STATE LEARNING ACHIEVEMENT SURVEY

CLASS II

2014-15

STATE COUNCIL FOR EDUCATIONAL RESEARCH AND TRAINING, PUNJAB

Supported
SSA-REMS FUND

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FOREWORD

Sarva Shiksha Abhiyan in Punjab is implementing a number of educational enhancement programmes through various schemes towards achieving the critical goal in Universalization of Elementary Education (UEE). SSA focuses on providing quality elementary education to all children bridging along the social, regional and gender gaps with active participation of the community. Punjab is a pioneer state in implementing various programmes like State Level Achievement Survey, Performance Indicators, Advancement of Educational Performances through Teacher Support, Quality Monitoring Tools etc.,

Education evaluation has confirmation and judgment functions concerning how well the educational goal is realized, based on the goal originally defined. It also has information gathering and application functions necessary for making decisions regarding learners, educational methods and administrative assistance. To assess the achievement levels of children in the curricular areas and to explore areas for further strengthening the academic inputs needed to improve the learning capabilities of children, a state level specific assessment survey was conducted during 2013 as an initiative of the State.

During SLAS 2014-15, in order to overcome the limitations of Classical Test Theory, Item Response Theory (IRT) has been used to compare performance over time and to analyses the data competency wise. IRT uses a mathematical model to link a student's chance of answering correctly a particular item to two main factors: the student's level of ability and the item's level of difficulty. State Level Achievement Survey (SLAS) has been conducted in 2013-14 for class III and 2014-15 for Classes II, III and VIII in Punjab. The survey tested the competencies that ought to be attained by students in every class. Practicing teachers, teachers and DIET faculty were involved in framing the test items, testing, data gathering and discussions.

SLAS has successfully explored and analyzed all areas of strengthening the learning outcomes among children. The report of SLAS is a diagnostic presentation of the existing levels of competencies among students and also throws light upon the areas which need to be improved in future. This report is need-based and gives valuable inputs for policy making, curriculum construction, research and setting up educational standards in Elementary Education.

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Executive Summary

Introduction

The State Learning Achievement Survey (SLAS) is a process to find out hard spots and collect relevant data regarding health of education system. It helps to make policy for the remedial process. In the year 2013, the State Learning Achievement Survey (SLAS) conducted by SCERT for the first time in Punjab as an independent project, was incorporated into the Government's flagship project Sarva Shiksha Abhiyan(SSA). SCERT is responsible for developing tools and conducting the surveys whilst funding is provided by the SSA under REMS.

In 2013, The SLAS of class III was conducted by the SCERT, according to the guidelines provided by NCERT. This year NCERT directed the state to conduct a sample survey of class II, III & VIII. However, the importance of these surveys and the experience gained through the first survey made it clear that this programme should be an ongoing feature of the State education system.

Methodology

Sample Selection

For Class II SLAS, government and government-aided schools were included in the sample frame. The general selection procedure was:

- Selection of schools (PPS within each selected districts)
- Selection of students(SRS with in selected schools)

The survey was administered to a sample of 3520 students, 176 schools and 22 districts.

Tool Development

For the survey, subject tools and three questionnaires (PQ,TQ and SQ) were developed. The tools employed need to be simple, understandable, accessible, valid and reliable. For the purpose a subject expert committee was made. These subject experts were from Lecturers in DIETs and teachers from schools. After formation of subject expert committee training was imparted for the development of testing tools. In order to measure reliably the achievement levels of students of class II, tests in two subjects, viz. Language and Mathematics were developed. The first step was to collect the syllabuses and the text books of Language and Mathe
then analysed from the point of view of the content areas
competencies to be developed. In each subject, common

competencies were identified. Based on this analysis, subject-specific assessment frameworks were developed. These described the content areas and competencies to be covered and prescribed the number and type of items to be used for testing each domain. In order to provide sufficient information, two test forms were developed for each subject. For the Class II SLAS, each test consisted of 40 multiple-choice items. Of these, 15 were common 'anchor items' which appeared in both test forms. Thus, overall 65 unique items were used in each subject to measure learning achievement. Finally, answer keys were developed and checked for each test form in each subject.

Test administration

SLAS is conducted by the State Council of Educational Research and Training (SCERT). To coordinate the SLAS project in districts, SCERT takes the help of DIETs. For the current survey, each participating district designated a District Coordinator who was responsible for implementing the SLAS in their districts in accordance with SLAS guidelines. State coordinators were given training on how to collect data in the field. For this a detailed training manual was developed. Thereafter, State Coordinators provided training to district coordinators about the conduct of main achievement survey. In each selected district, district coordinators appointed field investigators. They were given a rigorous training about selection of sections and students in the sampled schools, administration of tools and transfer of responses from test booklets to separate response sheets. These response sheets were collected by the district coordinators and then data was entered by the district coordinators with the help of district MIS coordinators. State Coordinators and their teams are to be commended for their efforts. Without their help and professionalism, the massive task of data collection for the State learning Achievement Survey would not have been possible.

Monitoring

Monitoring of administration of tools was done at the state and district levels as well. At state level SCERT faculty and at district level DIETs monitored the activities to ensure the quality of data.

Data Management and Analysis

The work of transferring the data from paper to electronic format was done by MIS wing of department. Keeping in mind the objectives of study, d analysis plan were developed. Data entry plan was provided undertaking the assigned task in a systematic manner. The MIS of the data entered. The State project team checked and verified

and resolved the problems of mismatching information. Cleaned files were used for analysis. Data analysis was carried out by using Classical Test Theory (CTT) and Item Response Theory (IRT).

Main Finding

Language: Punjabi

- The state average score is 75 % and average scale value of state is 250.
- The average achievement of students in Punjabi varies greatly across the districts of Punjab. There is a highly significant difference between outcomes in high scoring districts such as Fazilka (91%), Muktsar & Nawanshahr (88%), Tarantarn (83%), and low scoring districts such as Roopnagar (55%) and Fatehgarh Sahib (57%).
- Districts also vary greatly in the range between their lowest and highest achieving students as revealed by their inter-quartile score ranges. Some districts such as Fazilka (7.5) have relatively homogeneous cohorts whilst others have far more diverse outcomes, e.g., Fatehgarh Sahib (45).
- The average achievement of boys and girls has no significant difference.
- The average score of rural and urban has no significant difference.
- The students from the SC category outperformed their peers in the Gen, BC and other categories by a statistically significant margin.
- There has been a significant difference in the average score of department schools and aided schools.

Mathematics

- The state average score is 65% and average scale value of state is 250.
- The average achievement of students in Mathematics varies across the districts of Punjab. There is a highly significant difference between outcomes in high scoring districts such as Fazilka (89%), and low scoring districts such as Fatehgarh Sahib (45%).
- Districts also vary greatly in the range between their lowest and highest achieving students as revealed by their inter-quartile score ranges. Some Districts such as S.B.S. Nagar (13.1) and Fazilka (10) have relatively homogeneous cohorts whilst others have far more diverse outcomes, e.g., Jalandher (37.5) and Fatehgarh Sahib (40.0).
- The average achievement of boys and girls has no significant difference.
- There has been significant difference in the average of rural and urban area.
- The survey did find that students from the SC category [illegible] peers in the, BC and General categories by a statistically si
- There has been no significant difference in the average s and aided schools.

Limitations

This survey undoubtedly represents a significant step forward in the development of education in Punjab. However, as with all such enterprises, lessons have been learnt. In conducting the Class II SLAS, the following limitations have been noted so that they may be addressed in future achievement surveys:

- The survey used DISE 2013–14 data from the MIS- SSA Punjab as the primary sample frame. Once in the field, significant discrepancies between the DISE data and actual school enrolments were noticed.
- Due to discrepancies in the sample frame deviation from agreed sampling procedures and loss of information during administration, it was not possible to estimate sample weights for the survey.
- In all selected districts, the coordinator was from DIET's faculty. It was decided that the field investigator should be chosen from the senior most class of DIET's. On reflection, the training and hands-on practice given to these field investigators may not have been sufficient resulting in inefficiencies in the data collection procedure.
- In order to meet the key objectives of this survey, schools and students were sampled in a systematic fashion, meant that teachers could not be explicitly sampled. As a result, the analysis of teacher-related variables vis-à-vis student's attainment could not be made in a comprehensive manner.
- In this survey SCERT also used IRT for analysis of results. Therefore, results are reported in terms of scale scores rather than percentage. Whilst this is an important step towards emulating international best practice, unfamiliarity with this approach has undoubtedly made it more difficult for the lay reader to interpret results. It is hoped that understanding will improve of IRT with time.
- Difference between the research study and exam/test is not clear to the field.

Chapter 1
INTRODUCTION

This report summary gives a brief of the findings of the State Learning Achievement Survey (SLAS) of class II students conducted in 2014 by the State Council of Educational Research and Training (SCERT). This report is based on information gathered through test and questionnaires administered to a sample comprising 3520 students in 176 schools across 22 Districts. The subjects covered were Mathematics and Punjabi.

The aim of SLAS is to provide reliable information on the achievement of the students in the elementary sector of education in government and government aided schools. This is achieved not only by applying standardized test to students, but also collecting information about relevant background factors, such as school environment, instructional practices, qualification and experience of teachers, and the home background of students. The data from SLAS gives policy makers, curriculum specialists, researchers and, most importantly, school heads and teachers a 'snapshot' of students' achievements in key subjects at a particular point in time. By repeating such measurement at regular intervals, trend can be explored providing an invaluable perspective from which to consider educational reform and improvement.

It should be noted that whilst each SLAS provides achievement scores for the state, for each participating district and for certain group (e.g. Gender, Area etc.), it does not give scores to individual student and school.

1.1 SLAS in Punjab

The State Learning Achievement Survey (SLAS) is a process to find out hard spot and collect relevant data regarding health of education system. It helps to make policy for the remedial process. In the year 2013, the State Learning Achievement Survey (SLAS) conducted by SCERT for the first time in Punjab as an independent project, was incorporated into the Government's flagship project of Sarva Shiksha Abhiyan (SSA). SCERT is responsible for developing tools and conducting the surveys whilst funding is provided by the SSA under REMS.

Since 2001 National Council of Educational Research and Training (NCERT) has been periodically conducting National Achievement Survey(NAS).The NAS reports gave a national and state level picture rather than scores of individual student, school or district. The purpose of these assessments is to obtain an overall picture of what the students in specific class, knows and can do. These findings can also be u

areas that need improvement and to form policies. The finding can also be useful to invent the interventions for the improvement of children's learning under the SSA programme. But last year, the NCERT gave the direction to the state to conduct State Learning Achievement Survey (SLAS).The responsibility of conducting SLAS was given to SCERT under the Flagship of SSA.

In 2013, the SLAS of class III was conducted by the SCERT, according to the guidelines provided by NCERT. This year NCERT directed the state to conduct a sample survey of class II, III & VIII. However, the importance of these surveys and the experience gained through the first survey made it clear that this programme should be an ongoing feature of the State education system.

At the class II and III level, assessment is made in two subjects, i.e Mathematics and Language (Punjabi). For class VIII, four subject are assessed i.e. Mathematics, Language (Punjabi), Social Science and Science. The comprehensiveness and coverage of these surveys provide very useful datas to capture the progress of the education system as well as to enhance the quality of elementary education.

1.2 Development of tools

For any large survey, the tools employed need to be simple, understandable, valid and reliable. For measuring reliably the learning levels of class II are important. The tests need to be pegged at the level that they measure the abilities developed in children across the districts. Therefore, before undertaking the test development, it was necessary to know what was taught in class II. The first exercise, hence, was to collect the syllabus and the textbooks of Mathematics, Language (Punjabi). These were then analysed from the point of view of the content areas covered and competencies acquired. The common core content and competencies were identified for developing the tests.

Based on the analysis, assessment frameworks were developed in each subject. The frameworks described the competencies to be covered in the tests, the number and type of items to be used for testing each competency, the structure of the test forms and number of tests forms to be used.

For measuring each learning outcome with sufficient precision, it was necessary to construct multiple test forms in each subject. A three dimensional grid was prepared in each subject indicating the content areas to be covered, skills to be tested, the difficulty level of items under each skill along with the number of items.

Item writing workshop

General

The item writing workshop included plenary sessions on fundamental principles of test development and subject specific workshops for writing and reviewing/editing draft items.

The general principles covered were:

- Characteristics of sample-based achievement surveys
- Test specifications and their role in test development
- Item writing rules and guidelines
- Procedures and checklists for reviewing the quality of items
- Introduction to classical item statistics.

1.2.1 Language

There was one sub-group – Punjabi. The work was guided by the draft specifications for the language test prepared by SRG, text books and with the help of NAS. The tasks covered were:

- The Working Group came to a common understanding of the main principles of item writing and quality control.
- The Working Group drafted more than 120 items.
- All these items were peer reviewed.
- The Working Group proposed the use of the following classification system for Language topics:
  - Listening
  - Speaking
  - Reading
  - Writing
- Sufficient passages and discrete items were prepared and reviewed to create booklet for pre-testing/Piloting.

The next steps undertaken were:

- Entering all items into the computer and checking.
- Selecting items for two booklets for Pre- testing.
- Reviewing, checking and proof reading all booklets.
- Language structure multiple-choice questions.
- Checking again before 'passing for print' to ensure that the versions were 'camera-ready'

1.2.2 Mathematics

The work was guided by the draft specifications for the Mathematics test prepared by SRG, and textbooks used in schools for Mathematics.

Activities carried out in Mathematics Group

- The Working Group came to a common understanding of the main principles of item writing and quality control.
- The Working Group drafted more than 120 items.
- All these items were peer reviewed.
- The Working Group proposed the use of the following classification system for Mathematics topics:
  - Number System
  - Computations (operations)
  - Measurement
  - Geometry

The next steps undertaken were:

- Entering all items, reading passages, marking keys etc. into the computer and checking.
- Selecting items for two booklets for Pre- testing.
- Reviewing, checking and proof reading all booklets.
- Language structure multiple-choice questions.
- Checking again before 'passing for print' to ensure that the versions were 'camera-ready'

1.2.3 Piloting of the test items

In order to standardise the tests, they were piloted to see how the items worked. The difficulty level (p-value) and discrimination index (DI) were computed. Item were carefully scrutinised to select suitable items for the final tests. By and large, the items having difficulty indices (p-values) between 0.2 and 0.8 were selected.

1.2.4 Sampling for piloting

The following procedure was used:

1. A sampling strategy was developed based on District Information System for Education (DISE) data for the school (2013-14).
2. The sample was not random, but was based on the statistical requirement of having enough records for each item (for analysis) and at the same time, diversity of the students/schools in the education system.
3. A booklet with different competences was designed (for all the subjects).
4. A booklet was equally distributed among the students of selected section of the concerned class.
5. Mohali district was selected taking into account the diversity of socio-economic background variables i.e. keeping in mind the strata of area from urban and rural, the schools were selected

1.2.5 Administration of tools for piloting

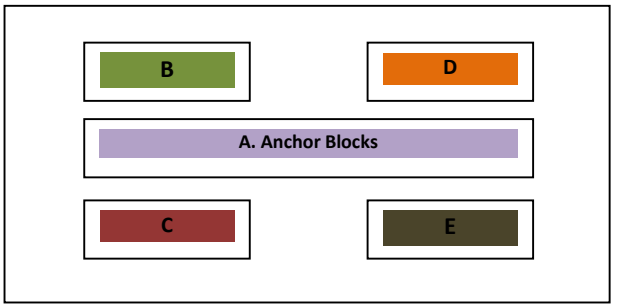
- Field investigators were trained on the required procedure.
- The school (from the selected schools list) was assigned to the Field Investigator.
- Field investigators administered the test in the selected school. It took two days for the individual to complete the test as there were two subject to be administered.
- Student responses were transferred to data sheets by the field investigators.
- The SCERT collected the data (Hard Copy) from the field investigator after the compilation.

1.2.6 Data analysis

- Data entry of the compiled data (Hard Copy) was carried out by Data Entry Operator.
- Data was analysed by the outsourced consultant through IRT(Item response theory).
- Data was also analysed by the SRG through CTT (Classical test theory).
- Item parameters were used to select the items in the context of National Assessment Survey.
- Poorly performed and flawed items were rejected.

1.2.7 Test booklet construction

For the construction of booklets for the main survey all the items were properly reviewed and it was decided that within a subject, all the two forms would contain 15 anchor items. The structure of the Language (Punjabi) and Mathematics was as under.



In the two subjects, the following domains were identified:

Language (Punjabi)	Mathematics
Listening	Number System
Speaking	Computations (operations
Reading	Measurement
Writing	Geometry

In each domain, there were a number of sub-domains or topics. These items were again vetted by subject experts. Each test was reviewed in the light of the content area covered, competency covered, appropriate language, estimated difficulty level and also the homogeneity of distracters.

Finally, for class II (SLAS), each test form for Language (Punjabi) and Mathematics, consisted of 40 multiple choice items. Thus, overall 65 items were used in each subject to measure learning achievement.

1.2.8 Questionnaires

Questionnaires for class II (SLAS) were built upon experience from the earlier SLAS and NAS surveys. For this survey, three questionnaires were developed to collect information on

a) schools,

b) teachers, and

c) pupils and their backgrounds.

The school and teacher questionnaires were produced in English only, as it was considered that school principals and teachers were proficient in these languages.

The pupil questionnaire was strongly influenced by NAS. The pupil questionnaire contained questions pertaining to the home background of students. Areas touched upon included parents' level of education and occupation; help available at home for studies from parents and siblings; and the study materials and resources available at home. The questionnaire also investigated the experience of pupils in school. This included questions about class work and homework given by teachers, and whether they liked coming to school etc.

The school questionnaire sought information on the location, enrolment and structure of the school; the number of school days; and the school's infrastructure and environment. Other questions related to teachers' job satisfaction and their professional development opportunities, curriculum transaction strategies, and problems existing in schools.

The teacher questionnaire comprised questions regarding the age of teachers, academic and professional qualifications, training programmes attended, teaching and evaluation practices, teaching materials available to them, interaction with other teachers and the school head, and their job satisfaction.

1.3 The SLAS Sample

The class II (SLAS) was designed to investigate learning achievement in the rural and urban area at the district level in state. Hence, the target population for the survey was all class II children studying in government and government-aided schools.

In general, the sample design involved a two-stage cluster design which used a combination of two probability sampling methods. In the First stage, the requisite number of schools was selected in the districts; for this PPS principles were used so that large schools had a higher probability of selection than small schools. In the second stage, the required numbers of students in each school were selected using the Simple Random Sampling (SRS) method. In schools where class II had multiple sections, an extra stage of selection was added with one section being sampled at SRS.

In the survey, PPS sampling was based on class II enrolment data from the DISE. SRS sampling was conducted according to the class registers available in sampled schools. Although the DISE data was not free from criticism, it was used because it was considered to be the most complete and up-to-date enrolment data available at the time of sampling. Unfortunately, due to discrepancies in the DISE data, limitations in the sampling method and loss of information at the sampling and administration stages of the survey, it was impossible to estimate sample weights for the survey.

1.4 Participating Districts and Sample Coverage

The survey covered all 22 districts. Exclusions of sub-populations from the total target population of SLAS class II were made at the initial stage of sampling. Large scale educational surveys allow such exclusions for reasons such as ensuring administrative efficiency, as long as the excluded population does not critically affect the quality of the survey. For example, the exclusion of very small schools from a target population is often accepted. In addition to the small school exclusion, the schools having fewer than 20 students were excluded. As a result of these exclusions, population coverage of the class II sample varies from district to district.

1.5 Characteristics of Participating Districts

Table 1.1 shows that the districts that participated in this survey vary greatly in their physical, demographic and socio-economic characteristics. For example Ludhiana, Amritsar, Gurdaspur, Jalandhar, Ferozepur each has population of more than 20, 00,000 whilst Rupnagar, Faridkot, SBS Nagar, Fatehgarh Sahib and Barnala have fewer than 7, 00,000 inhabitants. Muktsar has a population density of just 348 people per square kilometer whilst the corresponding figure for Ludhiana is over 978.

Of particular importance in this survey are the significant differences in the provision of education at the class II level. For example, the target population for this survey was all class II students enrolled in government-run and government-aided schools. However, the proportion of class II students in such schools varied significantly amongst districts.

Table 1.1: Physical, demographic and social indicators for the selected districts of Punjab

Sr. No	District[1]	Population	Sex Ratio	Literacy	Density	Class II Enrolment[2] (According to selected Area and Management)
1	Ludhiana	3,498,739	873	82.20 %	978	70346
2	Amritsar	2,490,656	889	76.27 %	928	46172
3	Gurdaspur	2,298,323	895	79.95 %	647	29018
4	Jalandhar	2,193,590	915	82.48 %	836	36855
5	Ferozepur	2,029,074	893	68.92 %	382	18070
6	Patiala	1,895,686	891	75.28 %	570	34364
7	Sangrur	1,655,169	885	67.99 %	457	27991
8	Hoshiarpur	1,586,625	961	84.59 %	469	27825
9	Bathinda	1,388,525	868	68.28 %	414	22485
10	TaranTaran	1,119,627	900	67.81 %	464	21820

[1] Source from column 2 to 6 is : http://www.census2011.co.in/census/state/districtlist/punjab.html
[2] Source of information is UDISE 2013.

