse at couple of centres from where TAs were able to attend the training.

- 6 Validity of data: For some schools, it was reported during scoring and coding process of test booklets that teacher writing and/or same text on the booklets particularly in CRQs of science and mathematics test, and languages tests. It was decided to award zero score in case of teacher writing, and reduced the marks if same text found on all the booklets from a school.
- 7 The transportation of the assessment materials to the districts was difficult. The districts also experienced difficulty in ensuring that the assessment instruments reached at all the sample schools on time.
- 8 The collection of the assessment instruments after test administration took long especially from remote areas.
- 9 The TAs' training in many centers failed to achieve its set objectives due to the late arrival of the training materials.
- 10 TAs always did not use the examples given in the test booklets to familiarize the students with the test pattern/methodology
- 11 TAs always did not follow the guidance given in the TA Manual; as they: a) found it difficult to understand and hence avoid practice on the use of the random number table (used to identify 20 students in a class which had more than 20 students) as well as the skip interval; and b) were lacking in understanding of the methodology for entering the correct information for "split" schools
- 12 The school enrollment was not recorded during the test administration for some of the sampled schools in a proper manner

6.1.4 PERTAINING TO MONITORING OF TEST ADMINISTRATION

- 13 PEACE, BoC, Senior staff of E&L Department were involved in monitoring with the objective to monitor the test administration activity and report back to PEACE. Due to limited number of monitoring staff engaged in the activity, this protocol was not fully implemented.

6.2 LESSON LEARNT FROM PAT 2015

- 1 There must be time slot between distributions of training material and its conduct, and administration of the tests in schools. This slot could ensure timely availability of assessment instruments and other material at the training centres and will also enable the administrators to reach back to their centre well before the test administration day.
- 2 The monitors should be able to address day to day problems occur during the test administration and report back to the PEACE control room on any major issue/challenge for quick response and uniform decision making across the province on such matters.
- 3 Quality Assurance procedures are required to be in place for all activities related to test administration and should be centrally handled at PEACE by establishing a control room in it.
- 4 The teacher writing data to be entered with a code and identify the districts, school with the name of TA and head teacher who signed the certificate. There is need to inform the District

Authority for TAs who had sent bogus data to PEACE in their writing and signed from head teacher on TA file.

6.3 CONCLUSION AND WAY FORWARD

The report is an attempt to document the process adopted by PEACE to ensure validity of the pool of the assessment items used in PAT 2015 and the test administration. It also has documented the strengths and weaknesses of the PEACE that will help Sindh Government in taking necessary measure to make it as viable institution with a database that could inform the government about the quality of education in the province.

The findings presented in this report are an attempt by PEACE to establish exiting achievement level of students at grade 4 level in the five subjects. It could be used as a starting point for monitoring trends in the learning achievement of students in Sindh. The background variables found to be positively or negatively associated with students' scores are not necessarily contributing and need to be considered with caution.

The findings of the tests have implications for the development of a quality education in Sindh province. Strategies and action plans need to be developed to: a) identify requirements and strategies and plan for improvements in student learning; b) revise textbook in line with the enacted curriculum standards, competencies and SLOs; c) align teacher training and teacher education development programmes to address the gray areas identified in the report; and d) improve the roles of management in the districts to mentor and advise teachers in a supportive manner.

This round of assessments has generated a rich pool of data that can be analyzed in greater detail and supplemented with rigorous quantitative and qualitative studies to identify more specifically the correlates of achievement in the students' learning environment which can be supported through policy formulation, administrative measures, textbook revision, teacher education and other learning materials development.

Currently PEACE does not have the human and financial resources to undertake such studies on regular basis. Up till now, PEACE is working under a project mode and hence acting upon time bound implementation plans to deliver its mandate. It will be of a great advantage, if a reasonable developmental budget be allocated for PEACE activities apart from its existing recurring budget.

PEACE has to play a significant role as an assessment hub of Sindh working for developing teachers capacity on assessment, developing question-banks with Multiple Choice type items, Constructed Response Questions, Extended Response Questions develop item profiles and adopt e-marking for increased validity, reliability, transparency, fairness and efficiency.

