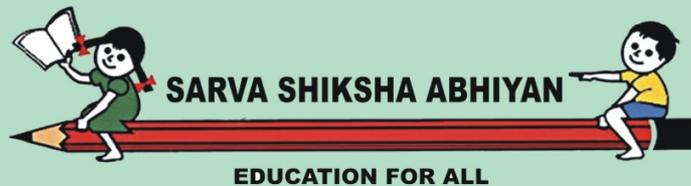


Factors Affecting Performance of School Students in Punjab

Major Research Project

Submitted to

Sarva Shiksha Abhiyan Authority, Punjab



Principal Investigator
Dr. Jasdeep Singh Toor

Project Consultants
Dr. H.S. Sidhu
Dr. Balwinder Singh Tiwana

Research Assistant
Dr. Sukhdev Singh



Department of Economics
Punjabi University, Patiala, Punjab
2016

Factors Affecting Performance of School Students in Punjab

Major Research Project

Submitted to

Sarva Shiksha Abhiyan Authority, Punjab



Principal Investigator

J. Toor
Dr. Jasdeep Singh Toor 20/12/16

Assistant Professor
Department of Economics
Punjabi University, Patiala

Project Consultants

H.S. Sidhu
Dr. H.S. Sidhu

Professor (Retd.) 20-12-16
Punjab School of Economics
Guru Nanak Dev University
Amritsar.
Former Chairman
Punjab School Education Board
Mohali, Punjab

Balwinder Singh Tiwana
Dr. Balwinder Singh Tiwana 30/12/2016

Professor
Department of Economics
Punjabi University, Patiala

ACKNOWLEDGEMENT

Improving the quality of school education in Punjab remains a major challenge before the government and the policy makers in the state. To have an appropriate policy response, we must first know the factors which affect academic performance of school students. It is in this context, the present study entitled "Factors Affecting Performance of School Students in Punjab" has been sponsored by Sarva Shiksha Abhiyan Authority, Punjab. This task was entrusted to Punjabi University, Patiala. We are highly obliged to the SSA Authority, Punjab for funding this project.

We are highly grateful to Hon'ble Vice-Chancellor, Dr. Jaspal Singh, Punjabi University, Patiala, for his cooperation and for creating favourable academic environment and constant encouragement to pursue research activities. The help received from other senior functionaries of the university, in completing this project, is also gratefully acknowledged.

We express deep sense of gratitude to Sh. Pradeep Kumar Agrawal, I.A.S., Director General School Education, Punjab, for his keen interest in the study from its very inception. Our special thanks are also due to Dr. Maninder Singh Sarkaria, Deputy State Project Director, SSA Authority, who evinced keen personal interest in the study and also facilitated our interaction with various senior functionaries of the Punjab School Education Directorate. Sh. Jaswinder Singh, ASPD, SSA Authority, Punjab and Sh. Sunil Kumar, Technical Assistant, SCERT, Punjab also helped us in many ways. Their help and cooperation is thankfully acknowledged.

This study would not have been completed on time without the painstaking effort made by Dr. Sukhdev Singh, Research Assistant with the project, who handled large data competently and contributed immensely in the analysis of the same. We also appreciate the contribution made by Sh. Jaskaran Singh, Assistant Professor, Ramgarhia College, Phagwara, for providing and using his skill for the effective and efficient analysis of statistical data.

We also put on record our sincere thanks to all the School Teachers, School/Circle Heads and Teachers Union Leaders, who took part in the focus group discussions at our request and gave their frank opinions on various issues related to this research problem.

Lastly, we thank Mr. Avtar Singh for providing all kind of secretarial help to complete the manuscript carefully and diligently. Needless to say, it is always possible to do better with still greater care and effort; however, we alone are responsible for any shortcomings that may have remained in this report.

Principal Investigator


Dr. Jasdeep Singh Toor
Assistant Professor
Department of Economics
Punjabi University, Patiala

Project Consultants


Dr. H.S. Sidhu
Professor (Retd.)
Punjab School of Economics
Guru Nanak Dev University
Amritsar.
Former Chairman
Punjab School Education Board
Mohali, Punjab


Dr. Balwinder Singh Tiwana
Professor
Department of Economics
Punjabi University, Patiala