11	Moga	995,746	893	70.68 %	444	16853
12	Mohali	994,628	879	83.80 %	909	18316
13	Muktsar Sahib	901,896	896	65.81 %	348	16558
14	Kapurthala	815,168	912	79.07 %	499	14627
15	Mansa	769,751	883	61.83 %	350	13566
16	Rupnagar	684,627	915	82.19 %	505	10967
17	Faridkot	617,508	890	69.55 %	424	11525
18	SBS Nagar	612,310	954	79.78 %	478	10372
19	Fatehgarh Sahib	600,163	871	79.35 %	509	10123
20	Barnala	595,527	876	67.82 %	402	10136
21	Fazilka[3]					20113
22	Pathankot					10123

These and associated factors are likely to influence students achievement and other educational outcomes. Therefore, when considering the findings of this survey and, in particular, when comparing the achievement levels of different districts, it is important to take the prevailing conditions into account to ensure that like is being compared with like.

1.6 Administration of Tools

When conducting SLAS, SCERT takes the help of districts agencies i.e. DIETs to coordinate survey activities in the districts. Each participating district designates a district coordinator who has the responsibility of implementing the SLAS in his/her district in accordance with the SLAS guidelines. The state coordinators are given training on how to collect data in the field. For this, a detailed guideline-cum-training manual was developed by SRG. Further, state coordinators provide training to district coordinators about the conduct of main achievement survey. In each selected district, district coordinators appoint field investigators. They are given rigorous training about selection of section and students in the sampled schools, administration of tools and transfer of response from test booklet to separate response sheet. These response sheets are collected by the district coordinators and then sent to the districts MIS coordinator after checking their number, coding of schools, and whether they have been properly filled by the investigators. These responses were transferred from response sheets to e-from by districts MIS coordinators and sent to state coordinator. Without the help, dedication, competence and experience of the districts coordinators and their teams for which they should be commended, the massive task of data collection for the State Learning Achievement Survey would not have been possible.

[3] Districts Fazilka and Pathankot were not formed during the census 2011 so the information from column 3 t

1.7 Monitoring

For monitoring, it was communicated to the districts that the schools are to be monitored randomly during the actual conduct of the survey by the SCERT faculty. Similarly, 5–10 schools in each district are to be monitored by the District Institute of Education and Training (DIET) faculty.

It was found through the report received from SCERT and DIETs faculty that all the SCERT officials and 95% DIETs faculty visited the schools.

1.8 Data Management

The transfer of data from paper forms to electronic format was done by the districts MIS Coordinators. Data entry plan and data analysis plan were developed in the department keeping in mind the objectives of the study. Both plans were provided to the State MIS Coordinators for doing the assigned task in a systematic manner. The State MIS Coordinators provided soft copy of the data entered. In the department, the SRG team checked and verified the quality of the data and resolved problems of mismatching files. Files of clean data were finalized for further analysis. Data analysis was carried out by using both Classical Test Theory (CTT) and IRT (Item Response Theory).

1.9 Analysis of Data

In earlier surveys (by NCERT), the learning achievement data was analysed using CTT and average scores were reported simply as the percentage of correct answers. This approach, whilst valid, has significant limitations. In particular, the results are linked to particular tests and groups of students so it is very difficult to use multiple tests or to link results from one year to another. Therefore, it was decided to analyse the data for this and future surveys using Item Response Theory (IRT) in addition to the classical approach.

From the guidelines received from the NCERT, the state has used IRT and CTT. In this survey, a two-parameter logistic model was used. The main reason for administering the tests in this study was to obtain an estimate of the overall ability of the students tested. IRT assumes that there is a statistical connection between the difficulty of an item, the ability of the student, and the probability of being successful on the item. Students with higher ability scale scores are more likely to succeed on any item than their peers of lower ability, while all students are less likely to succeed on items with higher difficulty scores. In fact, a student's probability of success on a particular item is dependent on the difference between the ability of the student and the difficulty of the item.

Whilst this method makes the analysis more complex than traditio[illegible] advantages. Firstly, it places students and test items on the san[illegible]

enables us to produce meaningful 'maps' of items and students. Secondly, in IRT, the difficulty parameter for an item does not depend on the group of test takers. This allows us to use multiple test booklets which can be 'linked' or equated. This can also be used, for example, to compare scores from tests used in different years– an essential characteristic for monitoring progress over time.

SRG experts, after doing preliminary analysis, decided what kind of classical and IRT test analysis would be used for the analysis of the full dataset received from 22 districts. Under CTT, the performance of students on anchor items was carried out by computing percentage correct scores and averages, standard deviations of test scores, and t-values between different groups. Under IRT, a detailed analysis was carried out to determine the scaled scores, standard errors, significant differences between the groups etc.

1.10 Organisation of the Report

The report contains 10 chapters and appendices.

Chapter 1 (Introduction): Chapter 1 describes the background of SLAS, Piloting, Tool preparations, Sample and Methodology of survey etc.

Chapter 2 (Achievement in Language: Punjabi): In chapter 2, achievement in Language of class II students is presented. Their achievement in Language is reported overall and district wise. In addition, information about differences in achievement by students' gender, school location and social category is also provided.

Chapter 3 (What students know and can do: Punjabi): Chapter 3, describes what class II students know and can do in Language.

Chapter 4 (Achievement in Language: Mathematics): In chapter 4, achievement in Mathematics of class II students is presented. Their achievement in Mathematics is reported overall and districts wise. In addition, information about differences in achievement by students' gender, school location and social category is also provided.

Chapter 5 (What students know and can do: Mathematics): Chapter 5 describes what class II students know and can do in Mathematics.

Chapter 6 (Anchor item analysis): Chapter 6 describes performance of students in anchor items.

Chapter 7 (Students, Teachers and School related information): Chapter 7 Students, Teachers and School related information.

1.11 Limitations

This survey undoubtedly represents a significant step forward in the development of education in Punjab. However, as with all such enterprises, lessons have been learnt. In conducting the Class II SLAS, the following limitations have been noted so that they may be addressed in future achievement surveys:

- The survey used DISE 2013–14 data from the MIS- SSA Punjab as the primary sample frame. Once in the field, significant discrepancies between the DISE data and actual school enrolments were noticed.
- Due to discrepancies in the sample frame, deviation from agreed sampling procedures and loss of information during administration, it was not possible to estimate sample weights for the survey.
- In all selected Districts, the coordinator was from DIET's faculty. It was decided that the field investigator should be chosen from the senior most class of DIET's. On reflection, the training and hands-on practice given to these field investigators may not have been sufficient resulting in inefficiencies in the data collection procedure.
- In order to meet the key objectives of this survey, schools and students sampled in a systematic fashion, meant that teachers could not be explicitly sampled. As a result, the analysis of teacher-related variables vis-à-vis student attainment could not be made in a comprehensive manner.
- In this survey SCERT also used IRT for analysis of results. Therefore, results are reported in terms of scale scores rather than percentage. Whilst this is an important step towards emulating international best practice, unfamiliarity with this approach has undoubtedly made it more difficult for the lay reader to interpret results. It is hoped that understanding will improve of IRT with time.
- Difference between the research study and exam/test is not clear in the field.

Chapter 2
Achievement in Language: Punjabi

Keeping in mind listening, speaking, reading and writing, the Language tests used in the SLAS included four categories of items. Overall achievement in language is reported for each of the participating districts. In addition, information about differences in achievement by student gender, school location and social category is provided.

2.1 Performance of districts in Punjabi

Tables 2.1 and 2.2 show the distribution of student's achievement for districts. Within each table, districts are listed in alphabetical order. Table 2.1 represents the analysis done through IRT (Item response theory), the table lists each district's average score on a scale from 0 to 500. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process. Table 2.2 represents the analysis done through CTT (Classical test theory); the table lists each district's average in percentage. For each score, the 'standard error' is also given to indicate the degree of imprecision arising from the sampling process. Finally, the tables indicate whether a district's average score is significantly different from the state's average or not.

Table 2.1: Districts wise average score in Punjabi (Through IRT)

District	Average Score	SE	Significant difference
Amritsar	256	10.9	No
Barnala	259	5.3	No
Bathinda	251	9.8	No
Faridkot	242	7.4	No
Fatehgarh Sahib	217	17.4	No
Fazilka	292	5.7	Above
Ferozepur	251	4.4	No
Gurdaspur	242	16.2	No
Hoshiarpur	239	5.1	Below
Jalandhar	221	13.2	Below
Kapurthala	263	4.9	Above
Ludhiana	269	7.0	Above
Mansa	252	9.3	No
Moga	263	2.5	Above
Mohali	214	11.5	Below
Muktsar Sahib	287	18.3	Above
S.B.S Nagar	281	7.5	Above
Pathankot	258	5.4	
Patiala	225	10.4	

Rupnagar	208	12.8	Below
Sangrur	250	9.0	No
TaranTaran	268	6.1	Above
State	**250**	**2.1**	

The average score was 250 (with a standard error of 2.1).The results reveal substantial differences in achievement of language between the highest performing district (292 for Fazilka) and the lowest performing district (208 for Rupnagar).Seven districts had average scores significantly above from that of the state; Five districts had average scores significantly below from that of the state; and Ten districts had average scores that were not significantly different from that of the state.

Table 2.2: Districts wise average score in Punjabi (Through CTT)

Districts	Average	Standard Error	Standard Deviation	Significance Difference
Amritsar	78	1.4	16.7	No
Barnala	80	1.0	12.6	Above
Bathinda	75	1.7	22.2	No
Faridkot	72	1.4	18.1	No
Fatehgarh Sahib	57	2.5	30.9	Below
Fazilka	91	1.3	17.4	Above
Ferozepur	76	1.3	16.0	No
Gurdaspur	71	2.4	31.1	No
Hoshiarpur	71	1.5	18.2	No
Jalandhar	60	2.0	25.7	Below
Kapurthala	81	1.3	14.7	Above
Ludhiana	86	1.1	14.8	Above
Mansa	77	1.2	14.9	No
Moga	81	1.5	16.7	Above
Mohali	58	2.2	28.0	Below
Muktsar Sahib	88	1.2	15.1	Above
S.B.S. Nagar	88	0.8	10.4	Above
Pathankot	80	1.1	14.0	No
Patiala	63	1.7	19.9	Below
Rupnagar	55	2.2	29.0	Below
Sangrur	76	1.3	14.7	No
TaranTaran	83	1.2	14.2	Above
State Average	**75**	**2.2**	**10.5**	**-**

Note: Percentage may vary due to round off

The average score was 75% (with a standard error of 2.2). The results reveal substantial differences in achievement of language between the highest performing districts (91% for Fazilka) and the lowest performing districts (55% for Rupnagar).Eight districts had above significance difference from the state's average score; Five districts had average scores significantly below from state; and nine districts had average scores that were not significantly different from that of the state.

2.2 Performance of various groups

The table below compares the average performances of different groups. Performance is compared by gender, school location, social category and management.

2.2.1 Gender related difference in Punjabi

Table 2.3 compares the average score achieved by boys and girls in Punjabi. It shows that there was no significant difference in average score of boys and girls. The table also represents that 51% boys and 49 % girls were participating in the survey. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process.

Table 2.3: Gender wise average score in Punjabi (Through CTT)

Gender	Participation Sample	% Participation	Average	SE	SD	Significance Difference
Boys	1670	51%	74	0.5	22.0	**No**
Girls	1587	49%	75	0.5	23.2	

Note: Percentage may vary due to round off

In table 2.4, analysis was carried out through IRT and it shows that, there is no significant difference between the average score of boys and girls.

Table 2.4: Gender wise average score in Punjabi (Through IRT)

District	Boy (Average)	SE	Girl (Average)	SE	Significant difference
Amritsar	259	13	253	10.2	No
Barnala	255	6	263	6.1	No
Bathinda	245	9	256	12.7	No
Faridkot	242	8	242	8.2	No
Fatehgarh Sahib	231	21	205	13.8	No
Fazilka	289	7	296	5.6	No
Ferozepur	244	5	256	6.8	No
Gurdaspur	248	13	235	21.3	No
Hoshiarpur	236	6	241	5.1	No
Jalandhar	222	13	220	13.8	No
Kapurthala	256	5	267	6.4	No
Ludhiana	268	5	270	10.0	No
Mansa	247	10	258	8.5	No
Moga	259	3	267	4.5	No
Mohali	218	13	208	9.7	No
Muktsar Sahib	290	18	283	19.0	No
S.B.S. Nagar	280	9	282	8.3	No
Pathankot	260	6	256	7.7	No
Patiala	225	10	225	11.7	No
Rupnagar	204	16	211	10.9	No
Sangrur	247	8	254	10.4	No
TaranTaran	277	7	259	9.5	No
State	**250**	**2**	**250**		

In table 2.5, analysis was carried out through CTT and it shows that, in five districts: Barnala, Bathinda, Ferozepur, Kapurthala and Mansa boys' score is significantly below than girls' score, but in two districts- Fatehgarh Sahib and Tarantaran there has been significant difference between boys' and girls' score.

Table 2.5: District wise average score according to gender in Punjabi (Through CTT)

Districts	Boys			Girls			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	78	2.0	17.6	78	2.0	15.7	No
Barnala	78	1.7	14.0	82	1.2	11.0	Below
Bathinda	72	2.4	20.9	78	2.4	23.0	Below
Faridkot	71	1.8	16.2	72	2.3	20.1	No
Fatehgarh Sahib	62	3.4	29.0	52	3.5	31.9	Yes
Fazilka	90	1.8	17.5	92	2.1	17.3	No
Ferozepur	72	2.2	17.4	79	1.6	14.3	Below
Gurdaspur	73	3.0	28.1	67	4.0	34.1	No
Hoshiarpur	70	2.1	19.7	72	1.9	16.1	No
Jalandhar	60	2.9	25.9	59	2.8	25.7	No
Kapurthala	79	1.5	10.3	83	1.8	16.7	Below
Ludhiana	84	1.4	12.8	85	1.8	16.5	No
Mansa	74	1.8	16.3	80	1.5	12.3	Below
Moga	80	1.7	13.4	83	2.7	19.9	No
Mohali	60	2.7	26.4	56	3.6	30.0	No
Muktsar Sahib	87	1.6	14.9	87	1.7	15.3	No
S.B.S. nagar	88	1.2	11.0	88	1.1	9.8	No
Pathankot	81	1.7	14.7	79	1.5	13.4	No
Patiala	62	2.2	19.8	63	2.7	20.1	No
Rupnagar	53	3.7	31.5	57	2.8	27.0	No
Sangrur	75	1.7	13.9	78	1.9	15.3	No
TaranTaran	87	1.4	11.6	79	1.8	15.4	Yes

Note: Percentage may vary due to round off

2.2.2 Area related difference in Punjabi

Table 2.6 describes the analysis of average score of the area selected. It shows that there was no significant difference in the average score of rural and urban area. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate how widely individuals in a group vary.

Table 2.6: Area wise average score in Punjabi (Through CTT)

Area	Average	SE	SD	Significance Difference
Rural	76	0.4	21.9	**No**
Urban	72	0.8	24.4	

Note: Percentage may vary due to round off

In table 2.7, analysis was carried out through IRT and it shows that, average scale score of rural area is 251 and urban area is 250.It also shows that there was no significant differences in the average score of the area concerned.

Table 2.7: Area wise average score in Punjabi (Through IRT)

District	Rural (Average)	SE	Urban (Average)	SE	Significant difference
Amritsar	261	12.6	248	16.9	No
Barnala	253	4.1	275	16.8	No
Bathinda	247	11.0	265	21.3	No
Faridkot	248	11.2	232	6.6	No
Fatehgarh Sahib	222	23.6	209	19.5	No
Fazilka	292	6.5	293	0.0	No
Ferozepur	251	5.9	248	0.0	No
Gurdaspur	249	15.7	189	0.0	Above
Hoshiarpur	239	7.0	239	1.8	No
Jalandhar	220	17.9	222	18.9	No
Kapurthala	268	5.5	252	10.4	No
Ludhiana	265	9.4	283	0.3	No
Mansa	255	9.7	234	0.0	Above
Moga	262	2.0	273	0.0	Below
Mohali	212	14.4	218	15.3	No
Muktsar Sahib	282	20.1	317	0.0	No
S.B.S. Nagar	288	9.9	260	0.3	Above
Pathankot	260	3.0	252	18.2	No
Patiala	224	15.4	227	6.7	No
Rupnagar	208	7.2	208	33.3	No
Sangrur	248	10.3	266	0.0	No
TaranTaran	261	4.9	285	27.8	No
State	**251**	**2.5**	**250**	**3.0**	**No**

In table 2.8, analysis was carried out through CTT and it shows that, seven districts' rural area average score is significantly below than the urban area and five districts have significant difference in the average score. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate the how widely individuals in a group vary.

Table 2.8: District wise average score in Punjabi according to Area (Through CTT)

Districts	Rural			Urban			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	80	1.6	15.2	74	2.6	18.6	No
Barnala	78	1.2	12.8	86	1.7	10.6	Below
Bathinda	73	2.0	22.0	81	3.4	21.9	Below
Faridkot	74	1.9	18.9	67	2.1	16.0	Yes
Fatehgarh Sahib	60	3.0	29.6	52	4.2	32.6	No
Fazilka	91	1.4	16.7	90	4.9	22.1	No
Ferozepur	76	1.4	15.6	73	4.3	18.7	No
Gurdaspur	74	2.3	28.0	47	9.0	40.4	Yes
Hoshiarpur	71	1.4	14.9	72	3.9	25.2	No
Jalandhar	59	3.0	29.4	60	2.4	18.6	No
Kapurthala	83	1.7	16.3	78	1.5	10.5	Yes
Ludhiana	83	1.4	15.9	89	1.4	9.4	Below
Mansa	78	1.3	14.8	69	2.8	12.5	Yes
Moga	81	1.7	17.3	88	1.5	4.8	Below
Mohali	58	2.4	26.7	62	5.0	31.6	No
Muktsar Sahib	86	1.3	15.6	98	0.5	2.4	Below
S.B.S. Nagar	90	0.8	9.2	82	1.8	11.4	Yes
Pathankot	81	1.3	13.3	77	2.6	15.8	No
Patiala	61	2.4	20.9	64	2.4	18.5	No
Rupnagar	55	2.8	28.5	55	3.8	30.1	No
Sangrur	75	1.4	14.9	84	2.6	9.8	Below
TaranTaran	81	1.4	14.4	88	1.9	12.1	Below

Note: Percentage may vary due to round off

2.2.3 Social class related difference in Punjabi

Table 2.9 describes the analysis of average score according social class. It shows that the average score of SC, BC, General and Others is 76%, 73%, 71% and 73% respectively. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate how widely individuals in a group vary. The average score of SC students have significant difference than BC and Gen. It interprets that on an average SC performed better than BC, Gen and others.

Table 2.9: Social Class wise average score in Punjabi (Through CTT)

Social Class	Average	SE	SD	Significance Difference			
				SC	BC	Gen	Other
SC	76	0.4	21.4	-	Yes	Yes	No
BC	73	0.8	23.7	Below	-	No	No
Gen	71	1.3	25.7	Below	No	-	No
Other	73	6.4	24.2	No	No	No	-

In table 2.10, analysis was carried out through CTT and It shows district wise average score. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate that how widely individuals in a group vary.

Table 2.10: District wise average score according to Social Class in Punjabi (Through CTT)

Districts	SC			BC			Gen			Other		
	Avg.	SE	SD	Avg	SE	SD	Avg.	SE	SD	Avg	SE	SD
Amritsar	79	1.6	17.1	75	3.2	15.1	86	4.6	13.1	-	-	-
Barnala	81	1.1	12.0	78	2.4	14.7	86	2.5	5.7	-	-	-
Bathinda	73	2.2	23.4	80	3.5	19.9	79	4.1	15.8	-	-	-
Faridkot	72	1.6	18.6	69	4.5	16.2	78	5.1	13.7	-	-	-
Fatehgarh Sahib	53	3.4	32.2	57	4.7	26.2	65	5.2	30.7	-	-	-
Fazilka	92	1.3	13.9	93	2.3	15.3	60	19.1	46.8	-	-	-
Ferozepur	75	1.5	16.1	83	3.3	16.3	74	3.2	12.0	-	-	-
Gurdaspur	79	3.4	28.8	66	3.4	29.9	56	10.5	39.4	-	-	-
Hoshiarpur	70	2.6	22.6	73	1.6	11.8	71	3.1	15.3	-	-	-
Jalandhar	61	2.5	22.8	61	4.9	29.4	56	4.7	28.2	36	7.9	13.7
Kapurthala	82	1.7	12.8	81	1.7	13.7	79	5.6	23.2	85	0.0	0.0
Ludhiana	84	1.3	12.7	79	3.7	22.4	90	0.9	5.7	91	1.2	1.7
Mansa	77	1.4	14.1	77	4.2	18.8	75	3.2	15.2	-	-	-
Moga	80	1.7	17.4	87	2.2	7.6	90	0.0	0.	-	-	-
Mohali	58	3.4	29.2	57	3.7	29.0	63	4.4	22.6	68	0.0	0.0
Muktsar Sahib	88	1.3	15.2	87	3.6	14.9	78	5	7.0	-	-	-
S.B.S. Nagar	88	1.1	10.5	86	1.6	9.8	91	2.1	10.7	85	0.0	0.0
Pathankot	78	1.3	13.3	83	2.6	15.4	87	0.8	1.4	81	9.3	20.7
Patiala	64	2.8	17.5	62	2.3	19.7	63	5.6	25.1	-	-	-
Rupnagar	56	3.2	26.8	57	3.6	28.9	49	6.3	34.2	-	-	-
Sangrur	78	1.6	15.7	81	2.4	11.8	74	2.9	11.8	-	-	-
TaranTaran	82	1.4	14.7	85	2.8	12.7	85	3.8	10.8	-	-	-

Note: Percentage may vary due to round off

2.2.4 Managements related difference in Punjabi

Table 2.11 describes the analysis of average score according to Managements. It shows that the average score of department schools is 75% and aided schools is 71%. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate that how widely individuals in a group vary. It also shows that there was a significant difference in the average score of department and aided schools. It does interpret that department schools perform better than aided ones.