Teacher Education Institutions and University departments of education/psychology can also be encourage to use the data generated from the PAT 2015 for research studies that could be used for informed decision making and policy formulation in Sindh.

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APPENDICES

Appendix 1. TERMS OF REFERENCE

TERMS OF REFERENCE FOR SHORT TERM TECHNICAL ASSISTANCE (ASSESSMENT AT GRADE IV)

Prepared by: Senior Adviser Quality Education

Background and Needs Assessment:

PEACE is a part of the Bureau of Curriculum, entrusted to carry out Education Assessments on an annual basis. For the purpose, Government of Sindh allocates a budget under the overall Budget Head of Reforms Support Unit. PEACE activities could not be operationalised for the first three quarters of this year, mainly for the reason that an annual plan was not put in place. A multi-year plan has been under discussion, but not endorsed by RSU/Education Department. Accordingly, the budget released by Finance Department to the RSU could not be further released to the PEACE.

Discussions were held by the Senior Adviser (Quality Education) and Senior Adviser (PFM and Procurement) first with the PEACE and BoC teams and then with the Chief and concerned Senior Programme Managers along with the Team Leader, on operationalizing PEACE, in the last quarter of the current fiscal year. It was agreed in principle that EU TA will work with PEACE and RSU teams to come up and agree with an operational plan, for the last quarter of the fiscal year at the earliest along with working out the detailed activities plan for conducting the large scale testing in the next financial year. It is important that the detailed plan is worked out, agreed and releases for the last quarter are made to PEACE, after endorsement from RSU at the earliest along with working out the budgetary requirements for the next fiscal year 2014/15, in good time.

Other findings from those meetings were

- At present, all except one sanctioned post of the PEACE are filled.
- PEACE, as a unit of the Bureau of Curriculum (BoC), is currently not involved in the assessment work which is their mandate, and it does not have a budget to carry out regular assessment activities
- PEACE staff are confident that for School Grade IV they had many of the skills to be capable of preparing instruments, they could pilot the instruments, do a quantitative analysis, produce assessment reports and briefs for dissemination for stakeholders, but would appreciate support and advice.
- In relation to preparing a framework for SLO based assessments based upon the new curriculum and text books, PEACE have requested some technical assistance to review the existing instruments.

Scope and purpose of the assignment

Technical Adviser (TA) for Capacity Development of PEACE Staff will be contracted for a period of 55 days beginning from May 2014 to March 2015. During this period the TA will provide consultancy to a group of 30 – 35 assessment instrument developers to write test items in Languages (English, Urdu, Sindhi), Maths, Science and Social studies of grade 4 students. Key outcomes of the assignment will be greater capacity for PEACE to support the achievement of one of the payment triggers for assessment in the EU policy matrix

- Agreed work in instrument development for Grade IV completed, piloted, analysed and finalized preparatory to large scale Grade IV testing (13/14)
- Grades IV assessment conducted analysed and results disseminated for action (14/15)

RSU will fund the operational activities related to assessment for all the three phases. The design and execution of assessment activities will be managed by PEACE. The consultant will work with PEACE staff and Senior Adviser Quality Education to mentor in the design of test instruments, pilot and modify the instruments, analyse the raw scores and develop analytical reports through test statistics, reliability coefficient and standard error of measurement. The comprehensive analyses of the test results will help in improving the test for the next round and will give more in depth reports to improve the curriculum as

well as professional development. This will hopefully lead to policy decisions in the area of curriculum and teacher education. The experience gained by PEACE personnel will prepare them to carry out similar activities for other grades.

Methodology

The assessment activity will be carried out in three phases. Phase I is for the preparation of instruments in five subjects of Grade IV. Phase II is for piloting of the instruments on a small sample size. Scoring of the results, analyses of the results and to improve the instruments post pilot. Phase III is to conduct the test on a large sample. Score the results, analyse for producing analytical reports for different stakeholders.

The modes to carry out different phases will depend on the nature of activities, but most of the time there will be workshops of the test writers and the training of test administrators with a help of a manual, PEACE staff will work from their centre on scoring the results and will produce reports with the help of analysis software. There will be regular meetings with the contracted expert and with Senior Adviser Quality Education.