CONTENTS

Chapter	Title	Page No.
	Acknowledgement	
	List of Tables	a-c
	List of Figures	d-f
1	Introduction	1-11
2	Literature Review	12-30
3	Data Base and Methodology	31-50
4	Impact of Pupil's Personal & Demographic Characteristics and Socio-Economic Background on Academic Performance	51-81
5	Impact of School Level Variables on Academic Performance of Students	82-103
6	Impact of Teacher Related Factors on Academic Performance of Students	104-132
7	Factors Affecting Student's Academic Performance – A Logistic Regression Model Analysis	133-145
8	Findings of Focus Group Discussions	146-164
9	Summary of the Main Findings	165-181
	References	i-vii

LIST OF TABLES

Table	Title	Page No.
1.1	Literacy Rates in Punjab (1971-2011)	2
1.2	District-wise Literacy Rates in Punjab 2011	3
1.3	Growth of Schools in Punjab (1970-71 to 2010-11)	4
1.4	Population Served per School 1970-71 to 2010-2011	5
1.5	Number of Teachers in School of Punjab	6
1.6	Teacher – Pupil Ratio in Punjab	7
1.7	Expenditure on Different Five Year Plan on Education in Punjab	8
1.8	Dropout Rate of Students at Various Levels in Punjab	10
3.1	Management-wise Distribution of Schools	31
3.2	Location-wise Distribution of Schools	32
3.3	Infrastructural Facilities Available in the Schools covered by SLAS-2013	33
3.4	Schools Management-wise Distribution of Students	35
3.5	Caste-wise Distribution of Students	36
3.6	Distribution as per Educational Status of Mother	38
3.7	Distribution of Students as per Occupation of Mother	39
3.8	Distribution of Students according to Occupation of Father	40
3.9	Gender-wise Distribution of Teachers	42
3.10	Age-wise Distribution of Teachers	42
3.11	Qualification-wise Distribution of Teachers	43
3.12	Employment Status-wise Distribution of Teachers	44
3.13	Professional Qualification-wise Distribution of Teachers	45
3.14	Caste-wise Distribution of Teachers	46
4.1	Comparison of Achievements of Male and Female Students	52
4.2	Comparison of Scores of Rural and Urban Area Students	53
4.3	Academic Achievement of Students belonging to BPL and Non-BPL Families	55
4.4	Caste-wise Academic Performance of Students	56
4.4 (a)	One-way ANOVA Table to Test Statistical Significance of Means	59

4.5	Help in Study at Home and Academic Performance	60
4.6	Availability of Private Tuition and Academic Performance	61
4.7	Impact of Family Size and Academic Performance	63
4.8	Impact of Physical Disability on Academic Performance of Student	64
4.9	Checking of Homework and Academic Performance	65
4.10 (A)	Mean Percentage Score by Mother's Education (English)	67
4.10 (B)	Mean Percentage Score by Mother's Education (Punjabi)	68
4.10 (C)	Mean Percentage Score by Mother's Education (Mathematics)	69
4.10 (a)	One-way ANOVA Table to Test Statistical Significance of Means	70
4.11	Mean Percentage Score by Mother's Occupation	71
4.11 (a)	One-way ANOVA Table to Test the Statistical Significance of Mean Differences	74
4.12	Mean Percentage Score by Father's Occupation	76
4.12 (a)	One-way ANOVA Table to Test the Statistical Significance of Mean	79
5.1	Type of Management of School and Academic Performance	83
5.1 (a)	One Way ANOVA Table to Test the Statistical Significance of Means	86
5.2	Classification of Schools in Terms of their Infrastructural Facilities Index and Type of School	87
5.3	Level of Infrastructural Development of School and Academic Performance	89
5.3 (a)	One-way ANOVA to Test the Statistical Significance of Means	91
5.4	Infrastructural Index and Location-wise Distribution of Sample Schools	92
5.5	Location of School and Academic Performance (Mean Score) of Students	93
5.6	Student-Teacher Ratio and Academic Achievement of Students	94
5.7	Availability of Instructional Material and Academic Performance of Students	97
5.7 (a)	One-Way ANOVA Table to Test the Statistical Significance of Means	99
5.8	Impact of Enrichment classes on Students' Academic Performance	100
5.9	Observation by Principal and Students' Academic Performance	101
6.1	Mean Percentage Score by Age of Teacher	105
6.1 (a)	One Way ANOVA Table to Test the Significance of Mean	107
6.2	Teacher's Gender-wise Mean percentage Score	108
6.3	Mean Percentage Score by Caste of Teacher	110