Table 2.11: Management wise average score in Punjabi (Through CTT)

Management	Average	SE	SD	Significance Difference
Department	75	0.4	22.6	**Yes**
Aided	71	1.6	22.3	

Note: Percentage may be vary due to round off

In table 2.12, analysis was carried out through CTT and it shows that in Amritsar, Ludhiana and Pathankot the average score of department school is significantly below than aided school, but in Kapurthala and Nawanshahr there was significant difference in average score of department and aided schools. In some district aided schools were not selected due less in number, non availability and PPS technique.

Table 2.12: District wise average score in Punjabi according to management (Through CTT)

Districts	Department			Aided			Significance Difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	77	1.6	17.3	88	1.7	7.6	Below
Barnala	80	1.0	12.6	-	-	-	-
Bathinda	75	1.7	22.2	-	-	-	-
Faridkot	73	1.6	18.3	65	3.4	15.6	No
Fatehgarh Sahib	58	2.8	32.6	50	3.1	13.9	No
Fazilka	91	1.3	17.4	-	--	-	-
Ferozepur	76	1.3	16.0	-	-	-	-
Gurdaspur	71	2.4	31.1	-	-	-	-
Hoshiarpur	71	1.6	18.5	72	3.7	16.7	No
Jalandhar	60	2.0	25.7	-	-	-	-
Kapurthala	83	1.3	14.9	71	2.2	8.3	Yes
Ludhiana	84	1.3	15.5	91	1.2	5.3	Below
Mansa	77	1.2	14.9	-	-	-	-
Moga	81	1.5	16.7	-	-	-	-
Mohali	58	2.2	28.0	-	-	-	-
Muktsar Sahib	88	1.2	15.1	-	-	-	-
S.B.S Nagar	89	0.8	9.7	82	2.8	12.9	Yes
Pathankot	79	1.2	14.1	85	3.0	12.4	Below
Patiala	63	1.7	19.9	-	-	-	-
Rupnagar	55	2.6	28.6	57	4.8	30.6	No
Sangrur	76	1.3	14.7	-	-	-	-
TaranTaran	83	1.2	14.2	-	-	-	-

Note: Percentage may vary due to round off

2.3 Range score in Punjabi

The table 2.13 illustrates the range of achievement of districts. The table list the scores achieved by students at key percentiles. For example, the score at the 25th percentile is the score which 75% of students achieve or surpass; the score at the 90th percentile is the score that 10% of students achieve or surpass. The range between the 25th and 75th

percentiles (the inter-quartile range) represents the performance of the middle 50% of students.

The inter-quartile range (i.e. the range between the 75th and 25th percentiles) is highly variable. For example, Fazilka has an inter-quartile range of just 7.5 whilst Fatehgarh Sahib has a corresponding value of 45. These values suggest that the class II population in Fazilka is far more homogeneous than that of Fatehgarh Sahib. In most districts, the range of performance for the middle group was between 60 and 95 points. Performance at the 10th and 90th percentiles respectively shows extremes in low and high achievement. The range between these two points, which includes 90 percent of the population, is highly variable ranging from 15.8 (Fazilka) to 97.5 (Gurdaspur).

The percentiles provide additional information when comparing language performance amongst districts. For example, when the districts are arranged in order of average score, the differences between adjacent districts tend to be small. However, the range of scores may not be similar. For example, there is no significant difference between the median score of the Muktsar (88) and Nawashahr (88). However, the score ranges between the 25th and 75th percentiles are different: Muktsar 's range is 20 compared with Nawanshahr's range of 15. This indicates that whilst average achievement is very similar in the two areas, Nawanshahr has a more heterogeneous group of class II students than the Muktsar .

Table 2.13: District wise Percentile score in Punjabi (Through CTT)

District wise Percentile in Punjabi								
District	Average score	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	Range 75-25	Range 90-10
Amritsar	78	52.5	67.5	82.5	90.0	95.0	22.5	42.5
Barnala	80	65.0	72.5	81.3	90.0	95.0	17.5	30.0
Bathinda	75	52.5	65.0	80.0	90.6	97.5	25.6	45.0
Faridkot	72	47.5	60.0	75.0	85.0	95.0	25.0	47.5
Fatehgarh Sahib	57	0.0	37.5	60.0	82.5	97.5	45.0	97.5
Fazilka	91	84.3	90.0	95.0	97.5	100.0	7.5	15.8
Ferozepur	76	55.0	67.5	77.5	90.0	95.0	22.5	40.0
Gurdaspur	71	0.0	65.0	80.0	92.5	97.5	27.5	97.5
Hoshiarpur	71	51.5	62.5	72.5	82.5	92.5	20.0	41.0
Jalandhar	60	31.0	40.0	62.5	80.0	95.0	40.0	64.0
Kapurthala	81	64.3	74.4	85.0	92.5	97.5	18.1	33.3
Ludhiana	86	70.0	77.5	90.0	95.0	97.5	17.5	27.5
Mansa	77	57.5	65.0	77.5	90.0			

Moga	81	62.5	77.5	82.5	90.0	97.5	12.5	35.0
Mohali	58	0.0	46.9	65.0	77.5	87.5	30.6	87.5
Muktsar Sahib	88	62.5	80.0	95.0	100.0	100.0	20.0	37.5
S.B.S. Nagar	88	73.0	82.5	90.0	97.5	100.0	15.0	27.0
Pathankot	80	60.0	72.5	82.5	90.0	95.0	17.5	35.0
Patiala	63	39.3	47.5	65.0	77.5	87.5	30.0	48.3
Rupnagar	55	0.0	39.4	63.8	77.5	87.5	38.1	87.5
Sangrur	76	60.0	67.5	77.5	87.5	93.8	20.0	33.8
TaranTaran	83	60.0	75.0	87.5	92.5	97.5	17.5	37.5

Note: Percentage may vary due to round off

2.4 Conclusion

The average achievement of students in Punjabi varies greatly across the districts of Punjab. There is a highly significant difference between outcomes in high scoring districts such as Fazilka (91%), Muktsar & Nawanshahr (88%), Tarantarn (83%), and low scoring districts such as Roopnagar (55%) and Fatehgarh Sahib (57%).

Districts also vary greatly in the range between their lowest and highest achieving students as revealed by their inter-quartile score ranges. Some Districts such as Fazilka (7.5) have relatively homogeneous cohorts whilst others have far more diverse outcomes, e.g.,Fatehgarh Sahib (45).

It was detected that average achievement of boys and girls has no significantly difference. Similarly, the average score of rural and urban has no significance difference.

The survey did find that students from the SC category outperformed their peers in the Gen, BC and other categories by a statistically significant margin. But in the management concern there have a significant difference in the average score of department schools and Aided schools.

The following chapter provides more information about what class II students at various levels of achievement know and can do in the domain of language Punjabi.

Chapter 3

What students know and can do: Punjabi

3.1 Overview of the Language Tests: Punjabi

In language, class II students were tested with two test booklets, which contained informational reading passage, items related to grammar and curriculum. The items were designed to test a range of relevant *linguistic skill.* These are classified as Listening, Speaking, Reading and Writing.

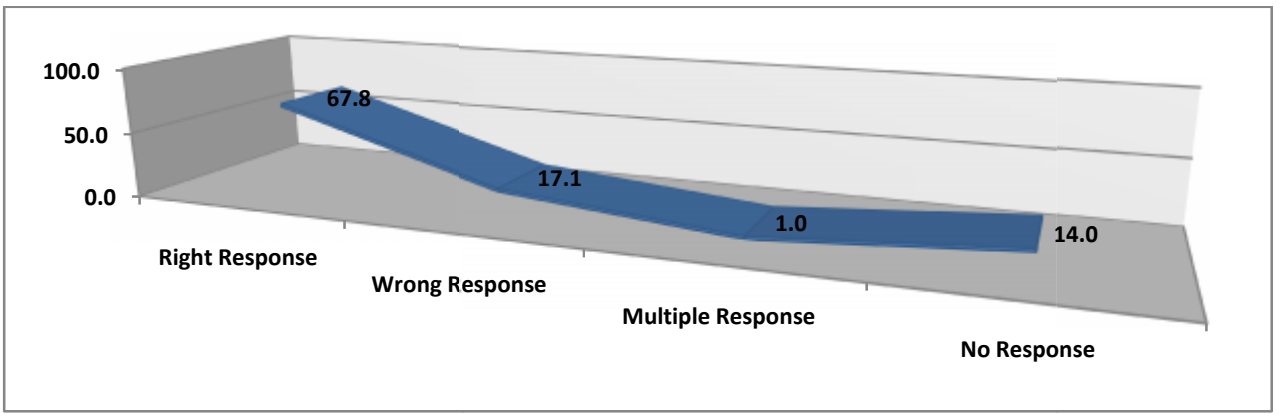
3.2 Sample Item

The items reproduced below were used in one of the tests of language Punjabi. Statistics showing how students responded to these items are given.

	Scale Score: 221
	-ਪਛਾਣ ਕਰਵਾਓ।

This item requires students to have ability to speak. The scaled score of this item was 221, i.e., significantly below the average level of difficulty of items in the survey. Around 67.8 % of students in the sample were able to select the correct answer. The figure 3.1 shows how the remaining 22.2% responded.

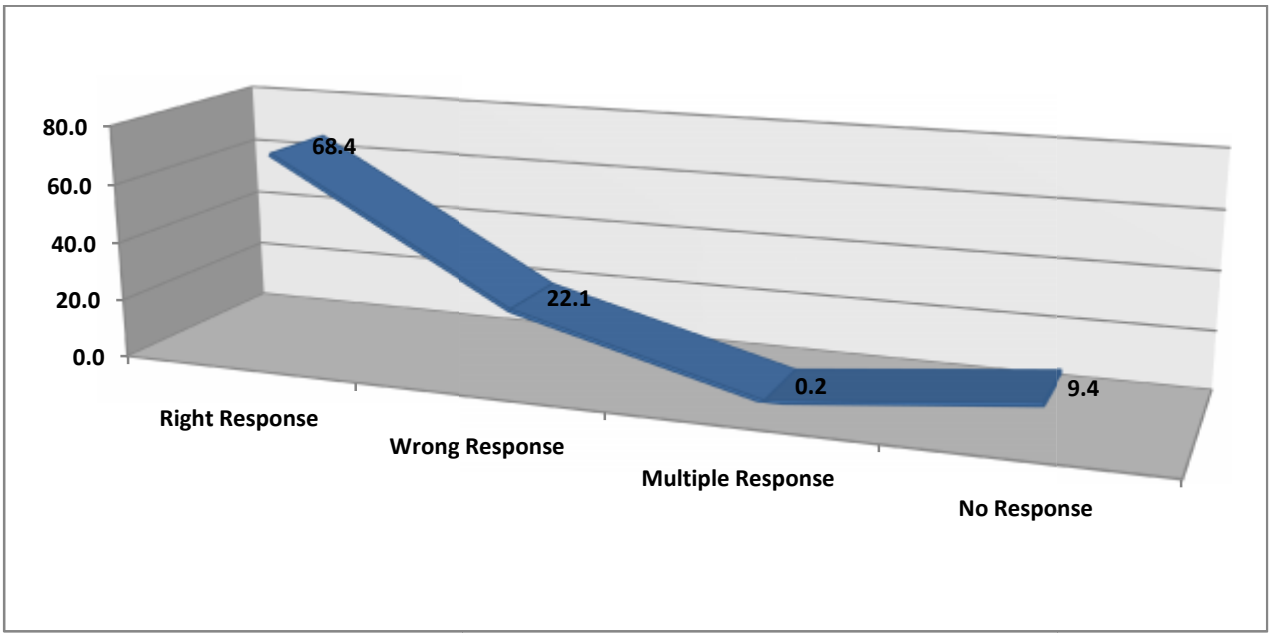
: Percentage of students response



Scale Score: 220
-ਹੇਠ ਲਿਖੇ ਸ਼ਬਦ ਜੁਟਾਂ ਨੂੰ ਪੜ੍ਹੋ:- - jkr ividAwrQI shI pVdw h qW pSn d swhmx " shI ਪੜ੍ਹਿਆ igAw " Aq j glq pVdw h qW " glq ਪੜ੍ਹਿਆ igAw " , j ividAwrQI nhI pVdw qW " nhI ਪੜ੍ਹਿਆ igAw " ਫੀਲਡ ਇਨਵੈਸੀਗੇਟਰ dvwrw iliKAw jwv[ਮੇਲ – ਮੇਲਾ

This item requires students to have ability to read words of same pronunciation correctly. The scaled score of this item was 220, i.e., at significantly below the average level of difficulty of items in the survey. Around 68.4% of students in the sample were able to select the correct answer. The figure 3.2 shows how the remaining 31.6% responded.

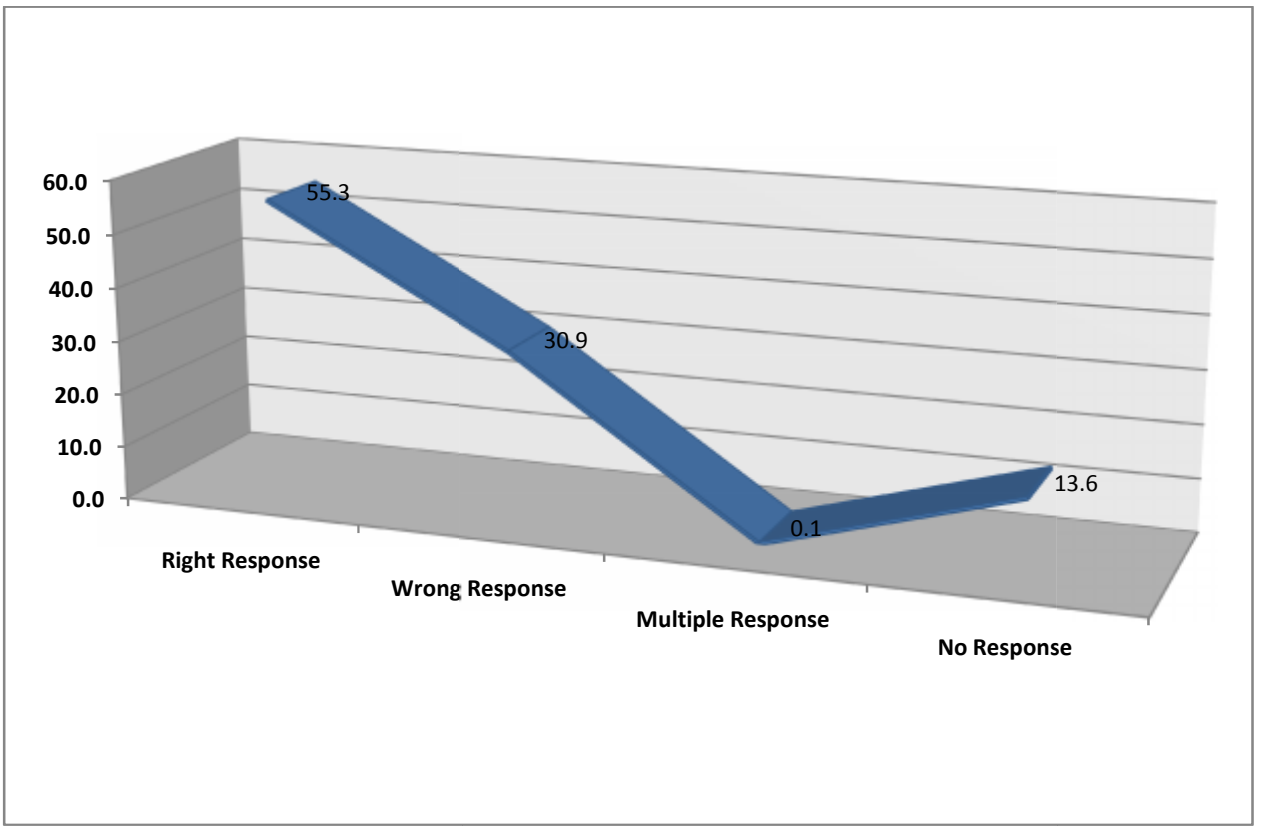
Percentage of students response



Scale Score: 243
ਲਿੰਗ ਬਦਲੋ: ਉਦਾਹਰਨ: ਨਾਨਾ – ਨਾਨੀ ਮਾਤਾ – .....

This item requires students to have ability to write simple words. The scaled score of this item was 243, i.e., significantly below the average level of difficulty of items in the survey. Around 55.3% of students in the sample were able to select the correct answer. The figure 3.3 shows how the remaining 44.7% responded.

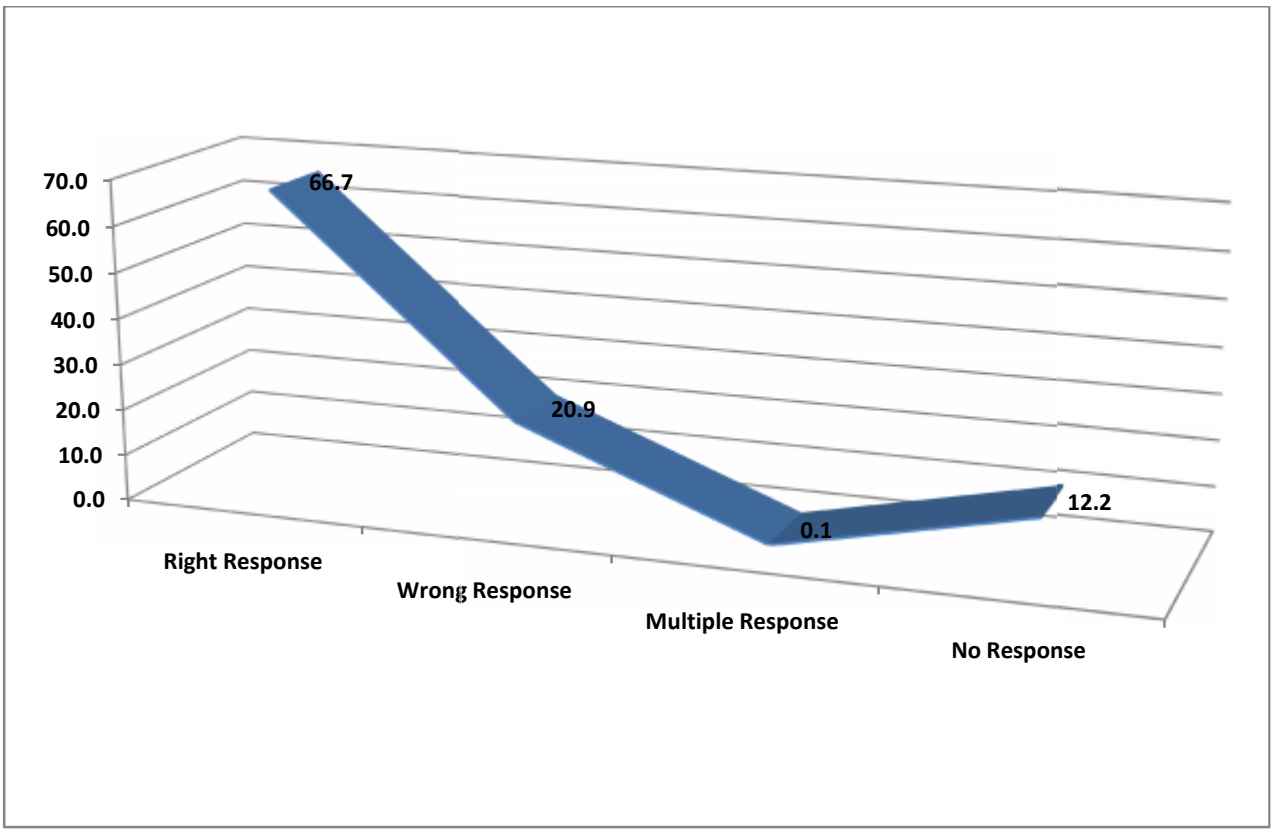
Figure 3.3: Percentage of students response



Sample Item: Writing	Scale Score: 223

This item requires students to have ability to write simple words. The scaled score of this item was 223, i.e., significantly below the average level of difficulty of items in the survey. Around 66.7% of students in the sample were able to select the correct answer. The figure 3.4 shows how the remaining 33.3% responded.