Key tasks and deliverables:

Phase I May -2014 (Input 15days)

- i) Facilitate 3 days session on Introduction to assessment and construction of subject based SLO Framework.
- ii) Facilitate 3 days session to construct and review subject based test items in three Languages
Facilitate 3days session to construct test items in Math, Science and **Social studies**.
- iii) Facilitate 3 days session to translate the **two** subjects test items in Urdu and Sindhi

Consultant will spend 3days for planning and writing the report on the Initiation Phase.

Deliverables: Copies of subject wise Test Instruments and a report on the entire process of test construction

Phase II. Screen Piloted Tests Results and Improve the Test Instruments –June –July (Input 15 days)

In this Phase the Consultant will

- i) Review the test scores of piloting and help PEACE analyze the score
- ii) Work with the items writers to review post pilot item
- iii) Help re -write and create new items so that the test becomes valid and reliable to be administered on a large sample.

Deliverables: A set of final subjects' wise test instruments for grade IV and submit a comprehensive report on the review process.

Phase III. Final Analyses and Report Development on the large scale Grade 4 test: February –June 2015 (Input 25 days)

- i) Hold meetings with the test scorers to review the final test scores.
- ii) Hold workshop with PEACE staff to analyse the results.
- iii) Develop analytical reports for different stakeholders to guide;
 - a)Teacher Educators: for designing CPD courses
 - b)Curriculum Designers and Text Books Writers: for reviewing the curriculum and text books.
 - c)Develop workshop formats and content for Dissemination to Stakeholders

Deliverables: Analytical Reports and Dissemination plan of workshops and other means like flyers and briefs

Key selection criteria for recruitment:

Academic and Professional Qualification:

1. Masters in Education 2. Master in Educational Assessment.

Experience:

Evidence of substantial work in assessment like test instruments development; analyses of raw test data, Basic Item Analysis Statistics, Interpretation of Basic Statistics and can produce Summary Data.

Knowledgeable and experience of developing text book materials, holding workshops with curriculum and text book writers and produced material like manuals on curriculum 2006.

Experience of working with Government Sector (preferably Sindh)

Good communicator. Possess leadership skills with specific focus on: rapport building with government officers, respectful of people’s knowledge and experiences, active listener and quick decision maker

Good analytical skills: Being able to do higher order analyses specific to assessment, being reflective and able to question assumptions and give alternate solutions.

Strong writing skills (English Language).

Reporting and management

Recruiting Manager

British Council –Team Leader SESSP

Reporting and management during the assignment:

SESSP- Senior Adviser Quality Education

Final sign-off responsibility for the deliverables

SESSP- Senior Adviser Quality Education

Timeframe and next steps:

Time Frame: May 2014- June 2015

Total Consultancy Days = 55.

- The Senior Adviser will share the Concept Note, Scope of Work, and the TA Needs Assessment Form with the Team Leader by second week of April 2014.
- EU agree ToR
- Chief Programme Manager RSU approves the Terms of Reference
- Head hunt the prospective consultants; at least three CVs will be secured.
- Share the profiles with the search committee
- Organize interviews and do the selection.
- Will attend to any other procurement related tasks to ensure the services of the right candidate to be on board for the instrument development work to begin smoothly in the proposed dates.

Appendix 2. TABLE OF SPECIFICATIONS

1. TEST SPECIFICATION (GENERAL SCIENCE)

Below is found the minimum percentage distribution of items for Grades 4, for science ability in the Provincial assessment

Science Abilities	Weightage in percentage
Knowledge	38
Conceptual Understanding	40
Problem Solving/Investigating/Inferring	22
Total	100%

The distribution of items by Science Content is found below:

Science Content	Weightage in percentage
Life Science	42
Physical Science	51
Earth and Space Science	7
TOTAL	100%

Number of items for each level understanding and content

Science Abilities	Science content			Total
	Life Science	Physical Science	Earth and Space Science	
Knowledge (K)	16	19	3	38
Conceptual Understanding (CU)	17	20	3	40
Problem Solving/ Investigating/ Inferring (PS)	9	12	1	22
Total %	42	51	7	100%
Total Items (PT)	34	40	6	80 Items
Total Items (LST)	26	30	4	60 Items