6.3 (a)	One Way ANOVA Table to Test the Statistical Significance of Mean	112
6.4	Teachers Educational Qualification-wise Mean Percentage Score	113
6.4 (a)	One Way ANOVA Table to Test the Statistical Significance of Mean	115
6.5	Teacher's Professional Qualification-wise Mean Percentage Score	116
6.5 (a)	One Way ANOVA Table to Test the Statistical Significance of Mean	118
6.6	Mean Percentage Score by Length of Teacher's Teaching Experience	119
6.6 (a)	One Way ANOVA Table to Test the Statistical Significance of Mean	121
6.7	Mean Percentage Score by Employment Status of Teachers	123
6.7 (a)	One Way ANOVA Table to Test the Statistical Significance of Mean	125
6.8	Mean Percentage Score by Level of Teachers Job Satisfaction	127
6.8 (a)	One Way ANOVA Table to Test the Statistical Significance of Means	129
6.9	Mean percentage Score of Students Taught by Two Categories of Teachers	130
7.1	Multivariate Analysis (Binary Logistic Model) English	140
7.2	Multivariate Analysis (Binary Logistic Model) Mathematics	142
7.3	Multivariate Analysis (Binary Logistic Model) Punjabi	144

LIST OF FIGURES

Figure	Title	Page No.
3.1	Management-wise Distribution of Schools (in %)	31
3.2	Location-wise Distribution of Schools (in %)	32
3.3	Infrastructural Facilities Available (No. of Schools in Percentage)	34
3.4	Schools Management-wise Distribution of Students (in %)	35
3.5	Caste-wise Distribution of Students (in %)	36
3.6	Distribution as per Educational Status of Mother (in %)	38
3.7	Distribution of Students as per Occupation of Mother (in %)	40
3.8	Distribution of Students according to Occupation of Father (in %)	41
3.9	Gender-wise Distribution of Teachers (in %)	42
3.10	Age-wise Distribution of Teachers (in %)	43
3.11	Qualification-wise Distribution of Teachers (in %)	44
3.12	Employment Status-wise Distribution of Teachers (in %)	45
3.13	Professional Qualification-wise Distribution of Teachers (in %)	46
3.14	Caste-wise Distribution of Teachers (in %)	47
4.1	Comparison of Achievements of Male and Female Students	52
4.2	Comparison of Scores of Rural and Urban Area Students	54
4.3	Academic Achievement of Students belonging to BPL and Non-BPL Families	55
4.4 (A)	Caste-wise Academic Performance of Students (English)	57
4.4 (B)	Caste-wise Academic Performance of Students (Punjabi)	57
4.4 (C)	Caste-wise Academic Performance of Students (Mathematics)	58
4.5	Help in Study at Home and Academic Performance	60
4.6	Availability of Private Tuition and Academic Performance	61
4.7	Impact of Family Size and Academic Performance	63
4.8	Impact of Physical Disability on Academic Performance of Student	64
4.9	Checking of Homework and Academic Performance	65
4.10 (A)	Mean Percentage Score by Mother's Education (English)	67
4.10 (B)	Mean Percentage Score by Mother's Education (Punjabi)	68

4.10 (C)	Mean Percentage Score by Mother's Education (Mathematics)	69
4.11 (A)	Mean Percentage Score by Mother's Occupation (English)	72
4.11 (B)	Mean Percentage Score by Mother's Occupation (Punjabi)	72
4.11 (C)	Mean Percentage Score by Mother's Occupation (Mathematics)	73
4.12 (A)	Mean Percentage Score by Father's Occupation (English)	77
4.12 (B)	Mean Percentage Score by Father's Occupation (Punjabi)	77
4.12 (C)	Mean Percentage Score by Father's Occupation (Mathematics)	78
5.1 (A)	Type of Management of School and Academic Performance (English)	84
5.1 (B)	Type of Management of School and Academic Performance (Punjabi)	84
5.1 (C)	Type of Management of School and Academic Performance (Mathematics)	85
5.2	Infrastructural Facilities Index and Type of School	88
5.3 (A)	Level of Infrastructural Development of School and Academic Performance (English)	89
5.3 (B)	Level of Infrastructural Development of School and Academic Performance (Punjabi)	90
5.3 (C)	Level of Infrastructural Development of School and Academic Performance (Mathematics)	90
5.4	Infrastructural Index and Location-wise Distribution of Sample Schools	92
5.5	Location of School and Academic Performance of Students	93
5.6 (A)	Student-Teacher Ratio and Academic Achievement of Students (English)	95
5.6 (B)	Student-Teacher Ratio and Academic Achievement of Students (Punjabi)	95
5.6 (C)	Student-Teacher Ratio and Academic Achievement of Students (Mathematics)	96
5.7 (A)	Availability of Instructional Material and Academic Performance of Students (English)	97
5.7 (B)	Availability of Instructional Material and Academic Performance of Students (Punjabi)	98
5.7 (C)	Availability of Instructional Material and Academic Performance of Students (Mathematics)	98
5.8	Impact of Enrichment classes on Students Academic Performance	100
5.9	Observation by Principal and Students Academic Performance	102
6.1 (A)	Mean Percentage Score by Age of Teacher (English)	105
6.1 (B)	Mean Percentage Score by Age of Teacher (Punjabi)	106
6.1 (C)	Mean Percentage Score by Age of Teacher (Mathematics)	106
6.2	Teacher's Gender-wise Mean percentage Score	108