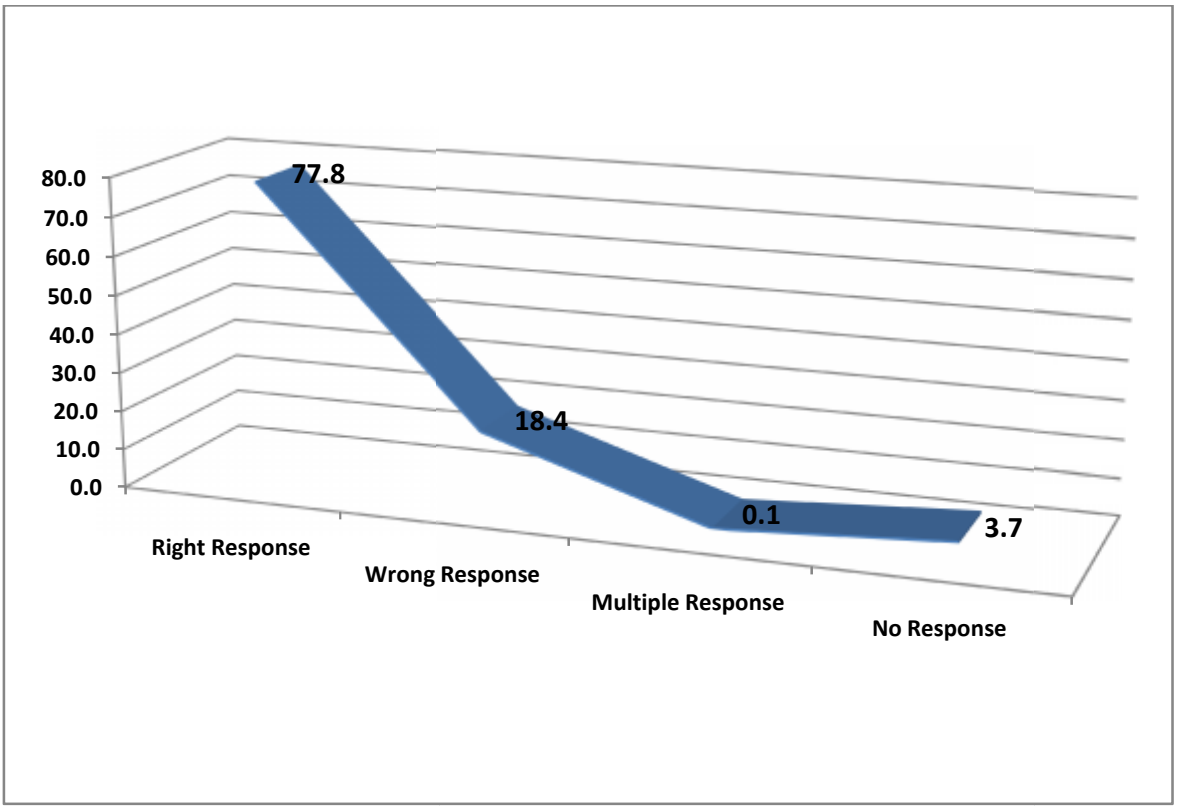
Figure 3.4: Percentage of students response



	Scale Score: 199
	ਹਨ। ਫੀਲਡ ਇਨਵੈਸਟੀਗੇਟਰ ਦੁਆਰਾ ਵਿਦਿਆਰਥੀ ਵਲੋਂ ਦਿੱਤਾ ਗਿਆ ਤਿਉਂ ਲਿਖਿਆ ਜਾਵੇ: ?

This item requires students to have ability to listen properly. The scaled score of this item was 199 i.e., significantly below the average level of difficulty of items in the survey. Around 77.8% of students in the sample were able to select the correct answer. The figure 3.5 shows how the remaining 22.2% responded.

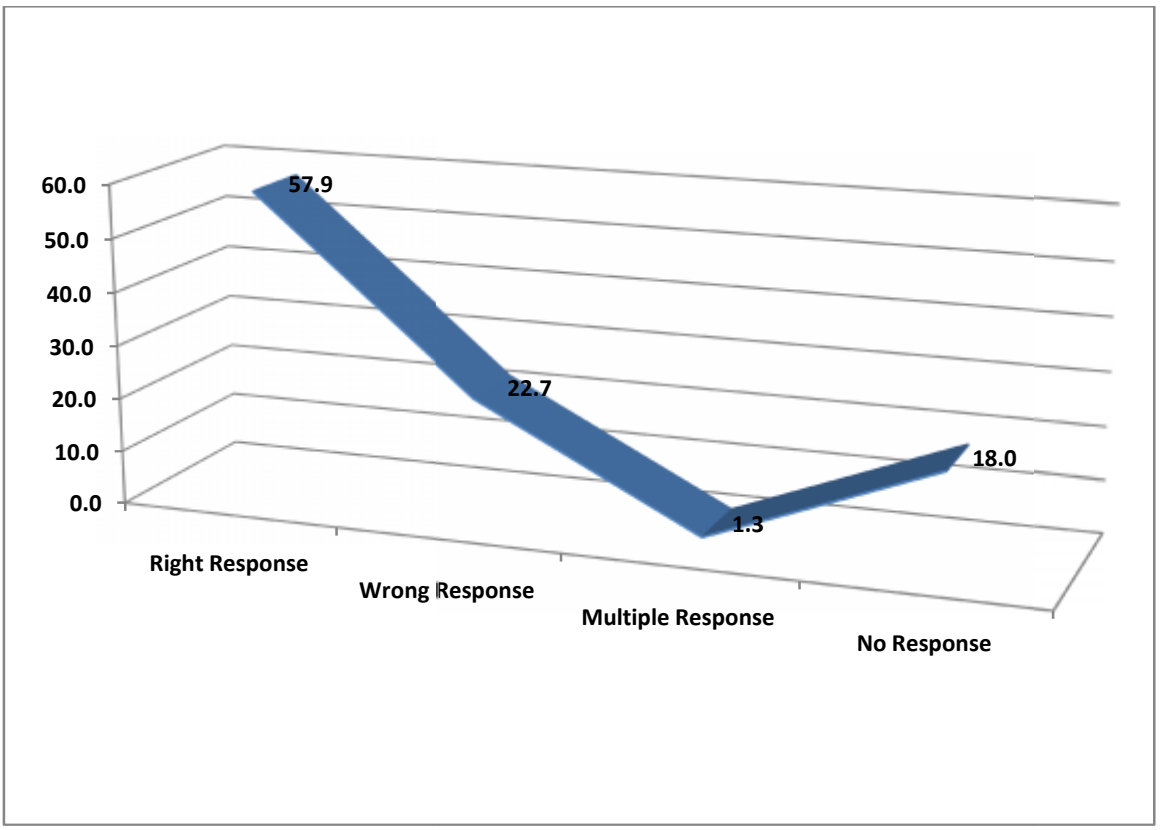
Figure 3.5: Percentage of students response



	Scale Score: 238
	ਹਨ। ਫੀਲਡ ਇਨਵੈਸਟੀਗੇਟਰ ਦੁਆਰਾ ਵਿਦਿਆਰਥੀ ਵਲੋਂ ਦਿੱਤਾ ਗਿਆ ਤਿਉਂ ਲਿਖਿਆ ਜਾਵੇ: ਨਾਂ ਬੋਲ ਕੇ ਜਾਣ-ਪਛਾਣ ਕਰਵਾਓ।

This item requires students to have ability to speak. The scaled score of this item was 238 i.e., significantly below the average level of difficulty of items in the survey. Around 57.9% of students in the sample were able to select the correct answer. The figure 3.6 shows how the remaining 42.1% responded.

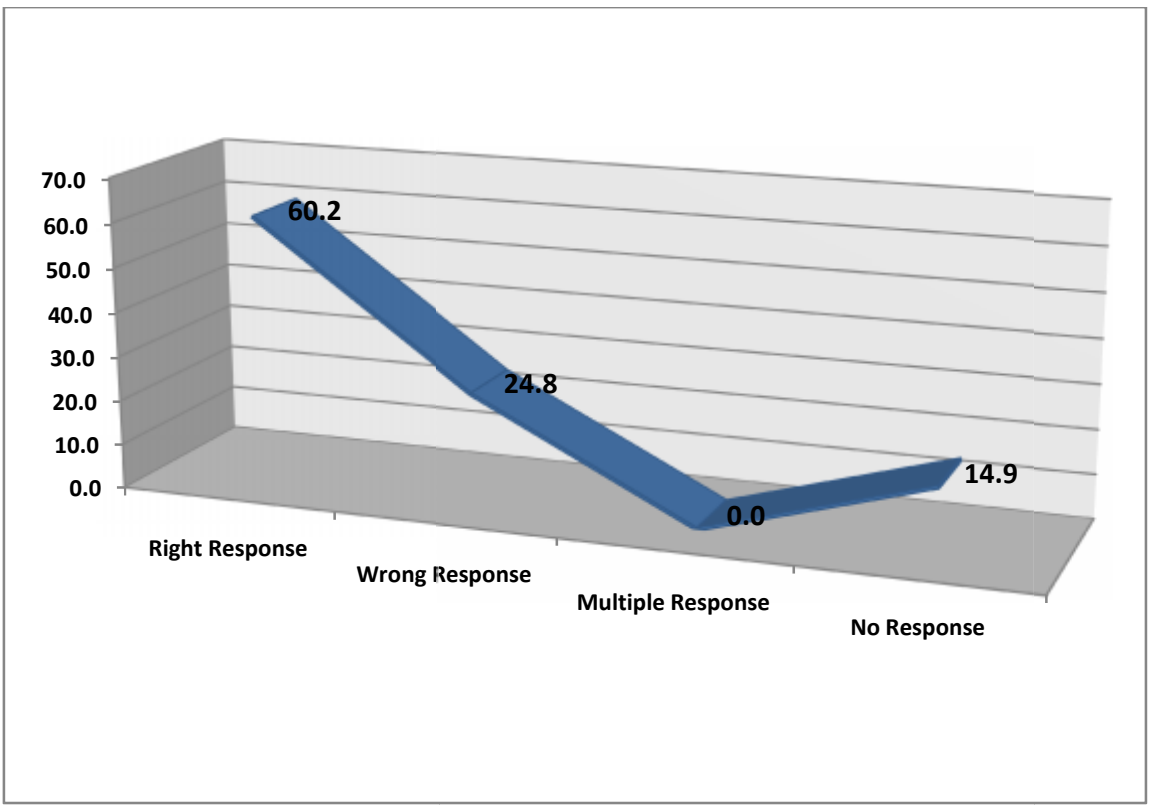
Figure 3.6: Percentage of student's response



Scale Score: 233
ਪ੍ਰਸ਼ਨ ਨੰ: 35 ਤੋਂ 40 ਤੱਕ ਲਿਖਤੀ ਹਨ, ਜ਼ੋ ਕਿ ਵਿਦਿਆਰਥੀਆਂ ਵਲੋਂ ਹੀ ਲਿਖੇ ਜਾਣਗੇ। ਆਪਣੇ ਪਿਤਾ ਜੀ ਦਾ ਨਾਂ ਲਿਖ ਕੇ ਦਿਖਾਓ। _____

This item requires students to have ability to write on their on. The scaled score of this item was 233 i.e., significantly below the average level of difficulty of items in the survey. Around 60.2% of students in the sample were able to select the correct answer. The figure 3.7 shows how the remaining 39.8% responded.

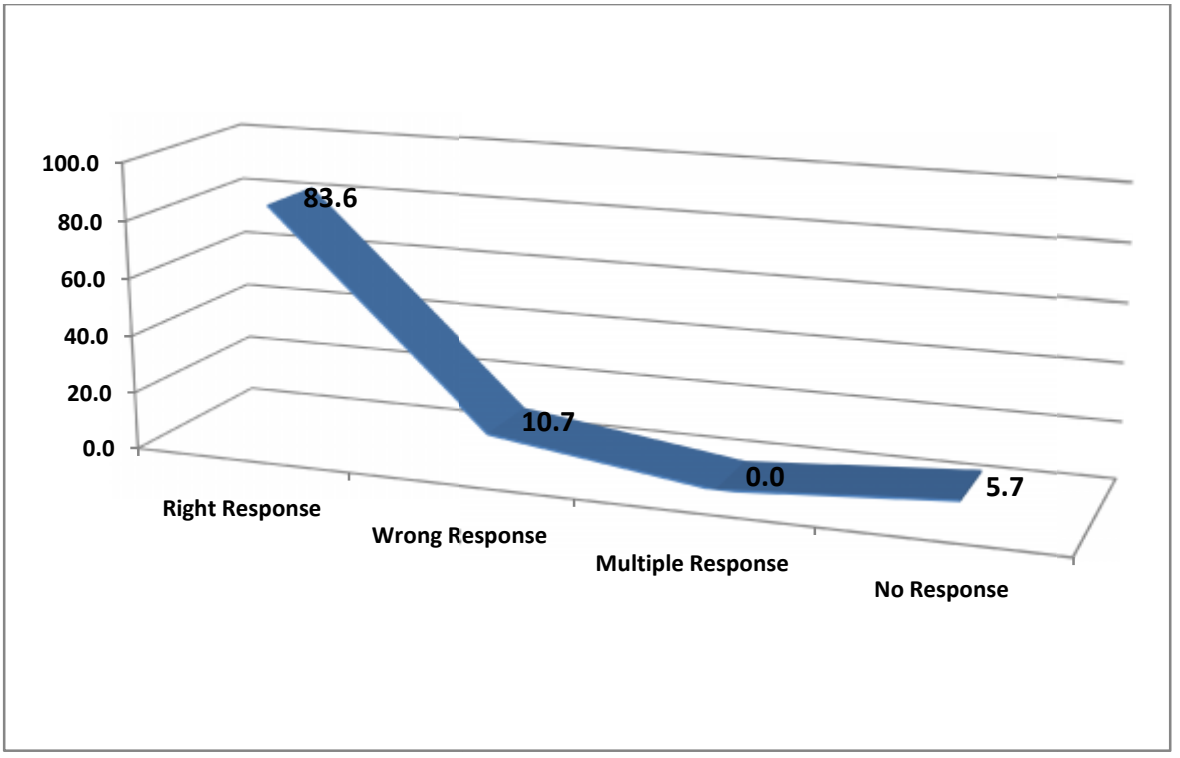
Figure 3.7: Percentage of student's response



	Scale Score: 181
	ਆਰਾ ਵੇਖ ਕੇ ਪ੍ਰਸ਼ਨ ਦੇ ਸਾਹਮਣੇ ਲਿਖਿਆ ਜਾਵੇਗਾ। _____

This item requires students to have ability to write. The scaled score of this item was 181 i.e., significantly below the average level of difficulty of items in the survey. Around 83.6% of students in the sample were able to select the correct answer. The figure 3.8 shows how the remaining 26.4% responded.

Figure 3.8: Percentage of student's response



3.3 What can students do in Language: Punjabi

The items were designed to test the linguistic skill. These are classified as Listening, Speaking, Reading and Writing. The table given below shows that how the sample students perform in various item related to different linguistic skill.

3.3.1. Linguistic skill: Listening

Table 3.1 shows the performance of students of class II on the linguistic skill: Listening.

Table 3.1: Performance of students of class II on the linguistic skill: Listening.

Item ID	Scale scores	Percentage Correct
1	187	82.5
2	207	74.8
3	137	93.6
4	216	70.3
5	173	86.8
6	224	66.1
7	216	70.1
29	188	81.9
30	194	79.7
31	199	77.8
32	224	65.8
41	214	70.4
42	217	68.8
43	155	90.3
44	159	89.5
45	209	72.8
46	205	74.4
47	234	60.1

On an average 76.4% sample students were able to give right response on the item related to listening skill.

3.3.2 Linguistic skill: Speaking

Table 3.2 shows the performance of students of class II on the Linguistic skill: Speaking.

Table 3.2: Performance of students of class II on the Linguistic skill: Speaking

Item ID	Scale scores	Percentage Correct
8	194	80.1
9	201	77.1
10	211	72.6
11	221	67.8
12	204	76.0
13	226	64.8
33	195	79.3
34	193	80.0
35	193	79.8
36	238	57.9
48	227	63.6
49	198	77.4
50	213	71.0
51	197	78.0
52	231	61.4
53	224	65.1

On an average 72% sample students able to give right response on the item related to Linguistic skill: Speaking.

3.3.3. Linguistic skill: Reading

Table 3.3 shows the performance of students of class II on the Linguistic skill: Reading.

Table 3.3: Performance of students of class II on the Linguistic skill: Reading

Item ID	Scale scores	Percentage Correct
14	171	87.3
15	220	68.4
16	220	68.0
17	223	66.8
18	186	82.7
19	184	83.4
37	164	88.7
38	159	89.7
39	162	89.1
40	225	65.1
54	182	83.4
55	227	63.8
56	230	62.3
57	233	60.2
58	248	52.0
59	229	62.5

On an average 73% sample students able to give right response on the item related to cognitive process of Application.

3.3.4. Linguistic skill: Writing

Table 3.4 shows the performance of students of class II on the Linguistic skill: Writing.

Table 3.4: Performance of students of class II on the Linguistic skill: Writing

Item ID	Scale scores	Percentage Correct
20	220	68.4
21	199	78.2
22	243	55.3
23	223	66.7
24	184	83.5
25	185	83.0
26	171	86.8
27	200	77.4
28	190	81.0
60	233	60.5
61	233	60.2
62	237	58.1
63	239	56.9
64	187	81.7
65	181	83.6

On an average 72% sample students able to give right response on the item related to Linguistic skill: Writing.

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Chapter 4
Achievement in Mathematics

This chapter summarises the achievement of class II students in Mathematics in the State Learning Achievement Survey conducted in 2014. Overall achievement for each of the participating district is reported. In addition, information about differences in achievement by student gender, school location, social category and management is provided. For each district, a sample was drawn which was designed to be representative of the entire target population, i.e., all class II students studying in government and government-aided.

4.1 Performance of districts in Mathematics

The distribution of student achievement in Mathematics is given in Tables 4.1 and 4.2. Within each Table, districts are listed in alphabetical order. Table 4.1 represent the analysis done through IRT(Item response theory), The table list each district's average score on a scale from 0 to 500. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process.

Table 4.2 represents the analysis done through CTT (Classical test theory); the table lists each district's average in percentage. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process. Finally, the tables indicate whether a district's average score is significantly different from the State's average or not.

Table 4.1: District wise average score in Mathematics(Through IRT)

District	Average Score	SE	Significant difference
Amritsar	244	8.1	No
Barnala	261	13.1	No
Bathinda	247	10.5	No
Faridkot	241	3.5	Below
Fatehgarh Sahib	214	14.5	Below
Fazilka	294	8.6	Above
Ferozepur	262	3.8	Above
Gurdaspur	240	11.5	No
Hoshiarpur	242	16.4	No
Jalandhar	249	16.7	No
Kapurthala	231	7.9	Below
Ludhiana	275	9.4	Above
Mansa	254	4.8	No
Moga	252	8.7	No
Mohali	214	7.6	

Muktsar Sahib	303	12.1	Above
S.B.S. Nagar	282	4.7	Above
Pathankot	262	8.8	No
Patiala	220	2.6	Below
Rupnagar	216	10.6	Below
Sangrur	251	10.6	No
TaranTaran	246	11.5	No
State Average	**250**	**2.2**	

The table 4.1 shows that the average score of the state is 250 (with a standard error of 2.2). The results reveal substantial differences in Mathematics achievement between the highest performing districts (303 Muktsar) and the lowest performing districts (214 for Mohali and Fatehgarh Sahib). In Mathematics, six districts had average scores significantly below that of the group; five districts had average score significantly above that of group and eleven districts had average scores that were not significantly different from that of the group.

Table 4.2: District wise average score in Mathematics(Through CTT)

Districts	Average	Standard Error	Standard Deviation	Difference
Amritsar	62	1.6	19.2	No
Barnala	71	1.4	1.4	No
Bathinda	63	1.9	25.2	No
Faridkot	60	1.4	17.5	No
Fatehgarh Sahib	45	2.2	27.8	Below
Fazilka	89	1.3	17.2	Above
Ferozepur	72	1.2	13.9	Yes
Gurdaspur	62	2.5	31.5	No
Hoshiarpur	60	2.0	24.3	No
Jalandhar	64	2.2	27.8	No
Kapurthala	55	1.8	21.6	Below
Ludhiana	77	1.4	17.9	Yes
Mansa	69	1.3	15.1	No
Moga	68	1.5	16.5	No
Mohali	48	2.1	27.7	Below
Muktsar Sahib	88	0.8	10.8	Above
S.B.S.Nagar	82	0.8	10.5	Above
Pathankot	72	1.5	17.8	Yes
Patiala	48	1.2	13.8	Below
Rupnagar	49	2.1	27.0	Below
Sangrur	65	1.9	20.8	No
TaranTaran	63	1.9	20.6	No
State Average	65	2.5	12.1	

Note: Percentage may vary due to round off

Table 4.2 shows the analysis done through CTT (Classical Test Theory). Through CTT, it was found that the state average is 65 % (with a standard error 2.5). The results reveal differences in Mathematics achievement between the highest performing districts (89% for Fazilka and Muktsar 88%) and the lowest performing districts (45% for Fatehgarh Sahib). In Mathematics, five districts had average scores significantly below that of the group; three districts had average scores significantly above that of the group; three districts had average score significantly difference that of group and eleven districts had average scores that were not significantly different from that of the group.

4.2 Performance of various groups

The table below compares the average performances of different groups. Performance is compared by gender, school location, social category and management.

4.2.1 Gender related difference in Mathematics

Table 4.3 compares the average score achieved by boys and girls in Mathematics. It shows that there was no significant difference in average score of boys and girls. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process.