Minimum Distribution of the Type of Items for Grades 4

Content	MCQs 90%	Constructed response 10%
Life Science	23	2
Physical Science	28	3
Earth and Space Science	4	0
Total	55	5

Marks Distribution

1. MCQs has 1 marks	$55 \times 1 = 55$ marks
2. Constructed response 56-58 (4 marks each)	$3 \times 4 = 12$ marks
3. Constructed response 59 (2 marks each)	$1 \times 2 = 2$ marks
4. Constructed response 60 (1 marks each)	$1 \times 1 = 1$ marks
Total marks	$= 70$ marks

2. TEST SPECIFICATION (MATHEMATICS)

Percentage Distribution of Items for Grades 4 Content Strands

Content strand	Grade 4
Number & its operation	50 %
Measurement	20 %
Geometry	20 %
Information handling	10 %
Total	100 %

Distributions of items by mathematical abilities

Mathematical Ability	Weight age of Grade 4
Remembering	40%
Understanding	40%
Application	20%

The Test will be consist of 60 items in each grade, the Distribution of Items by Mathematical Abilities for Grades 4

Abilities/Level	Number & operation	Measurement	Geometry	information handling	Total
Remembering	12	5	5	2	24
Understanding	12	5	5	2	24
Application	6	3	2	1	12
Total no of items	30	13	12	5	60

Minimum Distribution of the Type of Items for Grades 4

Content	MCQs	Constructed response
Number and operation	25	5
Measurement	11	2
Geometry	10	2
information handling	4	1
Total	50	10

Percentage of each type

Item type	Percentage
Selected Response Type	
i. MCQs	60%
Constructed Response Questions (CRQs)	
i. Restricted Response (short Answer)	40%

- | | |
|-------------------------------------|--------------------------|
| 5. MCQs has 1 marks | $50 \times 1 = 50$ marks |
| 6. Constructed response has 5 marks | $10 \times 5 = 50$ marks |
| Total marks | = 100 marks |
| Total time | = 100 minutes |

3. TEST SPECIFICATION (LANGUAGE - URDU, SINDHI, ENGLISH)

Language Test Specification

Area/Skill	Booklet wise Question number		Total questions	Type of questions
	Booklet A	Booklet B		
Reading	33	33	66	MCQ
Grammar	14	14	28	MCQ
Writing	03	03	6	CRQ
	50	50	100	

Reading specification

Content	Booklet wise Question number				Total questions
	GU	D.Int	TC	EX.C&St	
Literary experience Prose	4	4	2	1	11
No.of question	1-4	5-8	9-10	11	
Literary experience Poetry	4	4	2	1	11
No. question	12-15	16-19	20-21	22	
Reading for information	4	4	2	1	11
No. of question	23-26	27-30	31-32	33	
	12	12	6	3	33

Knowledge about language

Aspect of Language	Themes	No. of items
Vocabulary	Use of words, idioms, opposite words ,understand and use of antonyms ,rhyming words ,gender ,singular /plural Arrange according to alphabetical order Dictation 34-39	6
Grammar	Understand and use of basic grammar(noun, preposition ,conjunctions ,punctuation) 40-45	6
Sentence	Sentence structure (simple ,interrogative ,negative) 46-47	2
	Total	14

Grammar Specification

Aspect	Themes	Question no.	Question no.	Total questions
		b-A	b-B	
	Use of words Word meaning	34	34	
	Idiom			

Vocabulary	Opposite words	37	37	
	Antonyms			
	Rhyming words	36	36	
	Gender	39	39	
	Singular/plural	35	35	
	Alphabetical order	38	38	
	dictation			
	Total			
Grammar Understand and use of basic grammar	Proper noun	43	43	
	Definition of word	41	41	
	Adjective	42	42	
	Subject (fail)	44	44	
	Punctuation	40	40	
	Conjunction (Harf jumlo)	45	45	
Sentence	Correct sentence	46	46	
	Interrogative Sentence	47	-	
	Negative Sentence	-	47	
		14	14	