6.3 (A)	Mean Percentage Score by Caste of Teacher (English)	110
6.3 (B)	Mean Percentage Score by Caste of Teacher (Punjabi)	111
6.3 (C)	Mean Percentage Score by Caste of Teacher (Mathematics)	111
6.4 (A)	Teachers Educational Qualification-wise Mean Percentage Score (English)	113
6.4 (B)	Teachers Educational Qualification-wise Mean Percentage Score (Punjabi)	114
6.4 (C)	Teachers Educational Qualification-wise Mean Percentage Score (Mathematics)	114
6.5 (A)	Teacher's Professional Qualification-wise Mean Percentage Score (English)	116
6.5 (B)	Teacher's Professional Qualification-wise Mean Percentage Score (Punjabi)	117
6.5 (C)	Teacher's Professional Qualification-wise Mean Percentage Score (Mathematics)	117
6.6 (A)	Mean Percentage Score by Length of Teacher's Teaching Experience (English)	119
6.6 (B)	Mean Percentage Score by Length of Teacher's Teaching Experience (Punjabi)	120
6.6 (C)	Mean Percentage Score by Length of Teacher's Teaching Experience (Mathematics)	120
6.7 (A)	Mean Percentage Score by Employment Status of Teachers (English)	123
6.7 (B)	Mean Percentage Score by Employment Status of Teachers (Punjabi)	124
6.7 (C)	Mean Percentage Score by Employment Status of Teachers (Mathematics)	124
6.8 (A)	Mean Percentage Score by Level of Teachers Job Satisfaction (English)	127
6.8 (B)	Mean Percentage Score by Level of Teachers Job Satisfaction (Punjabi)	128
6.8 (C)	Mean Percentage Score by Level of Teachers Job Satisfaction (Mathematics)	128
6.9	Mean percentage Score of Students Taught by Two Categories of Teachers	130

CHAPTER – I

INTRODUCTION

There was a time when it was generally believed that the economic development of a country largely depends upon its natural resources. During the last half a century or so, some countries, with scarce natural resources, have joined the ranks of developed countries on the strength of their human resources. This shifted attention from natural resources to education as the most potent factor in economic development. Now, it is generally recognised that efficient labour and good organisation are more important than land and capital. Education makes labour efficient and provides a basis for sophisticated organisation. Therefore, now, every country is placing a greater emphasis on good quality education. Education is being seen not only as a powerful tool for empowerment and widening of human capabilities but also the most potent defense against social vulnerability and marginalisation.

Since elementary education is the first stage of formal education, therefore, the emphasis at the national level has been to universalise elementary education and bring quality in education at the elementary stage. A grass root level education is not only pre-requisite for building a strong base needed for development of one's own personality, but it is also indispensable for scientific, technological, social and economic advancement of a country. The entire super structure of the educational set up of a nation rests upon elementary education as it prepares the child for future life. In India, elementary education is a constitutional responsibility of the state. Government is duty bound to provide free and compulsory education to every child until he/she attains the age of fourteen.

To meet its constitutional responsibility, the government of India took various steps – the most important being the launching of Sarva ShikshaAbhiyan (SSA) in 2002-03, which is a flagship programme of the government of India to attain Universal Elementary Education (UEE), covering the entire country in a mission mode. The programme aims to provide useful and relevant elementary education to all children in the age group of 6-14 years. This programme also lays emphasis on bridging all gender and social category gaps at the elementary education level, with time bound objectives. To achieve the objective of universalisation of elementary education, the policy makers also advocated a non-detention of students till 8th standard. The

review of literature on the subject, however, reveals that in the process of achieving universalisation of elementary education, the quality of education has been compromised to some extent. Even the Planning Commission of India has admitted the fact that there are quality issues which need to be addressed (Planning Commission, GOI, 2008).