Table 4.3: Gender wise average score in Mathematics

Gender	Average score	Standard Error	Significance difference
Boys	65	0.6	No
Girls	65	0.6	

Note: Percentage may vary due to round off

Table 4.4 shows the average scale score analysed through IRT. The Average scale score of boys' is 250(with a standard error 2.4) and girls' 250(with a standard error 2.4).There has been no significant difference between boys' and girls' average score.

Table 4.4: District wise average score according to gender in Mathematics (Through IRT)

District	Boy (Average)	SE	Girl (Average)	SE	Significant difference
Amritsar	244	7	243	11.1	No
Barnala	261	15.1	261	12.2	No
Bathinda	240	8.5	252	12.9	No
Faridkot	239	2.7	244	5.6	No
Fatehgarh Sahib	217	22.9	212	10.4	No
Fazilka	292	9.4	297	9.7	No
Ferozepur	265	6.1	259	4.7	No
Gurdaspur	241	11.8	238	14.2	

Hoshiarpur	237	18	248	17.8	No
Jalandhar	248	17.2	249	16.7	No
Kapurthala	223	16.6	235	4.7	No
Ludhiana	277	7.7	272	13	No
Mansa	254	4.9	253	5.4	No
Moga	246	8.3	260	10.3	No
Mohali	223	5.5	202	9.8	No
Muktsar Sahib	306	9.6	299	14.6	No
S.B.S. Nagar	284	5.1	279	4.9	No
Pathankot	260	10.7	264	10.3	No
Patiala	219	2.2	220	4.7	No
Rupnagar	211	13.1	219	9.2	No
Sangrur	249	9.1	253	12.9	No
TaranTaran	252	10.4	241	13.4	No
State	**250**	**2.4**	**250**	**2.4**	**No**

Table 4.5 shows that In mathematics, Five districts had average scores significantly below that of the girls score; and one district had average scores that had significance different from that of the girls score .During analysis It has been found that in district Amritsar, Ferozepur, Ludhiana, Mohali, Muktsar sahib and S.B.S. Nagar boys' average score is higher than girls' score, which indicates that boys perform better than girls.

Table 4.5: District wise average score according to gender in Mathematics (Through CTT)

Districts	Boys			Girls			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	63	2.2	19.7	62	2.4	18.6	No
Barnala	71	2.3	18.1	71	1.9	16.7	No
Bathinda	60	3	25.6	66	2.6	24.6	Below
Faridkot	60	1.8	16.6	62	2.1	18.5	No
Fatehgarh Sahib	45	3.5	29.5	45	2.9	26.5	No
Fazilka	85	1.7	17.1	87	2.1	17.4	No
Ferozepur	74	1.8	13.6	70	1.6	14.1	No
Gurdaspur	62	3.3	30.4	61	3.8	32.9	No
Hoshiarpur	58	2.8	25.9	63	2.7	22.1	Below
Jalandhar	64	3.2	28.2	64	3.1	27.5	No
Kapurthala	50	3.5	24.8	57	2.1	19.1	Below
Ludhiana	78	1.9	17.1	76	2	18.7	No
Mansa	68	1.8	16	69	1.8	14.1	No
Moga	65	2.1	16.7	71	2.1	15.8	Below
Mohali	52	2.7	26.4	42	3.5		

Muktsar Sahib	89	1.1	10.2	86	1.2	11.2	No
S.B.S. Nagar	83	1.2	10.4	81	1.2	10.5	No
Pathankot	71	2.5	20.3	73	1.7	15.4	No
Patiala	48	1.6	14.2	48	1.7	13.4	No
Rupnagar	46	3.3	28.3	51	2.7	26	Below
Sangrur	64	2.6	20	66	2.9	21.8	No
TaranTaran	64	2.6	19.8	60	2.7	21.2	No

Note: Percentage may vary due to round off

4.2.2 Area related difference in Mathematics

In table 4.6 shows that the average scores of rural and urban area is 66% and 62 % respectively. It also shows that there has been significant difference in the average score of Rural and urban area. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate the how widely individuals in a group vary.

Table 4.6: Area wise average score in Mathematics

Area	Average	SE	SD	Significant Difference
Rural	66	0.4	23.3	**Yes**
Urban	62	0.9	26.2	

Note: Percentage may vary due to round off

In table 4.7, analysis was carried out through IRT and it shows that, average scale score of rural and urban area is 250 and 248 respectively.

Table 4.7: Area wise average score of districts in Mathematics(Through IRT)

District	Rural(Average)	SE	Urban(Average)	SE	Significant difference
Amritsar	245	11.3	242	15.8	No
Barnala	260	8.8	264	45.0	No
Bathinda	246	12.1	248	21.1	No
Faridkot	241	2.5	243	10.6	No
Fatehgarh Sahib	210	11.6	220	16.5	No
Fazilka	299	9.3	264	0.0	Above
Ferozepur	261	4.7	263	0.0	No
Gurdaspur	243	11.6	214	0.0	Above
Hoshiarpur	243	19.0	240	33.3	No
Jalandhar	250	17.8	247		

Kapurthala	223	8.4	245	15.9	No
Ludhiana	267	12.6	297	2.7	Below
Mansa	259	5.1	221	0.0	Above
Moga	255	9.2	226	0.0	Above
Mohali	217	6.6	206	22.8	No
Muktsar Sahib	301	13.7	310	0.0	No
S.B.S Nagar	283	5.6	278	8.6	No
Pathankot	256	7.9	282	26.0	No
Patiala	221	4.3	218	4.2	No
Rupnagar	220	1.6	208	28.3	No
Sangrur	250	12.4	265	0.0	No
TaranTaran	245	9.4	251	49.8	No
State Average	250	2.2	248	4.6	**No**

In table 4.8, analysis was carried out through CTT and it shows that, in district Kapurthala, Ludhiana, Muktsar Sahib, Pathankot and Sangrur the average score of rural area is significantly below than urban area, But in district Fazilka and Moga shows the significant difference in average score of rural and urban area and in district Mansa the average score of rural area is significantly above than the urban area. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate the how widely individuals in a group vary.

Table 4.8: Area wise average score of districts in Mathematics

Districts	Rural			Urban			Significant difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	64	1.8	16.8	60	3.1	22.5	No
Barnala	71	1.5	15.1	70	3.8	22.6	No
Bathinda	63	2.3	25.6	65	3.7	23.9	No
Faridkot	61	1.7	17.3	60	2.4	18.1	No
Fatehgarh Sahib	45	2.5	24.4	46	4.2	32.5	No
Fazilka	88	1.2	14.9	74	5.8	26.1	Yes
Ferozepur	72	1.3	14.1	71	3.1	13.2	No
Gurdaspur	64	2.5	29.4	49	9.3	41.8	No
Hoshiarpur	60	2.3	24.1	60	3.9	25.1	No
Jalandhar	64	3	29.6	65	3.2	24.9	No
Kapurthala	50	2.4	22.6	63	2.4	17	Below
Ludhiana	74	1.7	18.9	86	1.6	10.2	Below
Mansa	72	1.1	12.6	47	2.7	11.7	Above
Moga	69	1.6	16.7	55	2	(	

Mohali	49	2.4	26.4	45	4.9	31.5	No
Muktsar Sahib	87	0.9	11.2	92	1.4	6.4	Below
S.B.S. Nagar	82	1	11.3	82	1.2	7.7	No
Pathankot	69	1.7	18.1	80	2.4	14.5	Below
Patiala	49	1.5	12.9	46	1.9	14.8	No
Rupnagar	50	2.5	25.3	46	3.8	29.6	No
Sangrur	64	2	21.2	73	4.6	13.8	Below
TaranTaran	63	1.9	18.2	65	4.6	26.2	No

Note: Percentage may vary due to round off

4.2.3 Social class related difference in Mathematics

Table 4.9 describes the analysis of average score according to Social class. It shows the average score of SC, BC, General and Others is 66%, 63%, 60% and 65% respectively. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate the how widely individuals in a group vary. It also shows the significant difference in average score of SC students from BC and Gen.

Table 4.9: Social Class wise average score in Mathematics (Through CTT)

Social Class	Average	SE	SD	Significant Difference			
				SC	BC	Gen	Other
SC	66	0.5	23.0	-	Yes	Yes	No
BC	63	0.8	25.3	Below	-	Yes	No
Gen	60	1.4	26.7	Below	Below	-	No
Other	65	7.8	29.4	No	No	No	-

Note: Percentage may vary due to round off

In table 4.10, analysis was carried out through CTT and it shows that in some district like Amritsar, Faridkot, Fatehgarh Sahib, Ferozepur, Ludhiana, Mansa, Moga and Mohali the average performance of general students is higher than SC students . For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate that how widely individuals in a group vary.

Table 4.10: District wise average score according to Social Class in Mathematics

Districts	SC			BC			Gen			Other		
	Avg.	SE	SD	Avg	SE	SD	Avg	SE	SD	Avg	SE	SD
Amritsar	62	1.9	20.3	62	2.9	13.8	66	6.3				
Barnala	70	1.8	18.2	73	2.6	15.4	69	5.1				

Bathinda	60	2.4	26.1	71	3.9	22.2	70	5.0	19.5	-	-	-
Faridkot	60	1.5	17.6	65	4.7	17.0	65	6.4	16.9	-	-	-
Fatehgarh Sahib	44	3.2	30.2	48	4.7	26.2	46	3.9	22.9	-	-	-
Fazilka	88	1.0	11.3	85	3.0	20.1	55	17.6	43.2	-	-	-
Ferozepur	71	1.4	14.5	76	2.6	12.3	73	3.7	12.2	-	-	-
Gurdaspur	69	3.6	30.0	59	3.4	29.6	43	10.4	39.0	-	-	-
Hoshiarpur	57	2.9	24.7	72	2.8	20.7	44	3.6	17.7	-	-	-
Jalandhar	68	2.6	23.3	64	4.6	27.9	58	5.6	33.9	33	24.0	41.6
Kapurthala	60	2.2	16.1	49	2.9	22.8	60	6.5	27.0	69	16.2	22.9
Ludhiana	73	1.8	16.8	83	1.8	10.7	80	3.9	23.6	90	2.5	3.5
Mansa	68	1.4	14.3	68	5.1	21.6	75	2.4	11.0	-	-	-
Moga	66	1.6	16.5	78	2.8	10.5	95	0.0	0.0	-	-	-
Mohali	45	3.2	27.2	51	3.8	29.6	52	4.7	24.3	30	0.0	0.0
Muktsar Sahib	88	0.9	11.0	88	2.3	9.6	84	8.7	12.3	-	-	-
S.B.S. Nagar	83	1.1	10.5	80	1.6	9.8	80	2.2	11.2	80	0.0	0.0
Pathankot	71	1.5	15.7	73	4.0	23.3	80	12.5	21.7	77	6.5	14.5
Patiala	47	2.0	13.4	48	1.7	14.3	46	2.8	13.6	-	-	-
Rupnagar	49	3.0	25.0	49	3.5	27.5	49	5.7	31.2	-	-	-
Sangrur	66	2.5	22.4	63	4.0	18.1	64	4.1	14.3	-	-	-
TaranTaran	65	2.1	20.3	57	5.0	22.6	64	7.6	18.6	-	-	-

Note: Percentage may vary due to round off

4.2.4 Managements related difference in Punjabi

Table 4.12 describes the analysis of average score according Managements. It shows that the average score of Department schools is 65% and Aided is 64%. For each score, the 'standard error' is given to indicate the degree of imprecision arising from the sampling process, and 'standard deviation' is given to indicate the how widely individuals in a group vary. It also shows that there has been no significant difference in the average score of department and aided schools.

Table 4.12: Management wise average score in Mathematics (Through CTT)

Management	Average	SE	SD	Significant Difference
Department	65	0.4	24.1	**No**
Aided	64	1.8	25.8	

Note: Percentage may be vary due to round off

In table 4.13, analysis was carried out through CTT and it shows that, in Amritsar, Faridkot , Hoshiarpur, Ludhiana and Pathankot the average score of department schools is significantly below than aided schools, but in Fatehgarh Sahib and S.B.S. Nagar shows significance difference between average score of department and aided schools.

Table 4.12: District wise average score according to Management in Mathematics

Districts	Department			Aided			Significance Difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	61	1.8	19.8	71	2.7	12.2	Below
Barnala	71	1.4	17.3	-	-	-	-
Bathinda	63	1.9	25.2	-	-	-	-
Faridkot	59	1.4	16.9	69	4.3	19.5	Below
Fatehgarh Sahib	47	2.5	28.8	32	3.3	15.0	Yes
Fazilka	86	1.3	17.2	-	-	-	-
Ferozepur	72	1.2	13.9	-	-	-	-
Gurdaspur	62	2.5	31.5	-	-	-	-
Hoshiarpur	57	2.1	24.5	78	3.7	16.6	Below
Jalandhar	64	2.2	27.8	-	-	-	-
Kapurthala	56	2.0	22.3	49	3.5	14.6	No
Ludhiana	75	1.5	18.2	87	2.5	11.6	Below
Mansa	69	1.3	15.1	-	-	-	-
Moga	68	1.5	16.5	-	-	-	-
Mohali	48	2.1	27.7	-	-	-	-
Muktsar Sahib	88	0.8	10.8	-	-	-	-
S.B.S. Nagar	82	0.9	10.9	78	1.4	6.4	Yes
Pathankot	69	1.5	17.2	93	0.9	3.7	Below
Patiala	48	1.2	13.8	-	-	-	-
Rupnagar	50	2.4	26.6	46	4.4	28.1	No
Sangrur	65	1.9	20.8	-	-	-	-
TaranTaran	63	1.9	20.6	-	-	-	-

Note: Percentage may be vary due to round off

4.3 Range score in Punjabi

The tables 4.14 illustrate the range of achievement of districts. The tables list the scores achieved by students at key percentiles. For example, the score at the 25th percentile is the score which 75% of students achieve or surpass; the score at the 90th percentile is the score that 10% of students achieve or surpass. The range between the 25th and 75th percentiles (the inter-quartile range) represents the performance of the middle 50% of students.

The inter-quartile range (i.e. the range between the 75th and 25th percentiles) is highly variable. For example, Fazilka has an inter-quartile range of just 10 whilst Fatehgarh Shahib has a corresponding value of 40. These values suggest that the class II population in Fazilka is far more homogeneous than that of Fatehgarh Sahib. Performance at the 10th and 90th percentiles respectively shows extremes in low and high achievement. The range between these two points, which includes 90 percent of the population, is highly variable ranging from 20 (Fazilka) to 92.5 (Gurdaspur).

The percentiles provide additional information when comparing Mathematical performance amongst districts. For example, when the districts are arranged in

the differences between adjacent distiricts tend to be small. However, the range of scores may not be similar. For example, there is no significant difference between the median score of the Amritsar (62) and Gurdaspur (62). However, the score ranges between the 25th and 75th percentiles are very different: Amritsar's range is 27.5 compared with Gurdaspur's range of 32.5. This indicates that whilst average achievement is very similar in the two areas, Gurdaspur has a more heterogeneous group of class II students than the Amritsar.

Table 4.13: Percentile scores in Mathematics for Districts

District	Average score	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	Range 75-25	Range 90-10
Amritsar	62	35.0	50.0	65.0	77.5	86.5	27.5	51.5
Barnala	71	47.5	57.5	72.5	85.0	92.5	27.5	45.0
Bathinda	63	29.8	50.0	70.0	80.0	92.5	30.0	62.8
Faridkot	63	40.0	47.5	60.0	72.5	85.0	25.0	45.0
Fatehgarh Sahib	45	0.0	27.5	42.5	67.5	82.3	40.0	82.3
Fazilka	89	77.5	85.0	87.5	95.0	97.5	10.0	20.0
Ferozepur	72	52.5	62.5	72.5	82.5	90.0	20.0	37.5
Gurdaspur	62	0.0	52.5	72.5	85.0	92.5	32.5	92.5
Hoshiarpur	60	25.0	42.5	67.5	80.0	87.5	37.5	62.5
Jalandhar	64	23.0	50.0	67.5	87.5	95.0	37.5	72.0
Kapurthala	55	25.0	42.5	57.5	71.3	80.0	28.8	55.0
Ludhiana	77	52.5	70.0	80.0	90.0	95.0	20.0	42.5
Mansa	69	48.8	60.0	70.0	80.0	85.0	20.0	36.3
Moga	68	50.8	57.5	67.5	80.0	87.5	22.5	36.8
Mohali	48	0.0	35.0	55.0	68.1	80.0	33.1	80.0
Muktsar Sahib	88	75.0	80.0	90.0	97.5	100.0	17.5	25.0
S.B.S. Nagar	82	67.8	76.9	82.5	90.0	95.0	13.1	27.3
Pathankot	72	50.0	60.0	75.0	85.0	95.0	25.0	45.0
Patiala	48	27.5	37.5	50.0	57.5	65.0	20.0	37.5
Rupnagar	49	0.0	32.5	57.5	67.5	77.8	35.0	77.8
Sangrur	65	35.0	52.5	68.8	78.1	90.0	25.6	55.0
TaranTaran	63	31.3	50.0	67.5	80.0	86.3	30.0	55.0

Note: Percentage may vary due to round off

4.4 Conclusion

The average achievement of students in Mathematics varies across the districts of Punjab. There is a highly significant difference between outcomes in high scoring districts such as (89%) Fazilka, and low scoring districts such as Fatehgarh Sahib (45%).

Districts also vary greatly in the range between their lowest and highest achieving students as revealed by their inter-quartile score ranges. Some Districts such as S.B.S. Nagar (13.1)

and Fazilka (10) have relatively homogeneous cohorts whilst others have far more diverse outcomes, e.g., Jalandher (37.5) and Fatehgarh Sahib (40.0).

It was detected that average achievement of boys and girls has no significantly difference. But in area concern there has been significant difference in the average of Rural and Urban area.

The survey did find that students from the SC category outperformed their peers in the, BC and General categories by a statistically significant margin. But in the management concern there have no significance difference in the average score of department and aided.

The following chapter provides more information about what class II students at various levels of achievement know and can do in the domain of mathematics.

Chapter 5

What students know and can do: Mathematics

5.1 Overview of the Mathematics tests

Also for mathematics two test form containing 40 items each was framed. In the both test form there have 15 common items. These served as 'anchors' so that the different test booklets could be linked together and hence, all items could be placed on a common scale. In total, the Mathematics assessment instrument comprised 50 unique items.

The items in each text booklet were chosen to cover the following range of mathematical domains from the Mathematics curriculum: the number system, basic operations, measurement, geometry and patterns. In addition to the content domains listed above, items were constructed to test a range of cognitive processes/domain[4] (Classified by Bloom in 1956) or parameters in a variety of contexts. These were classified as Knowledge, Understanding, Application and Skill as described below:

Parameters classification for test construction in Mathematics

Knowledge: In items testing this process, students are expected to answer using simple knowledge (recall) or recognition of terms and/or concepts familiar from their lessons.

Comprehension/Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, interpreting, giving descriptions, and stating the main ideas

Application: Using acquired knowledge. Solve problems in new situations by applying acquired knowledge, facts, techniques and rules.

Skill: Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences. Make judgments about the value of ideas or materials. In short skill of analyzing, evaluating and creating.

[4] Source regarding cognitive process/Domain: - 1. https://en.wikipedia.org/wiki/Bloom's
2. Teaching of Social Science by Dr. Re

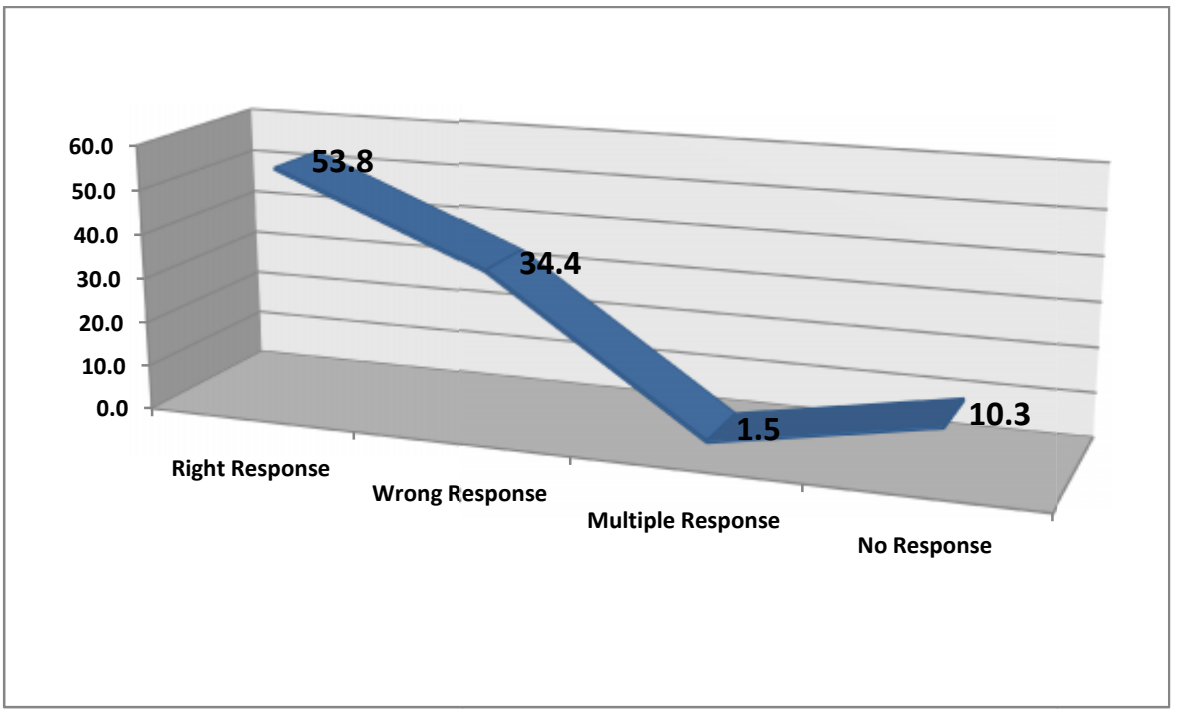
5.2 Sample Item

The items reproduced below were used in one of the tests of Mathematics. Statistics showing how students responded to these items are given.