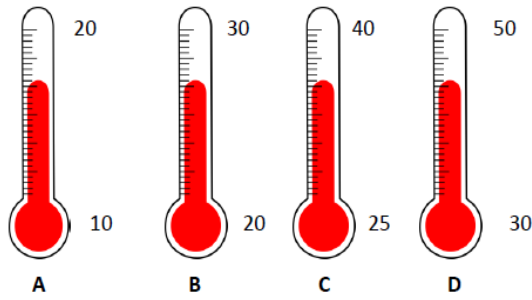
Distribution of items for each purpose of writing

Purpose of writing	No. of Prompt	No.of question
Narrative	1	48
Informative	1	49
Persuasive	1	50
	03	

Appendix 3. SAMPLE TEST ITEMS

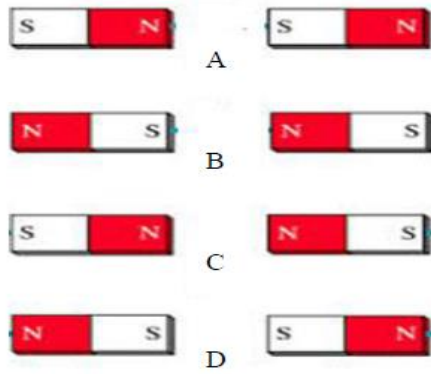
1. SAMPLE TEST ITEMS (GENERAL SCIENCE)

سوال نمبر 29: هڪ بيمار شخص جو گرمي پد 35°C کان 42°C جي وچ ۾ آهي. هيٺ ڏنل ۾ ڪهڙو ترموميٽر جسم جو گرمي پد معلوم ڪرڻ جي لاءِ تمام مناسب آهي؟



- الف ترموميٽر A
 ب ترموميٽر B
 ج ترموميٽر C
 د ترموميٽر D

سوال نمبر 45: چقمق جا ڪهڙا ٻه جوڙا هڪ ٻئي کي ڪشش ڪن ٿا؟



- الف C ۽ B
 ب D ۽ B
 ج B ۽ A
 د C ۽ A

سوال نمبر-03 جسم کا کون سا عضو سننے کے لیے استعمال ہوتا ہے؟



- الف
ب
ج
د

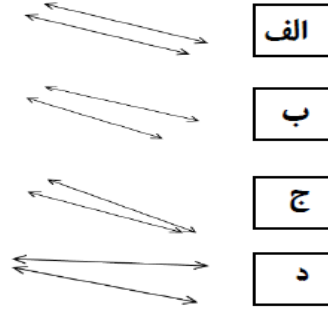
سوال نمبر-57 پودے کے دور زندگی کے مراحل کو دئے گئے الفاظ کی مدد سے مکمل کریں۔

پودا، بیج، جز، کوئیٹل

چوتھا مرحلہ	تیسرا مرحلہ	دوسرا مرحلہ	پہلا مرحلہ

2. SAMPLE TEST ITEMS (MATHEMATICS)

سوال نمبر 39: لیکن جو کھڑو جوڑو متوازي ليکون آهن؟



سوال نمبر 30: اتي جي هڪ ٽيلهي جو وزن 7 ڪلو گرام ۽ 50 گرام آهي. ٻئي ٽيلهي جو وزن 10 ڪلو گرام ۽ 30 گرام آهي ته ٻنهي اتي جي ٽيلهن جو ڪل وزن ڪيترو ٿيندو.

- الف 17 ڪلو گرام 50 گرام
- ب 17 ڪلو گرام 80 گرام
- ج 17 ڪلو گرام 10 گرام
- د 17 ڪلو گرام 20 گرام

سوال نمبر 24 18.56 میں عدد 5 کی مقامی قیمت ہے۔

- الف 5 دسویں
- ب 5 سوویں
- ج 5 ہزارویں
- د 5 دس ہزارویں

سوال نمبر 52 جوس کے ایک پیکٹ سے 5 گلاس بھرے جاتے ہیں تو بتائیے 210 گلاس بھرے کے لئے جوس کے کتنے پیکٹ درکار ہونگے؟