National Council of Educational Research and Training (NCERT) started conducting National Achievement Survey in 2001. NCERT has been conducting this survey since then. The NAS reports gave a national and state level picture but did not have details of scores of individual students, schools and districts. To fill this gap, MHRD gave direction to the states to conduct their own State Level Achievement Surveys (SLAS). The responsibility of conducting SLAS was given to SCERTs of different states under the flagship programme of SSA. Punjab conducted its first State Level Achievement Survey in 2013 for the Third Standard students. The survey covered all the 22 districts, 217 education blocks, 2164 schools and 31793 students. The test tried to assess the students ability in languages i.e. Punjabi and English and basic Mathematics. Before coming to the objectives of the present study, we will briefly review the progress of school education in the state.

Punjab is one of the richest states of India. The state, in its present form, came into existence 1966, when the erstwhile Punjab was reorganized on linguistic basis. During the last 50 years the state has made tremendous progress in the field of education.

Literacy Rates

There has been continuous increase in the literacy rate since 1971. It increased from

Table1.1 :Literacy Rates in Punjab (1971-2011)

Year	Persons	Males	Females	Gap in Male and Female Literacy Rates
1971	34.12	42.23	24.65	17.58
1981	43.37	51.23	34.35	16.88
1991	58.51	65.66	50.41	15.25
2001	69.96	75.63	63.55	12.08
2011	76.68	81.50	71.30	10.20

Source: Census of India 1971, 1981, 1991, 2001, 2011

34.12 per cent in 1971 to 43.37 per cent in 1981, to 58.51 per cent in 1991 to 69.96 per cent in 2000-01 and further to 76.08 per cent in 2011 (Table 1.1). The state has also done reasonably well in reducing the gender gap in literacy. The gap in male and female literacy rate was 17.58 per cent in 1971. It came down to 16.88 per cent in 1981, 15.25 per cent in 1991 12.08 per cent in 2001 and finally stood at 10.20 per cent in 2011. Similarly, the rural-urban and social gap in literacy has also been narrowing down over time.

Table 1.2 :District-wise Literacy Rates in Punjab 2011

District	Literacy Rate	Rank
Hoshiarpur	85.4	1
SAS Nagar (Mohali)	84.9	2
Rupnagar (Ropar)	83.3	3
Ludhiana	82.5	4
Jalandhar	82.4	5
Gurdaspur	81.1	6
SBS Nagar (Nawanshahr)	80.3	7
Fatehgarh Sahib	80.3	8
Kapurthala	80.2	9
Amritsar	77.2	10
Patiala	76.7	11
Moga	71.6	12
Faridkot	70.6	13
Ferozepur	69.8	14
Bathinda	69.6	15
Tarn Taran	69.4	16
Barnala	68.9	17
Sangrur	68.9	18
Muktsar	66.8	19
Mansa	62.8	20
Punjab	76.7	-

Source: Statistical Abstract of Punjab (Various Years)

However, there are wide inter district variations. Table 1.2 shows that ten districts each fall above and below the state average. Hoshiarpur with (85.4 per cent) is the most literate and is closely followed by SahibzadaAjit Singh Nagar, Mohali (84.9 per cent), Rupnagar (83.3 per cent), Ludhiana (82. per cent), Jalandhar (82.4 per cent), Gurdaspur (81.1 per cent), ShaheedBhagat Singh Nagar (Nawanshahr) and Fatehgarh Sahib both (83.3 per cent) and Kapurthala (80.2per cent) and Amritsar (77.2per cent). On the other hand, in Mansa, which is the least literate district with a literacy rate of 62.8 per cent, more than one third of its population is still illiterate. All the district have recorded significant improvement during the last decade. Even Mansa has jumped from 52.4 per cent in 2001 to 62.8 per cent in 2011. During the decade of 2001 to 2011, male literacy has increased from 75.2 per cent to 81.5 per cent i.e. 6.3 percentage points, female literacy has increased by 7.9 percentage points from 63.4 per cent to 71.3 per cent.