	Scale Score: 242
	व

The item given in the box is knowledge based and the item required that the student have ability to recall the process of knowing place value. The scaled score of this item was 242. The figure 5.1 shows that 53.8 % of students in the sample were able to select the correct answer and how the remaining 46.2% responded.

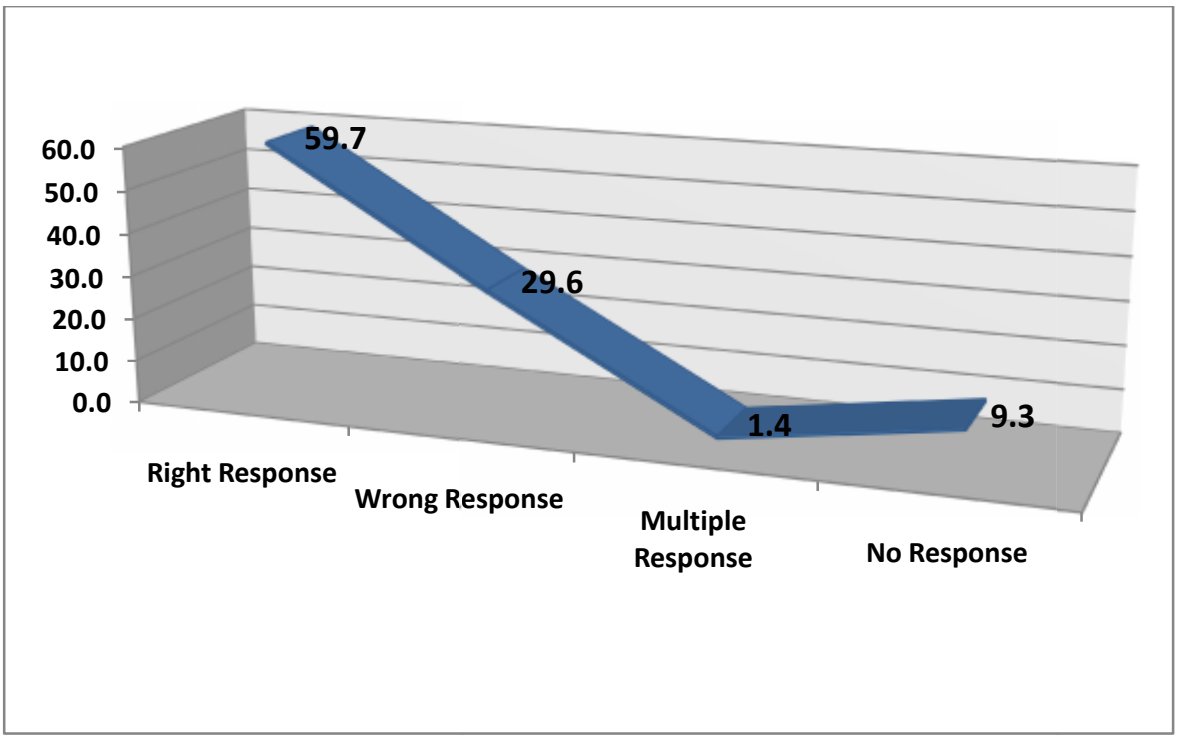
Figure 5.1: Percentage of responses given by students



Scale Score: 232

The scaled score of this item was 232. The figure 5.2 shows that 59.7 % of students in the sample were able to select the correct answer and how the remaining 40.3% responded.

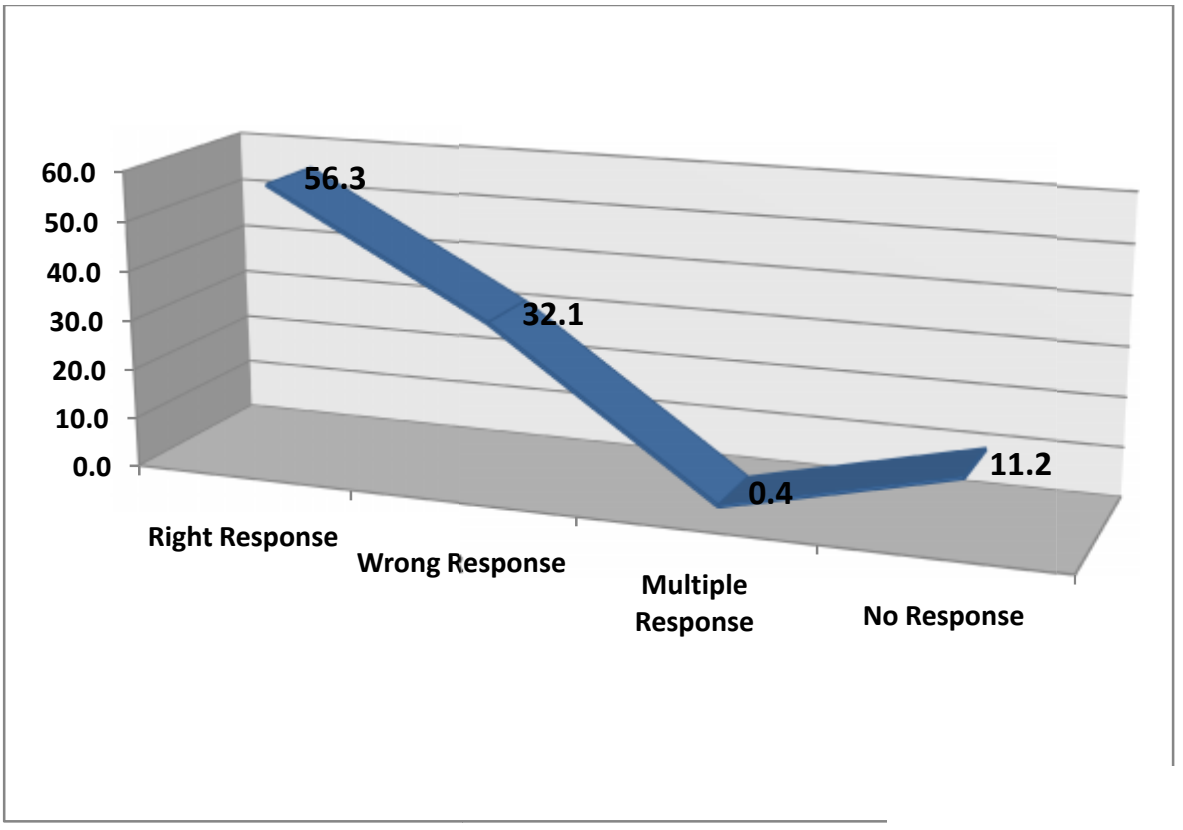
ntage of responses given by students



Scale Score: 240
ਆਲੂ 10 ਰੁ. ਦੇ ਪਿਆਜ ਅਤੇ 15 ਰੁ. ਦੇ ਟਮਾਟਰ ਖਰੀਦੇ ਉਸਨੇ

The scaled score of this item was 240. The figure 5.3 shows that 56.3 % of students in the sample were able to select the correct answer and how the remaining 43.7% responded.

age of responses given by students

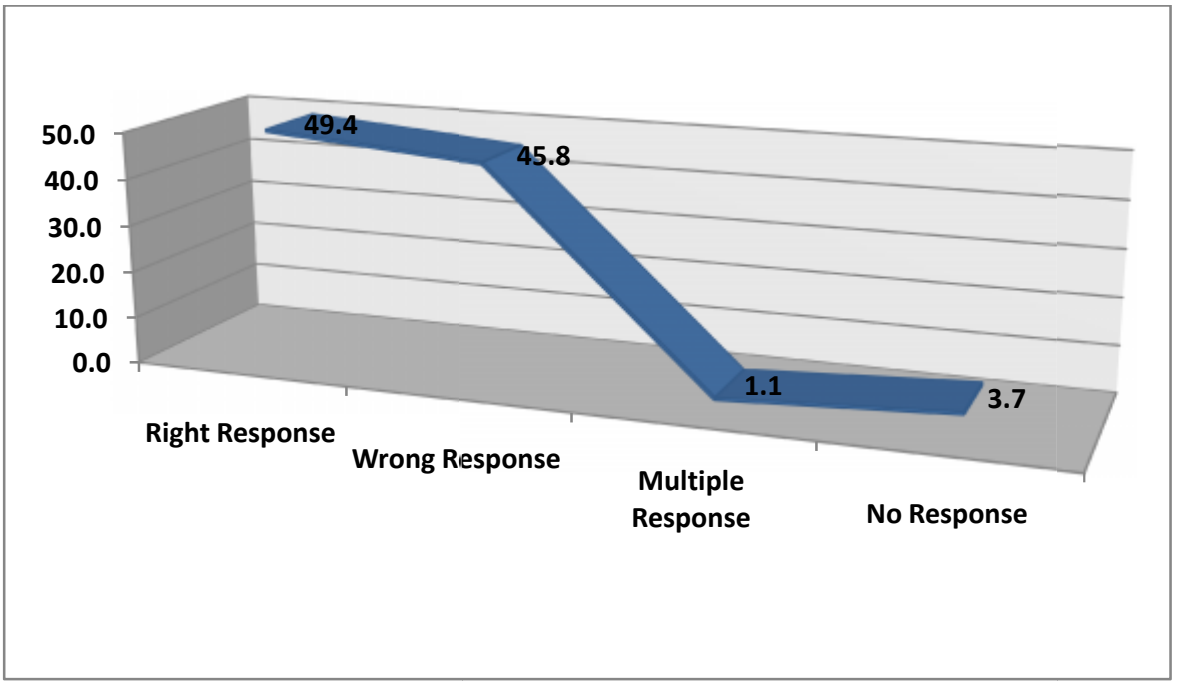


Scale Score: 253

ਹਨ?

The scaled score of this item was 253. The figure 5.4 shows that 49.4 % of students in the sample were able to select the correct answer and how the remaining 50.6% responded.

age of responses given by students



Scale Score: 243

ਇੱਕ ਮੈਚ ਵਿੱਚ ਸਚਿਨ ਤੇ 30 ਅਤੇ ਰਾਹੁਲ ਨੇ 25 ਰਨ ਬਣਾਏ ਦੱਸੋ ਦੋਵਾਂ ਨੇ ਕੁੱਲ ਕਿੰਨੇ ਰਨ ਬਣਾਏ।

(a) 55

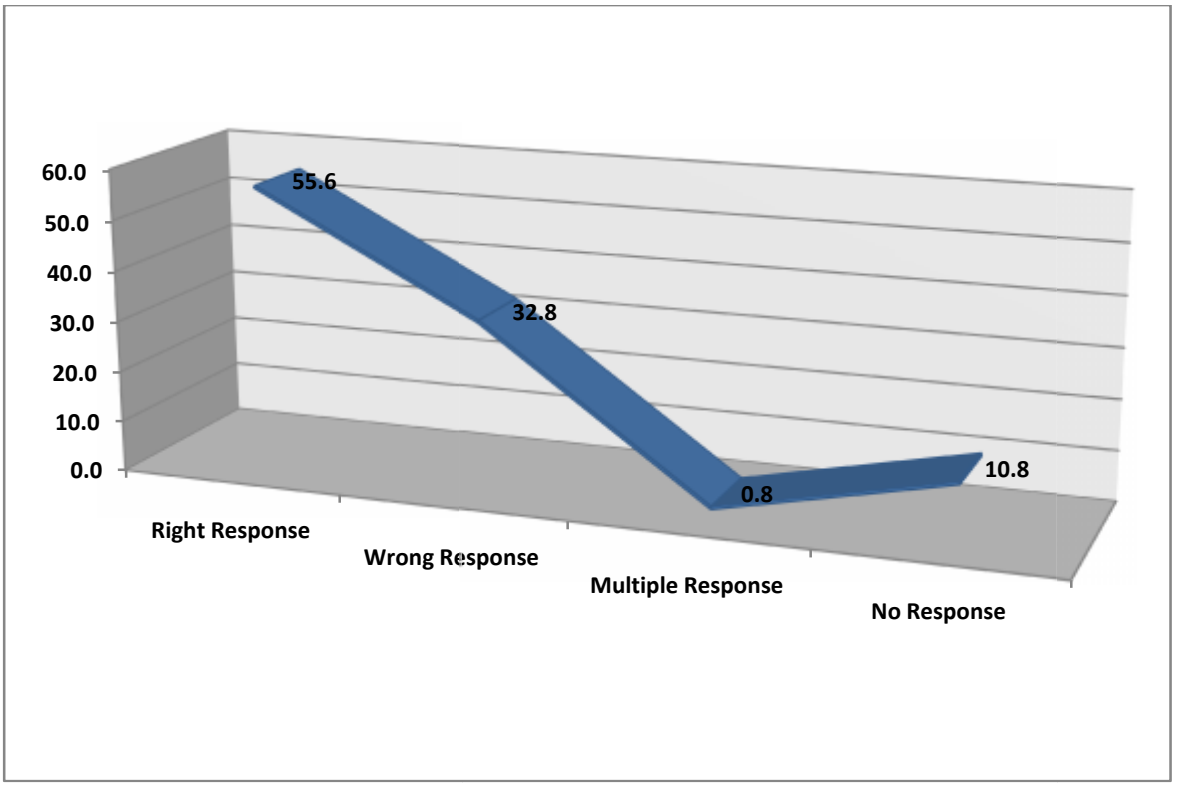
(b) 5

(c) 45

(d) 65

The scaled score of this item was 243. The figure 5.5 shows that 55.6 % of students in the sample were able to select the correct answer and how the remaining 44.4% responded.

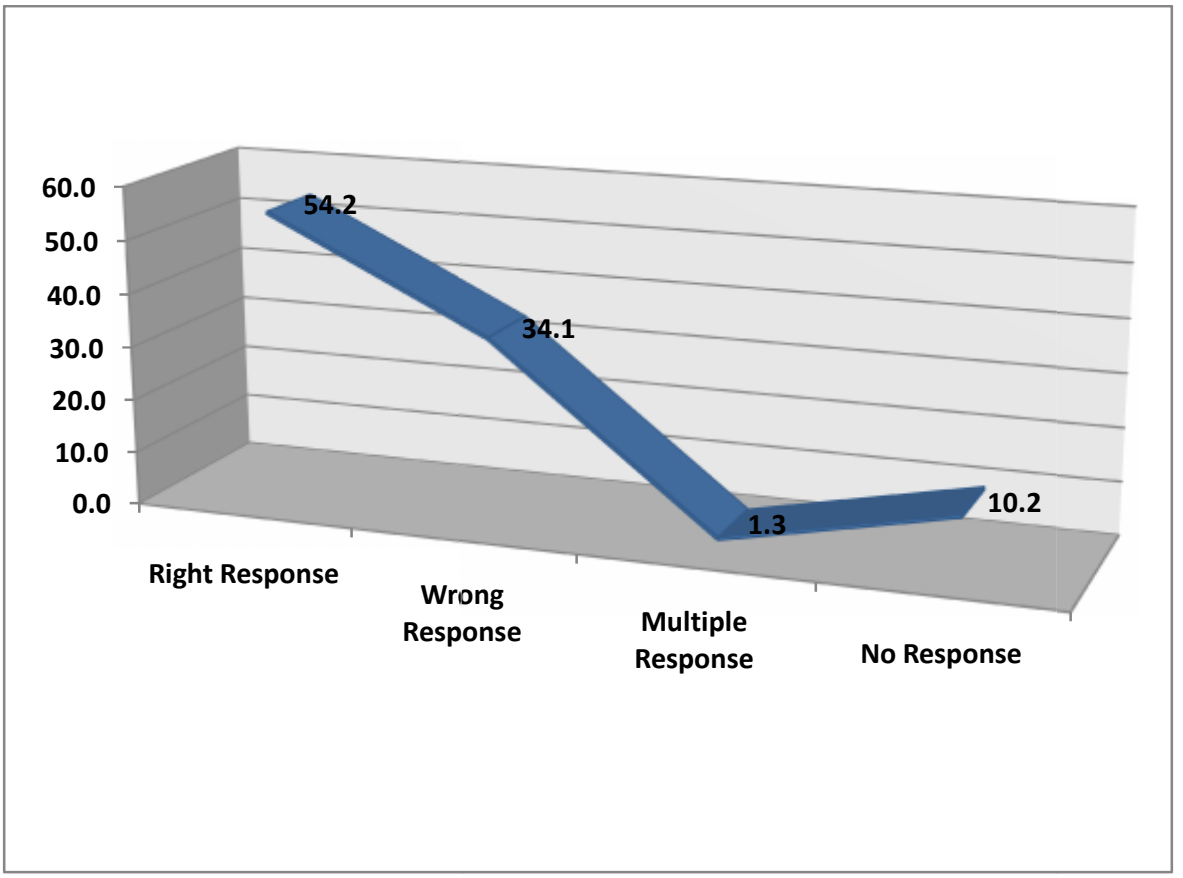
Figure 5.5: Percentage of responses given by students



Scale Score: 245
ਕਿੰਨੀਆਂ ਮਾਲਾ ਬਣ ਸਕਦੀਆਂ ਹਨ?

The scaled score of this item was 245. The figure 5.6 shows that 54.2 % of students in the sample were able to select the correct answer and how the remaining 45.8% responded.

Figure 5.6: Percentage of responses given by students

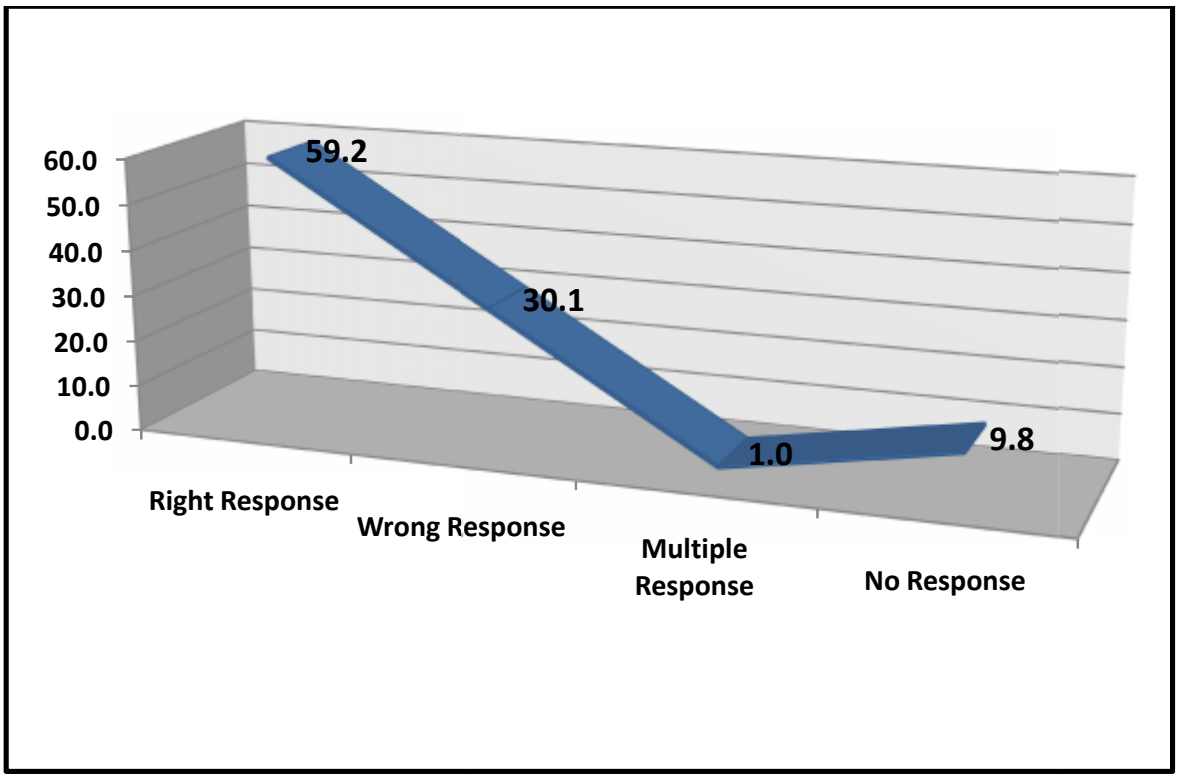


Scale Score: 238

ਆਉਂਦੀ ਹੈ?

The scaled score of this item was 238. The figure 5.7 shows that 59.2 % of students in the sample were able to select the correct answer and how the remaining 40.8% responded.