3. SAMPLE TEST ITEMS (SINDHI)

(Reading):

هدايت: ڏنل آکاڻي پنهنجي استاد سان گڏ پڙهو.
 سهائيءَ جي اک اڇ ڪڪڙ جي بانگ بجاءِ گهڙيال جي آواز تي ڪلي. هوءَ ٽپ ڏئي ڪت تان اُٿي ۽ پنهنجي
 پياري ڪڪڙ کي ڳولڻ لڳي. اوچتو پريان هُن ڏٺو ته سندس پيءُ سُڪار ۽ امڙ ڪڪڙ جي گوشت مان برياني
 ٺاهڻ جي تياري ڪري رهيا هئا.

سوال: اڇ صبح جو سهائيءَ جي اک ڪلي:

پيءُ جي رڙين تي	الف
ڪڪڙ جي بانگ تي	ب
ماءُ جي سڏ تي	ج
گهڙيال جي آواز تي	د

سوال: ڪڪڙ جو ڇا ٿيو؟

ڪڪڙ ڀڄي ويو	الف
ڪڪڙ لڪي ويو	ب
ڪڪڙ ڪُسي ويو	ج
ڪڪڙ اڏامي ويو	د

Sindhi (Writing):

پارو!

وڻن جي ويڊجڻ، دونمين جي ڦمليجڻ ۽ آوازن جي ڪري اسين دنيا کي گدلو ڪري رهيا آهيون، هيٺ ڏنل ڪهاڻي به اسان کي اهڙي صورتحال کان آگاهه ڪري رهي آهي. ڏنل اشارن جي مدد سان نا مڪمل ڪهاڻي کي مڪمل ڪريو.

ڏاڏي دنيا

• ڳوٺ ۾ ڳالهه هلي وئي ته ڏاڏي دنيا بيمار ٿي پئي آهي.

• ڏاڏي دنيا کي پڇڻ لاءِ سڀ ٻار _____

• ڏاڏي دنيا ٻڌايو ته دونمين جي ڪري _____

• وڻن ويڊجڻ جي ڪري _____

• گوڙ شور جي ڪري _____

• اهو ٻڌي ٻارن عهد ڪيو ته _____

4. SAMPLE TEST ITEMS (URDU)

Urdu (Reading):

ہدایت: دی گئی کہانی غور سے اپنے استاد کے ساتھ پڑھیے۔

بہت تیز دھوپ تھی۔ شالونہ اور روشن نے نابینا باباجی کو دیکھا۔ وہ پسینے میں بھگیے ہوئے تھے۔ دونوں بچوں نے باباجی سے پوچھا تو انہوں نے بتایا کہ مجھے پیاس لگی ہے اور سڑک پار جانا ہے۔ شالونہ نے اپنے تھر ماس سے پانی نکال کر پلایا۔ روشن نے باباجی کا ہاتھ پکڑا، سڑک پار کرائی۔ باباجی نے دونوں کو دُعا دی۔

درست جواب پر (✓) کا نشان لگائیے:

• شالونہ اور روشن کیسے بچے تھے؟

الف	شرارتی
ب	چالاک
ج	ڈرپوک
د	رحم دل

• کہانی کس موسم کی ہے؟

الف	سردی
ب	گرمی
ج	بہار
د	خزاں

Urdu (Writing):

سوال نمبر 1. کہانی مکمل کیجیے۔

پیارے بچو! نیچے ایک کہانی شروع کی گئی ہے۔ آپ اسے پڑھ کر کہانی مکمل کر دیجیے۔

ایک بڑا سا جنگل تھا۔ جنگل میں شیر، ہاتھی، چیتا، بندر، لومڑی اور بہت سے جانور رہتے تھے۔ ایک دن شیر کے گھر چوری ہو گئی۔ شیر نے غصے میں سارے جانوروں کو بلا لیا

5. SAMPLE TEST ITEMS (ENGLISH)

Once Ali went to the market for buying some grocery. He bought almost all things in his list. He checked the list and noted that he had also to buy a packet of milk. Suddenly he saw a poor and hungry girl, looking at oranges. Ali bought her oranges.