Table 1.3 :Growth of Schools in Punjab (1970-71 to 2010-11)

Year	Primary Schools	Upper Primary/ Middle Schools	High Schools	Senior Secondary Schools
1970-71	7258	1060	1071	252
1980-81	12383	1498	1912	257
1990-91	12400	1430	2249	520
2000-01	13238	2538	2199	1189
2001-2011	15738	5766	4844	3810

Source: Statistical Abstract of Punjab (Various Years)

There was an unprecedented increase in the number of primary schools in the state during the period from 1970-71 to 1980-81. During this period number of primary schools increased from 7258 to 12383. This was also the period when income of farmers and farm labourers went up substantially as result of the adoption of new agriculture technology. But, during the next decade, the number remained more or less stagnant. This stagnation may be largely attributed to the prevalence of terrorism during this period. The number of primary schools increased from 12400 in 1990-91 to 13238 in 2000-01 and further to 15738 in 2010-11. The spurt in the number of primary schools during the last decade is at least partly due to launching of the Sarva Shiksha Abhiyan in the state, which contributed significantly towards achieving the goal of universalisation of elementary education.

The number of middle schools also increased substantially, from 1060 in 1970-71 to 1498 in 1980-81. This number decreased during the next decade – partly because of upgradation of middle schools to high schools and not many new middle schools were opened during the period. During the period 1990-91 and 2000-01, the number showed an upward trend once again. The number of middle schools stood at 2538 in 2000-01. During the last decade between 2000-01 and 2010-11, the number of middle schools more than doubled and in 2010-11 their number stood at 5767.

Similarly, the number of high schools and senior secondary schools in the state registered a considerable increase from 1071 and 252 respectively in 1970-71 to 2249 and 520 respectively in 1990-91. The number of high schools did not increase during 1990-91 and 2000-2001 because there was a large scale upgradation of high schools to higher secondary schools. Consequently, the number of senior secondary schools shot up from 520 in 1990-91 to 1189 in 2000-01. During the decade of 2000-01 and 2010-11, the number of high schools more than doubled and that of senior secondary schools rose more than three times over the number in 2000-01.

An analysis of the data relating to number of schools and population served by them in different years shows that maximum expansion in primary education took place in the decade of 1970's. The population served by each primary school figure rose during 1980's and 1990's. However, the last decade also saw a definite improvement. By 2011 the state is having a primary school for every 1760 persons.

Table 1.4 : Population Served per School 1970-71 to 2010-2011

Year	Population served per primary school	Population served per middle school	Population served per high/higher secondary school
1970-71	1867	12784	10242
1980-81	1356	11207	7740
1990-91	1635	14183	7324
2000-01	1840	9597	7189
2010-11	1760	4805	3201

Source: Statistical Abstract of Punjab ((Various Years))

Now, the state has a middle school for every 4805 people. In fact the last decade saw massive fall from 9597 persons per school in 2000-01 to 4805 persons per school in 2011. In the

case of high and higher secondary schools, there has been steady progress since 1971. In 1970-71, there was a high or higher secondary school for a population of 10242 persons. This figure came down to 7740 in 1980-81, 7324 in 1990-91 and 7189 in 2000-01. But the real jump in the expansion of secondary school education has been achieved during the last decade, when the population per high/higher secondary school figure dropped from 7189 in 2000-2001 to 3201 in 2000-2011. Thus 1970's saw massive expansion of primary education, the decade of 1980's was a lost decade because of terrorism in the state. There was deterioration at all levels primary, upper primary and secondary. Since 1990-91, upper primary is seeing massive expansion. The last decade was a decade of expansion of secondary education.

Table 1.5 : Number of Teachers in School of Punjab

Year	Primary/Junior Basic Schools		
	Men	Women	Total
1980-81	22665	25237	47902
1990-91	21934	26041	47975
2000-01	15543	28103	43646
2010-11	14777	25991	40768
Middle/Senior Basic Schools			
1980-81	6067	4357	10426
1990-91	5147	4071	9218
2000-01	7364	7928	15292
2010-11	7255	12580	19835
High/Post Basic Schools			
1980-81	18536	11580	30116
1990-91	18325	14527	32852
2000-01	14551	15991	30542
2010-11	11852	25986	37838
Senior Secondary Schools			
1980-81	5210	3918	9128
1990-91	9194	8654	17848
2000-01	14750	19059	33809
2010-11	20811	40101	60912

Source: Statistical Abstract of Punjab (Various Years)

Table 1.5 shows the number of teachers in primary, middle, high and higher secondary schools of Punjab. A look at the table shows that number of teachers in the primary section remained more or less stagnant during the last 30 years, perhaps because most of expansion in the primary education had taken place during the decade of 1970's. In the upper primary section, the number of teachers rose by about 90 per cent from 10426 in 1980-81 to 19835 in 2010-11. The number of teachers in the high schools went up by nearly 25.6 per cent from 30116 in 1980-81 to 37538 in 2010-11. The most spectacular increase took place in the senior secondary section where the number was 9128 in 1980-81 and it stood at 60912 in 2010-11. The increase works out to be 6.67 times during the last three decades. Thus the major emphasis has been on the senior secondary segment followed by upper primary and then high schools. The apparent neglect of the primary section is actually attributable to the fact that large number of unrecognised, so called English medium schools, sprang up in both rural and urban areas during the last 20 years or so. Consequently, there was a large scale diversion of students from recognised to unrecognised schools, particularly in the primary section. As a result, the number of students in the recognised primary schools declined, which led to stagnation in the number of teachers in this segment.