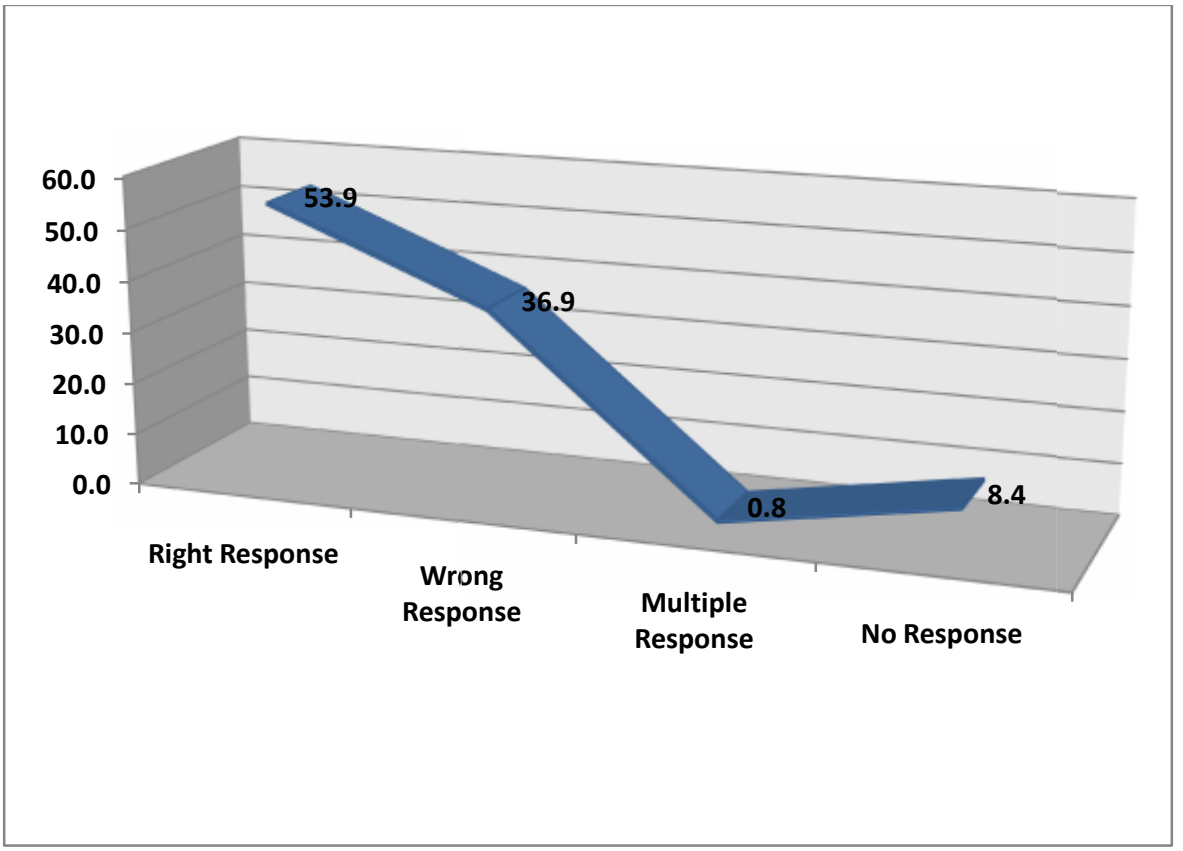
Figure 5.7: Percentage of responses given by students



Scale Score: 247
32,30,28,26, …… (a) 22 (b) 20 (c) 24 (d) 27

The scaled score of this item was 247. The figure 5.8 shows that 53.9 % of students in the sample were able to select the correct answer and how the remaining 46.1% responded.

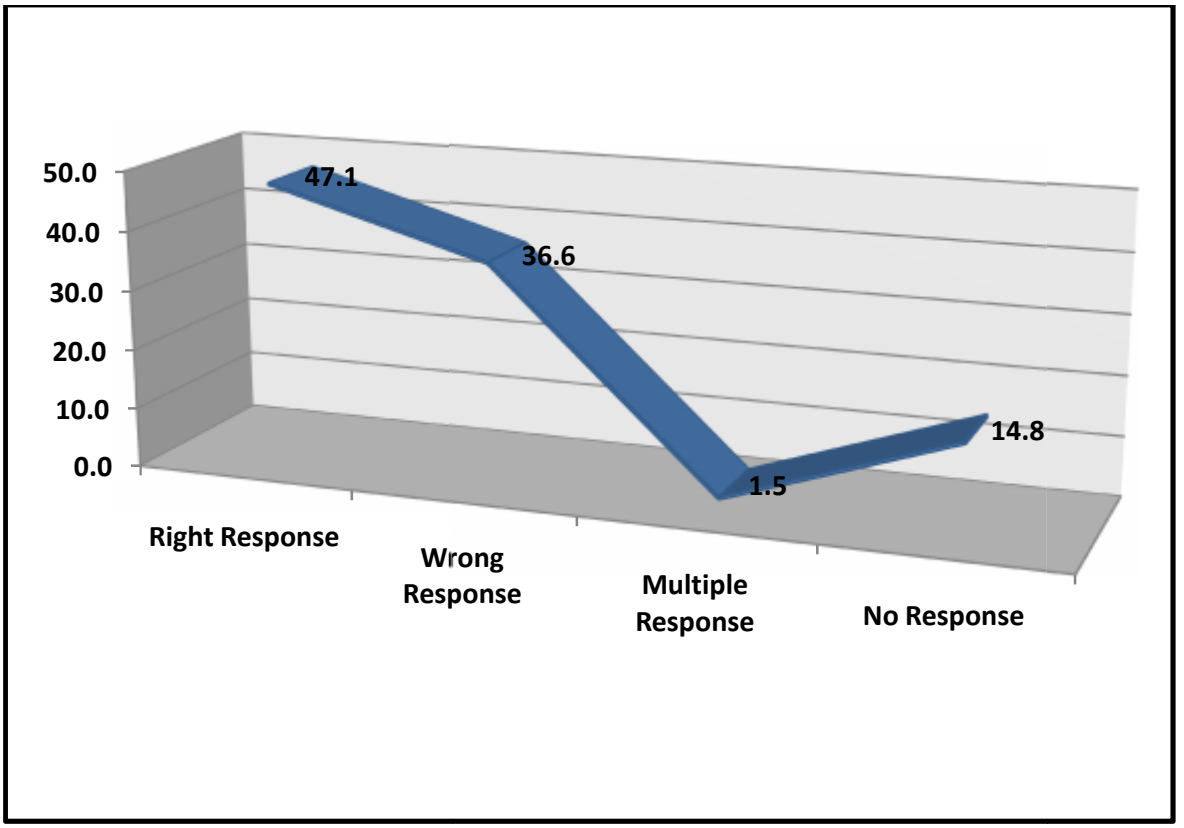
Figure 5.8: Percentage of responses given by students



Scale Score: 258
2 ਪੈਸੇ ਦੇ 6 ਸਿੱਕੇ =..... ਪੈਸੇ (a) 5 (b) 6 (c) 10 (d) 12

The scaled score of this item was 258. The figure 5.9 shows that 47.1 % of students in the sample were able to select the correct answer and how the remaining 52.9% responded.

Figure 5.9: Percentage of responses given by students



5.3 What can students do in Mathematics?

The items were designed to test the learning at different cognitive domains. These are classified as Knowledge, Understanding, Application and Skill. The table given below shows that how the sample students perform in various item related to different cognitive domains.

5.3.1. Cognitive Domain: Knowledge

Table 3.1 shows the performance of class II students on the Cognitive Domain: Knowledge.

Table 5.1: Performance of class II students on the Cognitive Domain: Knowledge

Unique ID	Percentage correct	Scale scores
1	77.4	183
8	53.8	242
14	63.5	225
20	70.5	204
23	55.5	241
24	47.1	256
27	80	194
29	83	193
33	63.8	227
40	59.8	232
46	59.2	238
50	59.2	237
55	68.7	223
56	69.2	217
57	64.4	227
61	72	210

On an average 65% sample students were able to give right response on the item related to Cognitive Domain: Knowledge.

5.3.2 Cognitive Domain: Understanding

Table 3.2 shows the performance of class II students on the Cognitive Domain: Understanding.

Table 5.2: Performance of class II students on the Cognitive Domain: Understanding

Unique ID	Percentage correct	Scale scores
4	68.5	217
5	62.7	226
9	68.7	216
12	59.7	232
19	75.8	195
21	58	230
30	66.6	221
32	75.1	206
35	65.3	224
39	85.7	179
43	51.4	251
44	74	208
49	57.1	240
51	63.5	229
60	69.6	220
63	69.2	216

On an average 67% sample students able to give right response on the item related to Cognitive Domain: Understanding.

5.3.3. Cognitive Domain: Application

Table 3.3 shows the performance of class II students on the Cognitive Domain: Application.

Table 5.3: Performance of class II students on the Cognitive Domain: Application

Unique ID	Percentage correct	Scale scores
3	77.7	193
6	66.9	218
10	76	203
11	72.5	211
15	70.5	215
16	56.3	240
28	82.7	186
34	60.1	233
36	76.2	205
37	55.6	243
42	75.4	204
45	54.2	245
48	58	240
53	62.2	234
54	52.1	250
62	47.1	258

On an average 65% sample students able to give right response on the item related to cognitive process of Application.

5.3.4. Cognitive Domain: Skill

Table 3.4 shows the performance of class II students on the Cognitive Domain: Skill.

Table 5.4: Performance of class II students on the Cognitive Domain: Skill

Unique ID	Percentage correct	Scale scores
2	67.7	216
7	56.4	237
13	69.8	206
17	65.1	223
18	52	247
22	33.5	308
25	44.7	263
26	49.4	253
31	64.3	226
38	67.3	223
41	81	189
47	51.1	251
52	53.9	247
58	71.1	200
59	53.7	246
64	44.7	264
65	76.4	198

On an average 59% sample students able to give right response on the item related to Cognitive Domain: Skill.

Chapter 6
Anchor item Analysis

This chapter shows the analysis carried out on anchor items. In the both tools (Language and Mathematics) 65 items each was prepared. Out of 65, 15 served as anchor items. These anchor items were used two set of tools. These items were attempted by all students. The table given below compares the average performances of different groups. Performance is compared by gender, school location, social category and management.

Table 6.1: Gender wise Average score of districts in Mathematics

Districts	Boys			Girls			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	66	2.4	21.5	66	2.7	21.3	No
Barnala	80	2.3	18.3	78	2.0	17.5	No
Bathinda	68	3.2	27.8	71	2.9	27.6	No
Faridkot	59	2.4	21.1	65	2.2	19.7	Below
Fatehgarh Sahib	49	3.7	31.5	49	3.2	29.6	No
Fazilka	86	1.8	18.3	89	2.3	18.6	No
Ferozepur	79	2.0	14.9	75	1.7	15.4	No
Gurdaspur	65	3.5	32.5	65	4.0	34.7	No
Hoshiarpur	63	2.9	26.4	67	2.7	22.5	Below
Jalandhar	66	3.5	30.8	65	3.3	30.0	No
Kapurthala	53	4.0	28.1	61	2.5	23.1	Below
Ludhiana	84	2.0	17.6	82	2.2	19.9	No
Mansa	74	2.1	18.8	74	2.5	20.2	No
Moga	70	2.4	19.2	77	2.7	20.0	Below
Mohali	53	2.9	28.0	44	3.6	30.1	Yes
Muktsar Sahib	90	1.3	12.0	89	1.5	13.2	No
S.B.S. Nagar	87	1.2	10.7	86	1.3	12.0	No
Pathankot	73	2.9	24.1	77	2.5	22.1	Below
Patiala	51	1.9	17.0	51	2.0	15.7	No
Rupnagar	51	3.7	31.2	54	2.9	27.6	No
Sangrur	73	3.2	24.5	70	3.2	24.3	No
TaranTaran	73	2.5	19.0	69	3.0	23.5	No

Note: Percentage may vary due to round off

Table 6.2: Area wise Average score of districts in Mathematics

Districts	Rural			Urban			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	68	2.2	20.4	63	3.1	22.5	No
Barnala	78	1.7	17.1	81	3.3	19.9	No
Bathinda	70	2.5	27.8	69	4.3	27.7	No
Faridkot	63	1.9	19.6	62	3.0	22.4	No
Fatehgarh Sahib	51	2.9	28.3	47	4.3	33.4	No
Fazilka	90	1.3	15.7	70	5.7	25.7	Yes
Ferozepur	77	1.4	14.9	76	4.2	17.8	No
Gurdaspur	67	2.6	31.3	48	9.6	43.2	Yes
Hoshiarpur	66	2.4	25.5	60	3.5	22.2	Yes
Jalandhar	66	3.3	32.2	64	3.5	27.3	No
Kapurthala	54	2.8	26.1	66	3.1	21.7	Below
Ludhiana	80	1.8	20.1	92	1.6	10.2	Below
Mansa	78	1.4	15.9	46	3.8	16.3	Above
Moga	75	1.8	19.1	58	6.0	20.0	Yes
Mohali	51	2.5	27.9	46	5.1	32.8	No
Muktsar Sahib	89	1.1	13.0	96	1.3	5.9	Below
S.B.S. Nagar	86	1.0	11.6	87	1.7	10.6	No
Pathankot	72	2.4	25.0	86	1.7	10.4	Below
Patiala	53	1.6	14.1	48	2.4	18.6	Yes
Rupnagar	59	2.8	28.1	48	3.9	30.2	Yes
Sangrur	70	2.4	24.6	79	7.3	22.0	Below
TaranTaran	71	2.0	18.8	70	4.8	27.5	No

Note: Percentage may vary due to round off

Table 6.3: Social Class wise Average score of districts in Mathematics

Districts	SC			BC			Gen			Other		
	Avg.	SE	SD	Avg	SE	SD	Avg	SE	SD	Avg	SE	SD
Amritsar	65	2.2	22.6	71	2.7	12.7	68	7.7	23.2	-	-	-
Barnala	79	1.8	18.4	81	2.8	16.5	75	7.4	16.5	-	-	-
Bathinda	66	2.7	29.0	77	4.2	23.9	77	5.1	20.1	-	-	-
Faridkot	62	1.7	20.5	64	5.2	18.9	69	9.7	25.7	-	-	-
Fatehgarh Sahib	48	3.4	32.4	50	4.9	27.0	52	4.8	28.2	-	-	-
Fazilka	90	1.2	12.6	86	3.2	21.7	59	18.7	45.8	-	-	-
Ferozepur	76	1.6	15.8	84	2.1	9.9	72	4.5	15.2	-	-	-
Gurdaspur	71	3.8	31.5	62	3.7	32.0	46	11.3	42.3	-	-	-
Hoshiarpur	61	2.9	24.7	75	3.0	22.2	52	4.4	21.7	-	-	-
Jalandhar	70	2.9	25.9	63	5.2	31.4	61	5.9	35.5	31	24.7	42.8
Kapurthala	66	2.8	20.4	49	3.1	24.7	64	7.3	30.3	77	23.3	32.9
Ludhiana	80	1.9	18.0	87	1.9	11.8	86	4.1	24.6	100	0.0	0.0
Mansa	73	1.8	17.8	69	6.3	27.1	83	3.6	16.4	-	-	-
Moga	72	2.0	20.1	81	4.2	15.8	100	0.0	-	-	-	-
Mohali	47	3.4	29.4	51	3.9	30.6	58	5.0	25.9	40	0.0	-
Muktsar Sahib	90	1.1	13.0	91	2.2	9.4	87	13.3				

S.B.S. Nagar	88	1.1	10.5	84	1.8	11.2	82	2.7	13.5	93	0.0	-
Pathankot	75	2.1	21.5	76	4.9	28.7	80	13.3	23.0	77	5.8	12.9
Patiala	55	2.3	14.9	48	2.0	16.8	52	3.4	16.3	-	-	-
Rupnagar	52	3.2	26.8	52	3.7	29.4	53	6.4	34.6	-	-	-
Sangrur	71	2.7	24.8	71	6.2	27.9	69	4.4	15.4	-	-	-
TaranTaran	73	2.1	20.2	61	5.5	24.7	73	9.1	22.3	-	-	-

Note: Percentage may vary due to round off

Table 6.4: Management wise Average score of districts in Mathematics

Districts	Department			Aided			Significance Difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	66	2.0	22.4	68	3.0	13.1	No
Barnala	79	1.5	17.8	-	-	-	-
Bathinda	69	2.1	27.7	-	-	-	-
Faridkot	60	1.7	19.6	75	5.1	22.8	Below
Fatehgarh Sahib	51	2.7	31.3	32	3.4	15.6	Yes
Fazilka	87	1.4	18.4	-	--	-	-
Ferozepur	77	1.3	15.2	-	-	-	-
Gurdaspur	65	2.6	33.5	-	-	-	-
Hoshiarpur	63	2.2	25.7	75	3.1	14.1	Below
Jalandhar	65	2.4	30.3	-	-	-	-
Kapurthala	60	2.4	26.1	47	3.6	14.8	Yes
Ludhiana	82	1.6	19.5	91	2.3	10.4	Below
Mansa	74	1.6	19.4	-	-	-	-
Moga	73	1.8	19.8	-	-	-	-
Mohali	49	2.3	29.2	-	-	-	-
Muktsar Sahib	90	1.0	12.6	-	-	-	-
S.B.S. Nagar	87	0.9	11.4	82	2.2	10.1	Yes
Pathankot	73	2.1	23.5	93	1.0	3.9	Below
Patiala	51	1.4	16.4	-	-	-	-
Rupnagar	55	2.6	29.3	46	4.4	28.1	Yes
Sangrur	71	2.3	24.4	-	-	-	-
TaranTaran	71	1.9	21.4	-	-	-	-

Note: Percentage may vary due to round off

Table 6.5: Gender wise Average score of districts in Punjabi

Districts	Boys			Girls			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	83	2.1	18.7	83	2.2	17.5	No
Barnala	87	1.4	11.6	87	1.3	11.6	No
Bathinda	81	2.4	20.5	83	2.5	23.9	No
Faridkot	78	2.2	19.3	80	2.3	20.2	No
Fatehgarh Sahib	61	3.4	28.8	52	3.5	32.4	Yes
Fazilka	93	1.8	17.9	94	2.1	17.6	No
Ferozepur	81	2.1	16.6	85	1.6	14.5	Below
Gurdaspur	77	3.1	28.7	70	4.0	34.9	No
Hoshiarpur	77	2.4	22.2	80	2.2	17.9	No
Jalandhar	62	3.0	26.4	60	2.8	25.5	No
Kapurthala	81	2.1	14.4	83	2.0	18.6	No
Ludhiana	89	1.2	10.7	88	1.6	14.9	No
Mansa	82	1.6	14.7	85	1.6	13.1	No
Moga	85	1.9	14.8	85	3.5	25.3	No
Mohali	59	2.7	26.1	54	3.7	30.3	No
Muktsar Sahib	86	1.7	15.8	85	1.7	15.4	No
S.B.S. Nagar	91	1.1	10.2	88	1.5	13.8	Yes
Pathankot	89	1.5	12.5	82	2.2	19.4	Yes
Patiala	67	2.4	21.0	73	2.8	21.1	Below
Rupnagar	59	3.9	32.9	61	2.9	27.6	No
Sangrur	83	1.5	12.2	85	1.9	15.0	No
TaranTaran	91	1.0	8.7	88	1.4	12.5	Yes

Note: Percentage may vary due to round off

Table 6.6: Area wise Average score of districts in Punjabi

Districts	Rural			Urban			Significance difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	86	1.6	15.0	77	3.1	21	Yes
Barnala	85	1.1	12.1	94	1.0	6.2	Below
Bathinda	81	2.0	22.2	85	3.6	22.8	No
Faridkot	80	2.0	20.3	77	2.5	18.5	No
Fatehgarh Sahib	59	3.1	30.5	50	4.0	31.4	Yes
Fazilka	93	1.4	17.0	93	5.0	22.4	No
Ferozepur	83	1.3	15.4	84	3.8	16.8	No
Gurdaspur	78	2.4	28.6	48	9.2	41.2	Yes
Hoshiarpur	77	1.5	15.9	82	4.6	29.2	No
Jalandhar	62	3.0	29.5	59	2.4	19.0	No
Kapurthala	84	1.8	17.0	79	2.5	17.2	Yes
Ludhiana	87	1.3	14.5	93	0.8	5.4	Below
Mansa	85	1.1	13.0	76	3.9	17.4	Yes
Moga	85	2.0	21.0	89	2.4	7.7	No
Mohali	56	2.4	26.8	60	4.9	31.5	No
Muktsar Sahib	84	1.3	16.1	96	1	4.4	Below
S.B.S. Nagar	93	0.9	9.8	81	2.3	14.4	Yes
Pathankot	89	1.3	14.2	76	3.2		
Patiala	67	2.4	21.0	74	2.8		

Rupnagar	61	3.0	30.2	59	3.8	29.7	No
Sangrur	83	1.3	14.0	89	2.5	9.5	Below
TaranTaran	89	1.1	11.5	92	1.4	8.7	Below