Mark (✓) the correct option:

Q. No. Ali went to the market for buying:

- A Grocery
- B Toys
- C Cloth
- D Fruit

Q. No. The girl was looking at oranges because she was:

- A Angery
- B Hungery
- C Lusty
- D Thirsty

Q. Describe “**Visit to a zoo**”? (Five sentences)

Answer:

1. _____
2. _____



- 3. _____
- 4. _____
- 5. _____



Appendix 4. TEST ITEM DEVELOPMENT FORMS

1. MCQ DEVELOPMENT FORM

Subject: Math Urdu English Sindhi Science

Grade: _____

Item Writer Name: _____

Competency: _____

Standard: _____

Benchmark: _____

Content domain: _____

SLO: _____

Cognitive Level:	<input type="checkbox"/> Conceptual Understanding	<input type="checkbox"/> Procedural Knowledge	<input type="checkbox"/> Problem Solving
Difficulty Level:	<input type="checkbox"/> Easy	<input type="checkbox"/> Moderate	<input type="checkbox"/> Difficult

Source:

Stimulus (If Any): (Please use backside of the page or enclose attachment, if required)

Stem:

Key Options

 A

 B

 C

 D

Key _____



2. CRQ DEVELOPMENT FORM

Subject: Math Urdu English Sindhi Science

Grade: _____

Item Writer Name: _____

Competency: _____

Standard: _____

Benchmark: _____

Content domain: _____

SLO: _____

Cognitive Level:	<input type="checkbox"/> Conceptual Understanding	<input type="checkbox"/> Procedural Knowledge	<input type="checkbox"/> Problem Solving
Difficulty Level:	<input type="checkbox"/> Easy	<input type="checkbox"/> Moderate	<input type="checkbox"/> Difficult

Source: (Attach Reference Material if needed)^{5*}

Stimulus (If Any): (Please use backside of the page or enclose attachment, if required)

Question:

Marks: _____

Possible Answers/ Marking Scheme: (Please use backside of the page, if required)

Appendix 5. TEST ADMINISTRATION MONITORING FORM



**Provincial Education Assessment Centre (PEACE)
Bureau of Curriculum & Extension Wing Sindh Jamshoro
Sindh Provincial Achievement Test 2015**



Monitoring Report Performa

School Name _____ SEMIS Code (New) _____

PEACE School ID _____ Taluka _____ District _____ Date of Visit _____

Name of Test Administrator _____

Monitored test/Day (Tick)

Monitored test Science (Day One) Monitored test Mathematics (Day two)
 Monitored test Language (Day three) Monitored test English (Day Four)

Statement	Source of Information	Yes	No	COMMENTS
1. Head Master/Mistress informed about the day, date, time and objectives of the test	<i>Informal discussion with Head Master/Mistress</i>			
2. Test Administrator was present in the school	<i>Physical presence of TA at the centre (Observation)</i>			
3. Test was conducted according to the schedule activities including sequence and subject as prescribed by PEACE	<i>Subject wise daily attendance sheet in TA File at section 3-6 and the activity going on at the time of visit</i>			
4. Student were selected for test by systematic sampling procedure as prescribed in the "Test Administrator Manual"	<i>Filled in Random Number Table at section 8 and Skip Interval Table at section 9-10 of TA handbook and sitting arrangement</i>			
5. Test Administrator solved the practice and example questions appropriately	<i>Blackboard with the solved practice and/or example questions; and/or Student booklets</i>			



Statement	Source of Information	Yes	No	COMMENTS
6. PEACe School ID were written on each Test booklets	<i>Student booklets</i>			
7. Students received test booklets in alternate order of A & B	<i>Attendance sheet and Student booklets</i>			
8. Absent student seat was vacant and written ABSENT on attendance sheet and booklet.	<i>Attendance sheet and Student booklets</i>			
9. Students were seated in the appropriate sequence (i.e. left to right)	<i>Roll Number written Student booklets</i>			
10. Test Administrator received the test booklets as per informed medium of instruction	<i>Material handed over to the TA/ Talk with TA</i>			
11. Students written their name and PEACe Roll on Top of Title page appropriately	<i>Student booklets</i>			
12. Test Centre environment was calm, adequately furnished and appropriately arranged	<i>Observation of the examination room</i>			
13. Students were sitting comfortably	<i>Observation of the examination room</i>			
14. Lighting and ventilation was appropriate for reading	<i>Observation of the examination room</i>			
15. Stationery box/pouch were provided to students	<i>Observation of the examination room</i>			
16. Clip boards were provided for solving the test comfortably.	<i>Observation of the examination room</i>			