Table 1.6 : Teacher – Pupil Ratio in Punjab

Year	Class			
	I-V	VI-VIII	IX-X	XI-XIII
1970-71	42	30	-	-
1980-81	41	25	17	-
1990-91	38	20	29	
2000-01	42	26	23	28
2010-11	38	29	34	34
2014-15	29	22	17	32

Source: 1. Statistical Abstract of Punjab (Various Years)
2. For 2014-15. Statistical of School Education in Punjab published by Department of School Education SAS Nagar (Mohali).

Teacher pupil ratio is a significant indicator of the quality of education. A ratio of 1:25 is considered as ideal level, especially at the elementary level. But due to shortage of teachers at the elementary level in Punjab, the pupil teacher ratio has remained on the higher side. Still, there is some improvement, particularly during the last few years. The teacher-pupil ratio which was hovering around 1:40 since 1970-71 till 2010-11, now stands of 1:29 in 2014-15. The situation

has also improved in the upper primary and high school segments where the latest figure is 1:22 and 1:17 respectively. However, more needs to be done at the secondary level and perhaps at all the levels.

Public Expenditure on Education in Punjab

Education has been recognised as a public good, with high social rates of return. Therefore, it deserves to be given a high priority in the allocation of public funds. Different committees and commissions, set up in the country after independence, have recognised the role of public financing of education in order to ensure equality and universal accessibility. In our country, education being on the concurrent list, both the central as well as the state governments are making financial allocations for the provision of education. The central government contributes towards education through plan allocations to the states. An analysis of the data pertaining to plan allocation to education in Punjab under various Five Year Plans reveals that after the Fourth Five Year Plan, when 7.16 per cent of total plan outlay for Punjab was allocated to education, the share of education in total plan outlay declined drastically in successive Five Year Plans. In the Fifth Five Year Plan this share was 4.21 per cent which came down to 2.71 per cent in the Sixth Five Year Plan and further to 2.32 per cent in the Seventh Five Year Plan. In the Eighth and Ninth Five Year Plans, the percentage share of education in total plan outlay for the state of Punjab increased marginally to 2.82 and 2.89 per cent respectively.

Table 1.7 : Expenditure on Different Five Year Plan on Education in Punjab

Five Year Plan	Approved Outlay on Education (Rs. Lakhs)	%age of Total Outlay
Fourth Five Year Plan (1969-74)	2100.00	7.16
Fifth Five Year Plan (1974-79)	4327.00	4.21
Sixth Five Year Plan (1980-85)	5300.00	2.71
Seventh Five Year Plan (1985-90)	7637.00	2.32
Eighth Five Year Plan (1992-97)	21683.00	2.62
Ninth Five Year Plan (1997-2002)	41310.49	2.89
Tenth Five Year Plan (2002-07)	189892.00	6.57
Eleventh Five Year Plan (2007-12)	1001746.27	10.88

Source: Statistical Abstract of Punjab (Various Years)

Thus, during the period from Fifth Five Year Plan to Ninth Five Year Plan, education sector was not given much priority. However, in the 10th Five Year Plan, 7.56 per cent of the outlay for Punjab was allocated to education. This steep hike in plan allocation for education was due to allocation made for the implementation of SarvaShikshaAbhiyan – the national initiative for universalisation of elementary education with major financial contribution from the Central Government. During the 10th Plan, SSA was funded on 75:25 basis, in the Eleventh Plan, the approved outlay for general education constitutes 6.57 per cent of the total plan outlay of the state. It was during this period that RashriyaMadhmikShikshaAbhiyan (RAMSA) was also initiated. RAMSA is an initiative to universalise secondary education in the country. In the 12th Five Year Plan, the allocation to education constituted 10.88 per cent of the total plan outlay for the state.

Thus, it is clear that the emphasis on education has been declining since early 1970 and this trend continued until 2002. With the launching of the SSA during the 10th plan in 2002, attention again shifted to education. During the last 15 years or so, education has been getting due attention and it is getting affected in the percentage expenditure allocated to education in the state.