Note: Percentage may vary due to round off

Table 6.7: Social Class wise Average score of districts in Punjabi

Districts	SC			BC			Gen			Other		
	Avg.	SE	SD	Avg	SE	SD	Avg	SE	SD	Avg	SE	SD
Amritsar	82	1.8	18.8	85	3.4	15.6	88	5.1	14.5	-	-	-
Barnala	89	0.9	9.1	82	2.7	16.2	92	2.4	5.5	-	-	-
Bathinda	80	2.2	24.0	86	3.4	19.4	86	3.6	13.9	-	-	-
Faridkot	79	1.7	19.9	76	5.6	20.4	89	4.9	13.1	-	-	-
Fatehgarh Sahib	52	3.4	32.0	56	4.7	26.2	65	5.3	31.2	-	-	-
Fazilka	94	1.3	14.2	95	2.3	15.3	62	19.7	48.3	-	-	-
Ferozepur	82	1.5	16.0	87	3.1	15.6	81	2.8	10.8	-	-	-
Gurdaspur	82	3.5	29.0	70	3.5	30.5	58	11.4	42.9	-	-	-
Hoshiarpur	77	2.9	24.7	82	1.7	12.6	77	4.0	19.9	-	-	-
Jalandhar	64	2.5	22.9	64	4.6	28.1	55	4.8	29.1	36	8.8	15.3
Kapurthala	85	1.6	11.7	80	2.4	18.3	82	6.0	24.9	100	0.0	0.0
Ludhiana	89	1.1	10.2	83	3.6	21.5	92	0.6	3.7	93	0.0	0.0
Mansa	85	1.2	12.9	82	3.8	17.4	79	3.2	15.3	-	-	-
Moga	85	2.1	21.2	88	2.9	10.1	93	0.0	0.0	-	-	-
Mohali	57	3.4	29.2	56	3.7	29.2	60	4.3	22.4	67	0.0	-
Muktsar Sahib	86	1.3	15.9	85	3.3	13.9	77	3.3	4.7	-	-	-
S.B.S. Nagar	89	1.2	11.5	90	2.4	14.4	93	2.3	11.8	73	0.0	-
Pathankot	84	1.7	17.0	87	2.9	17.2	96	2.2	3.8	92	4.8	10.9
Patiala	71	2.8	18.0	69	2.6	21.6	68	5.6	25.4	-	-	-
Rupnagar	63	3.4	28.4	62	3.6	28.9	51	6.4	34.9	-	-	-
Sangrur	83	1.6	15.1	87	2.4	11.5	83	1.4	5.9	-	-	-
TaranTaran	89	1.1	11.5	91	1.9	8.7	95	1.6	4.7	-	-	-

Note: Percentage may vary due to round off

Table 6.8: Management wise Average score of districts in Punjabi

Districts	Department			Aided			Significance Difference
	Avg.	SE	SD	Avg.	SE	SD	
Amritsar	81	1.7	19.1	90	1.5	6.8	Below
Barnala	87	0.9	11.6	-	-	-	-
Bathinda	82	1.7	22.4	-	-	-	-
Faridkot	80	1.7	19.4	73	4.6	20.7	No
Fatehgarh Sahib	57	2.8	33.0	50	2.1	9.7	Yes
Fazilka	93	1.4	17.7	-	--	-	-
Ferozepur	83	1.3	15.5	-	-	-	-
Gurdaspur	74	2.5	31.8	-	-	-	-
Hoshiarpur	77	1.7	20.0	84	4.9	22.2	No
Jalandhar	61	2.0	25.9	-	-	-	-
Kapurthala	85	1.4	15.7	62	4.2	15.8	Yes
Ludhiana	88	1.1	13.8	92	0.6	2.9	
Mansa	84	1.1	14.0	-	-	-	

Moga	85	1.9	20.2	-	-	-	-
Mohali	57	2.2	28.0	-	-	-	-
Muktsar Sahib	86	1.2	15.6	-	-	-	-
S.B.S. Nagar	90	1.0	12.4	87	2.6	11.6	No
Pathankot	85	1.5	17.1	91	3.1	13.1	No
Patiala	69	1.8	21.1	-	-	-	-
Rupnagar	59	2.7	30.0	64	4.7	29.9	No
Sangrur	84	1.2	13.6	-	-	-	-
TaranTaran	90	0.9	10.9	-	-	-	-

Chapter 7
Student, Teachers and School related information

Table 7.1: No. of Students (By Management)

District	Department of Education	Aided	Grand Total
Amritsar	122	19	141
Barnala	145	-	145
Bathinda	160	-	160
Faridkot	131	20	151
Fatehgarh Sahib	132	20	152
Fazilka	158	-	158
Ferozepur	144	-	144
Gurdaspur	157	-	157
Hoshiarpur	127	20	147
Jalandhar	155	-	155
Kapurthala	114	17	131
Ludhiana	136	20	156
Mansa	145	-	145
Moga	120	-	120
Mohali	160	-	160
Muktsar Sahib	156	-	156
S.B.S. Nagar	134	20	154
Pathankot	128	18	146
Patiala	136	-	136
Rupnagra	120	40	160
Sangrur	139	-	139
TaranTaran	144	-	144
Grand Total	**3063**	**194**	**3257**

Table 7.2: No. of Students (By Location)

District	Rural	Urban	Grand Total
Amritsar	83	58	141
Barnala	106	39	145
Bathinda	120	40	160
Faridkot	97	54	151
Fatehgarh Sahib	92	60	152
Fazilka	138	20	158
Ferozepur	125	19	144
Gurdaspur	137	20	157
Hoshiarpur	107	40	147
Jalandhar	95	60	155
Kapurthala	84	47	131
Ludhiana	116	40	156
Mansa	125	20	145
Moga	109	11	120
Mohali	120	40	160
Muktsar Sahib	136	20	156
S.B.S Nagar	115	39	154
Pathankot	108	38	146
Patiala	74	62	136
Rupnagar	100	60	160
Sangrur	125	14	139
TaranTaran	106	38	144
Grand Total	**2,418**	**839**	**3257**

Table 7.3: Parent(Father) Qualification wise

District	Father is not alive or Mother is not alive or both are not alive	Illiterate	Literate	Edu. upto Pry Level	Edu. upto Ele. level/Middle	Edu. upto Sec. Level	Edu. upto Higher/Sen. Sec. Level	Education upto Degree and above	Information not available	Grand Total
Amritsar	6	41	12	31	19	14	5		13	141
Barnala	2	22	24	16	21	48	10	2		145
Bathinda	28	32	9	30	22	19	11		9	160
Faridkot	1	45	21	37	31	14	2			151
Fatehgarh Sahib	4	41	9	27	17	27	10		17	152
Fazilka	6	31	14	44	31	24	6	2		158
Ferozepur	3	38	5	35	20	23	16		4	144
Gurdaspur	1	46	17	35	27	21	10			157
Hoshiarpur	1	32	11	21	20	43	13		6	147
Jalandhar	2	46	17	13	43	14	7	1	12	155
Kapurthala		22	9	19	21	23	5	1	31	131
Ludhiana	1	55	8	35	27	20	10			156
Mansa	6	51	5	23	26	20	8		6	145
Moga	7	49	28	23	7	4	1		1	120
Mohali	3	30	6	45	28	19	14		15	160
Muktsar Sahib	3	80	14	23	11	22	2		1	156
S.B.S. Nagar	5	40	2	33	34	37	3			154
Pathankot		27	25	26	25	22	15	2	4	146
Patiala	5	35	17	31	19	25	3	1		136
Rupnagar	1	14	13	52	12	34	22	2	10	160
Sangrur	3	43	17	20	13	25	10	1	7	139
TaranTaran	7	42	20	24	18	14	8		11	144
Grand Total	**95**	**862**	**303**	**643**	**492**	**512**	**191**	**12**	**147**	**3257**

Table 7.4: No. of Students taking Pvt. Tuition

District	Taking Pvt. Tuition			Not Taking Pvt. Tuition			Grand Total
	Boy	Girl	Total	Boy	Girl	Total	
Amritsar	27	17	44	51	46	97	141
Barnala	34	34	68	33	44	77	145
Bathinda	14	19	33	58	69	127	160
Faridkot	14	13	27	63	61	124	151
Fatehgarh Sahib	35	32	67	34	51	85	152
Fazilka	9	15	24	84	50	134	158
Ferozepur	11	8	19	53	72	125	144
Gurdaspur	8	4	12	76	69	145	157
Hoshiarpur	18	17	35	63	49	112	147
Jalandhar	21	18	39	55	61	116	155
Kapurthala	5	13	18	43	70	113	131
Ludhiana	13	11	24	63	69	132	156
Mansa	10	10	20	71	54	125	145
Moga	24	28	52	40	28	68	120
Mohali	24	17	41	69	50	119	160
Muktsar Sahib	3	6	9	76	71	147	156
S.B.S. Nagar	3	6	9	72	73	145	154
Pathankot	15	8	23	55	68	123	146
Patiala	23	11	34	55	47	102	136
Rupnagar	22	26	48	48	64	112	160
Sangrur	9	10	19	65	55	120	139
TaranTaran	4	9	13	68	63	131	144
Grand Total	**346**	**332**	**678**	**1295**	**1284**	**2579**	**3257**

Table 7.5: No. of Schools (By Management)

District	Department of Education	Aided	Grand Total
Amritsar	7	1	8
Barnala	8	-	8
Bathinda	8	-	8
Faridkot	7	1	8
Fatehgarh Sahib	7	1	8
Fazilka	8	-	8
Ferozepur	8	-	8
Gurdaspur	8	-	8
Hoshiarpur	7	1	8
Jalandhar	8	-	8
Kapurthala	7	1	8
Ludhiana	7	1	8
Mansa	8	-	8
Moga	8	-	8
Mohali	8	-	8
Muktsar Sahib	8	-	8
S.B.S. Nagar	7	1	8
Pathankot	7	1	8
Patiala	8	-	8
Rupnagar	6	2	8
Sangrur	8	-	8
TaranTaran	8	-	8
Grand Total	**166**	**10**	**176**

Table 7.6: No. of School Covered by Location

District	Rural	Urban	Grand Total
Amritsar	5	3	8
Barnala	6	2	8
Bathinda	6	2	8
Faridkot	5	3	8
Fatehgarh Sahib	5	3	8
Fazilka	7	1	8
Ferozepur	7	1	8
Gurdaspur	7	1	8
Hoshiarpur	6	2	8
Jalandhar	5	3	8
Kapurthala	5	3	8
Ludhiana	6	2	8
Mansa	7	1	8
Moga	7	1	8
Mohali	6	2	8
Muktsar Sahib	7	1	8
S.B.S. Nagar	6	2	8
Pathankot	6	2	8
Patiala	4	4	8
Rupnagar	5	3	8
Sangrur	7	1	8
TaranTaran	6	2	8
Grand Total	**131**	**45**	**176**

Table 7.7: No. of Schools Covered, Total Enrolment (2nd Class) & No. of Teachers

District	Total School Covered	Student's Strength in primary classes	2nd Class Enrolment			Teachers		
			Boys	Girls	Total	Male	Female	Total
Amritsar	8	1741	224	206	430	10	40	50
Barnala	8	1523	169	434	603	13	31	44
Bathinda	8	1270	414	200	614	19	25	44
Faridkot	8	1550	176	125	301	20	26	46
Fatehgarh Sahib	8	1086	123	119	242	10	27	37
Fazilka	8	1413	153	120	273	29	13	42
Ferozepur	8	1066	97	122	219	8	15	23
Gurdaspur	8	866	146	108	254	9	17	26
Hoshiarpur	8	1045	151	135	286	60	18	78
Jalandhar	8	1903	444	417	861	5	48	53
Kapurthala	8	1318	139	263	402	9	31	40
Ludhiana	8	1852	252	267	519	7	48	55
Mansa	8	1339	133	113	246	18	22	40
Moga	8	1350	247	220	467	18	29	47
Mohali	8	1061	136	101	237	2	37	39
Muktsar	8	1299	120	123	243	8	24	32
Nawanshahr	8	1147	129	135	264	9	27	36
Pathankot	8	1284	168	200	368	7	32	39
Patiala	8	1148	142	129	271	7	20	27
Roop Nagar	8	1220	246	241	487	8	30	38
Sangrur	8	1468	153	146	299	10	33	43
TaranTaran	8	1403	133	118	251	20	27	47
Grand Total	**176**	**29352**	**4095**	**4042**	**8137**	**306**	**620**	**926**

Table 7.7: No. of Schools by Availability of Facilities and Infrastructure

District	Total Schools	Electricity	Computers	Drinking Water	Playground	Toilet Facility	Separate Toilet for Girls	Pucca Building
Amritsar	8	7	1	8	6	8	8	8
Barnala	8	8	2	8	6	7	8	8
Bathinda	8	8	1	7	8	8	8	8
Faridkot	8	8	2	8	5	8	8	8
Fatehgarh Sahib	8	7	1	7	6	8	8	8
Fazilka	8	6		6	8	8	8	8
Ferozepur	8	7	2	6	7	8	8	8
Gurdaspur	8	8	3	8	3	8	8	8
Hoshiarpur	8	8	3	8	7	8	6	8
Jalandhar	8	8	2	8	6	8	8	8
Kapurthala	8	7	2	7	3	7	7	7
Ludhiana	8	8	3	8	5	8	8	8
Mansa	8	7		7	6	7	7	8
Moga	8	8	3	7	6	8	8	8
Mohali	8	7	1	8	6	8	8	8
Muktsar Sahib	8	8	1	8	5	8	8	8
S.B.S.Nagar	8	8	4	8	7	8	8	8
Pathankot	8	8	4	8	6	8	8	8
Patiala	8	6	1	7	4	7	7	8
Rupnagar	8	8	5	8	6	8	8	8
Sangrur	8	7	1	5	7	8	8	8
TaranTaran	8	7	2	4	6	8	8	8
Grand Total	**176**	**164**	**44**	**159**	**129**	**172**	**171**	**175**

Table 7.8 Total No. of Teachers Age Group-wise

District	31-40 yrs.	41-40 yrs.	51-65 yrs.	Below 30 yrs.	Grand Total
Amritsar	6	1	1	-	8
Barnala	6	1	1	-	8
Bathinda	4	2	1	1	8
Faridkot	6	2	-	-	8
Fatehgarh Sahib	4	2	-	2	8
Fazilka	5	-	1	2	8
Ferozepur	4	1	-	3	8
Gurdaspur	3	3	1	1	8
Hoshiarpur	3	2	3	-	8
Jalandhar	4	2	2	-	8
Kapurthala	4	2	-	2	8
Ludhiana	5	2	1	-	8
Mansa	7	1	-	-	8
Moga	4	4	-	-	8
Mohali	4	2	1	1	8
Muktsar Sahib	7	-	1	-	8
S.B.S.Nagar	6	1	-	1	8
Pathankot	2	3	2	1	8
Patiala	4	-	2	2	8
Rupnagar	6	-	-	2	8
Sangrur	5	-	3	-	8
TaranTaran	3	-	3	2	8
Grand Total	**102**	**31**	**23**	**20**	**176**

Table 7.9: Total No. of Teachers Category-wise

District	BC	Gen.	Others	SC	Grand Total
Amritsar	2	6	-		8
Barnala	2	3	-	3	8
Bathinda	1	5	-	2	8
Faridkot	-	2	-	6	8
Fatehgarh Sahib	2	5	-	1	8
Fazilka	1	4	1	2	8
Ferozepur	1	6	-	1	8
Gurdaspur	2	5	-	1	8
Hoshiarpur	1	3	-	4	8
Jalandhar	-	3	-	5	8
Kapurthala	3	4	-	1	8
Ludhiana	3	3	-	2	8
Mansa	1	3	-	4	8
Moga	3	3	-	2	8
Mohali	2	4	-	2	8
Muktsar Sahib	-	4	-	4	8
S.B.S.Nagar	2	2	-	4	8
Pathankot	-	6	-	2	8
Patiala	1	3	-	4	8
Rupnagar	1	4	-	3	8
Sangrur	1	4	-	3	8
TaranTaran	2	6	-	-	8
Grand Total	**31**	**88**	**1**	**56**	**176**

Table 7.10: Total No. of Teachers Management-wise covered

District	Department of Education	Aided	Grand Total
Amritsar	7	1	8
Barnala	8		8
Bathinda	8		8
Faridkot	7	1	8
Fatehgarh Sahib	7	1	8
Fazilka	8		8
Ferozepur	8		8
Gurdaspur	8		8
Hoshiarpur	7	1	8
Jalandhar	8		8
Kapurthala	7	1	8
Ludhiana	7	1	8
Mansa	8		8
Moga	8		8
Mohali	8		8
Muktsar Sahib	8		8
S.B.S. Nagar	7	1	8
Pathankot	7	1	8
Patiala	8		8
Rupnagar	6	2	8
Sangrur	8		8
TaranTaran	8		8
Grand Total	**166**	**10**	**176**

Table 7.11: Total No. of Teachers Location-wise

District	Rural	Urban	Grand Total
Amritsar	5	3	8
Barnala	6	2	8
Bathinda	6	2	8
Faridkot	5	3	8
Fatehgarh Sahib	5	3	8
Fazilka	7	1	8
Ferozepur	7	1	8
Gurdaspur	7	1	8
Hoshiarpur	6	2	8
Jalandhar	5	3	8
Kapurthala	5	3	8
Ludhiana	6	2	8
Mansa	7	1	8
Moga	7	1	8
Mohali	6	2	8
Muktsar Sahib	7	1	8
S.B.S. Nagar	6	2	8
Pathankot	6	2	8
Patiala	4	4	8
Rupnagar	5	3	8
Sangrur	7	1	8
TaranTaran	6	2	8
Grand Total	**131**	**45**	**176**

Table 7.12: Total No. of Teachers Employment Status-wise

District	Against Leave Vacancy	Other[5]	Regularly	Temporary/Adhoc[6]	Grand Total
Amritsar	-	2	6	-	8
Barnala	-	-	8	-	8
Bathinda	-	-	7	1	8
Faridkot	-	1	7	-	8
Fatehgarh Sahib	-	2	6	-	8
Fazilka	-	3	5	-	8
Ferozepur	1	1	5	1	8
Gurdaspur	-	4	4	-	8
Hoshiarpur	-	2	6	-	8
Jalandhar	-	1	6	1	8
Kapurthala	-	1	6	1	8
Ludhiana	-	-	8	-	8
Mansa	-	1	7	-	8
Moga	-	-	8	-	8
Mohali	-	2	6	-	8
Muktsar Sahib	-	-	8	-	8
S.B.S. Nagar	-	2	6	-	8
Pathankot	-	2	5	1	8
Patiala	-	1	6	1	8
Rupnagar	-	2	4	2	8
Sangrur	-	1	7	-	8
TaranTaran	-	1	7	-	8
Grand Total	**1**	**29**	**138**	**8**	**176**

[5] Other means Contract teachers.
[6] Temporary teachers are working in Aided schools only.

Table 7.13: Total No. of Teachers by Experience

District	Exp(0 -10)	Exp(11 - 20)	Exp(21 - 30)	Exp(31 - 50)	Grand Total
Amritsar	4	3	1	-	8
Barnala	7	1	-	-	8
Bathinda	5	3	-	-	8
Faridkot	6	2	-	-	8
Fatehgarh Sahib	6	2	-	-	8
Fazilka	7	-	1	-	8
Ferozepur	8	-	-	-	8
Gurdaspur	6	1	1	-	8
Hoshiarpur	3	2	1	2	8
Jalandhar	4	2	1	1	8
Kapurthala	6	2	-	-	8
Ludhiana	5	3	-	-	8
Mansa	5	3	-	-	8
Moga	8	-	-	-	8
Mohali	4	4	-	-	8
Muktsar Sahib	6	2	-	-	8
S.B.S. Nagar	6	2	-	-	8
Pathankot	5	2	1	-	8
Patiala	5	2	-	1	8
Rupnagar	7	1	-	-	8
Sangrur	5	-	3	-	8
TaranTaran	4	1	2	1	8
Grand Total	**122**	**38**	**11**	**5**	**176**

Table 7.14 Total No. of Teachers Qualification-wise

District	Higher Qualification				Total No. of Sch.	Professional Qualification			Total No. of Sch.
	Grad	Higher /Sen. Sec.	Post Grad.	Sec.		Grad. Trg. (B.Ed. or Equivalent)	M.ED. or any other	Pry/ETT/ Diploma	
Amritsar	-	1	6	1	8	3	1	4	8
Barnala	1	1	6	-	8	4	1	3	8
Bathinda	3	-	5	-	8	6	-	2	8
Faridkot	3	-	5	-	8	6	1	1	8
Fatehgarh Sahib	5	-	3	-	8	3	-	5	8
Fazilka	2	-	5	1	8	6	-	2	8
Ferozepur	1	1	6	-	8	5	1	2	8
Gurdaspur	3	1	4	-	8	4	-	4	8
Hoshiarpur	4	1	1	2	8	3	-	5	8
Jalandhar	2	2	3	1	8	5	-	3	8
Kapurthala	-	1	7	-	8	7	-	1	8
Ludhiana	3	-	5	-	8	5	1	2	8
Mansa	5	-	3	-	8	3	1	4	8
Moga	1	2	5	-	8	6	-	2	8
Mohali	3	-	5	-	8	5	-	3	8
Muktsar Sahib	5	-	2	1	8	4	-	4	8
S.B.S. Nagar	2	2	4	-	8	4	-	4	8
Pathankot	2	-	4	2	8	3	-	5	8
Patiala	-	1	5	2	8	4	-	4	8
Rup nagar	6	-	2	-	8	5	-	3	8
Sangrur	-	3	4	1	8	4	-	4	8
TaranTaran	-	2	3	3	8	2	-	6	8
Grand Total	**51**	**18**	**93**	**14**	**176**	**97**	**6**	**73**	**176**