Any other observation and suggestions for improvement

Signature of the Monitoring Officer

Name _____ Designation _____

Place of Posting _____ Contact Number _____

Appendix 6. GLOSSARY OF TERMINOLOGY

Assessment	Assessment is the process of documenting, usually in measurable terms, knowledge, skills, attitudes and beliefs of students
Assessment Instruments	These consist of a test framework and specifications, test booklets, rubrics, background questionnaires, guides for test administration, coding, data input and monitoring.
Background Questionnaires	Provide a context for reporting student performance. Student questionnaires collect information on students' demographic characteristics, classroom experience and educational support; teacher questionnaires gather data on teacher training and instructional practices; head teacher questionnaires gather information on school policies and characteristics
Coding	Each possible answer is given a specific code. For example, if the first possible answer was chosen a code of 1 was given; for answer 2 a code of 2 was given; for answer 3 a code of 3 was given for answer 4 a code of 4 was given.
Cognitive Domain	Cognitive domain is knowledge or <i>mind</i> based. It has three practical instructional levels including knowing facts and procedures, using concepts, solving problems and reasoning
Content Domain	Consists of number, measurement, fractions and geometry
CRQs	Items which provide a phrase or a stem, and students give the response itself
Data Cleaning	The detection and correction or removal of corrupt or inaccurate data from a data set by identifying incomplete, incorrect, inaccurate, irrelevant etc. data and replacing, modifying or deleting the dirty data to make a data set that is consistent with other data sets in the task or system.
Data Entry	Data entry is the procedure of transcribing the test data from hard copy to a computer using a specific computer program
Item	A single question which is written for a specific purpose to measure a specific objective
Multiple Choice Questions (MCQ)	Items which provide a phrase or a stem, and four possible answers from which students select the one correct answer.
National Curriculum	The curriculum to be followed by all the schools in Pakistan

Not significant	Identifies whether differences in reported scores could have occurred by chance alone, significance tests are reported. A probability where $p < 0.65$ means that the difference could occur by chance alone in 65 out of 100 students. This means that the results are not significant. They cannot provide reliable information for conclusions to be drawn.
Pilot	Where test items and tests are given to a small sample of representative students to see their effectiveness as assessment tools.
Provincial Assessment	These are large-scale, sample surveys which assess the performance of students according to specific content and cognitive domains across a range of levels
p-value	p value is a probability, with a value ranging from zero to one. If, for example, the p value is 0.03, it means that the difference could occur by chance in only 3 out of 100 students.
Questions	Usually a group of test items written to test the same objective
Random Number Table	A table listing random numbers generated by computer software according to specifications provided by PEACE. If the number of children in Grade 4 is 10 or less then all children in Grade 4 are tested; where the number in Grade 4 is found to be 11- 29 the random table is used to select the 10 students to be tested; where the number of students is greater than 30, the skip interval techniques is used to select the 10 students.
Sample	A representative group of students in Sindh Province; representative of each district, rural/urban area, gender (boys/girls)
Significant	Identifies whether differences in reported scores could have occurred by chance alone, significance tests are reported. A probability where $p < 0.05$ means that the difference could occur by chance alone in only 5 out of 100 students; where $p < 0.01$ the difference could occur by chance alone in only 1 out of 100 students (significant difference); where p is 0.000 there is a highly significant difference.
Skip Interval	The ratio of the number of students enrolled in Grade IV divided by the number of students to be sampled from the school, rounded top an integer.
Split Schools	Dividing a large school into a number of pseudo schools by a “conceptual split”
Test Framework	Provides the concept behind the testing and details of what will be tested and how it will be tested
Test Specifications	Provides specific information regarding the content and cognitive

domains to be tested, item wise