Drop Out Rate in Punjab

Despite the government efforts to reduce the dropout rate, the scenario continued to be very alarming till the launch of National and State level flagship programme SSA in 2002-03, followed by enactment of RTE Act in 2009. It was a matter of grave concern as in 2000-01 nearly 22 per cent of the children dropped out of schools at the primary level, 35 per cent by the time they reach middle level, and 38.62 per cent at the secondary level. The situation continued to be alarming until the launching of the SSA in 2002-03 and RMSA in 2007-08, followed by enactment of RTE Act in 2009. After that the dropout rate came down drastically at all levels. Now, at the primary level, it is 1.12 for boys and 0.92 for girls. For the upper primary classes, it is 1.63 for boys and 1.79 for girls. Even at the secondary level, it stands at 5.42 per cent for boys, 5.75 per cent for girls, and 5.58 per cent for the boys and girls put together. Consequently, there have been a sharp fall in out of school children in the age group of 6-14 years. In 2000-01 the number of drop out children in the age group 6-14 years stood at 297449. By 2015 this figure has come down to 10994.

Table 1.8 : Dropout Rate of Students at Various Levels in Punjab

Year	Primary (I – V)			Elementary (I – VIII)			Secondary (I – X)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1990-91	29.8	30.2	30.0	33.1	41.2	36.9	-	-	-
1994-95	22.6	22.9	22.7	37.6	43.0	40.1	51.5	56.8	54.01
2000-01	21.9	18.5	21.3	35.3	38.9	36.9	38.9	38.2	38.62
2014-15	1.12	0.92	1.02	1.63	1.79	1.71	5.42	5.75	5.58

Source: 1. Statistical Abstract of Punjab (Various Years)
2. For 2014-15. Statistical of School Education in Punjab published by Department of School Education SAS Nagar (Mohali).

Thus, whichever way we look at the educational scene of the state, we can say with a sense of satisfaction that the state has made tremendous progress. Apart from state efforts, the major role has also been played by largely centrally funded schemes and programmes such as Sarva Shiksha Abhiyan and RMSA. After having achieved most of the physical goals, the state is now trying to improve the quality of education in the state. With this objective in mind, Punjab conducted the first State Learning Achievement Survey (SLAS) in 2013 for class 3rd standard. It covered three subjects i.e. Punjabi, English and Mathematics. The survey covered all the 22 districts, 217 education blocks, 2164 schools and 31793 students.

The Present Study

The present study was commissioned by the SSA Authority, Department of Education, Government of Punjab in February 2016 to fulfill the following objectives:-

1. To analyse the difference in achievement levels of students of different classes and different subjects with regard to gender, location and social class;
2. To study the impact of teacher-related variables such as gender, qualification and work experience, in-service training on the academic achievement of students;
3. To quantify the impact of teacher-related variables such as gender, qualification and work experience, in-service training on the academic achievement of students;
4. To examine the impact of socio-economic status of parents, their education level and their occupation on the academic achievement of students;
5. To find out the impact of social categories of students on their academic achievement;
6. To identify the areas for further research in the context of factors of teaching learning process; and
7. To spell out the policy implications for improving the academic performance of students.

Chapter Scheme

The study consists of nine chapters:

1. Introduction
2. Literature Review
3. Data Base and Methodology
4. Impact of Pupil's Personal & Demographic Characteristics and Socio-Economic Background on Academic Performance
5. Impact of School Level Variables on Academic Performance of Students
6. Impact of Teacher Related Factors on Academic Performance of Students
7. Factors Affecting Student's Academic Performance – A Logistic Regression Model Analysis
8. Findings of Focus Group Discussions
9. Summary of the Main Findings

CHAPTER -2

LITERATURE REVIEW

A lot of work has been done by various researchers on factors affecting learning outcomes of students. Broadly speaking, there are three sets of factors, which affect the learning outcome of students. These are (a) factors relating to socio-economic status of the family, normally measured by education, employment, occupational status, income and wealth, (b) school related variables such as type of school, its management, its location and the infrastructural facilities available with school (both human and physical), and (c) teacher related variables such as gender of the teacher, their educational qualification and training, their salary, their experience and their regularity and seriousness in giving and checking the home work regularly. The empirical work done on these aspects is discussed below.

Socio-Economic Status

The relationship between socio-economic status of the family and the academic performance of children is well established in the existing empirical literature. Without denying the fact that academic performance of children may also be related to their innate ability and child's heritable characteristics most empirical studies, however, suggested that children from low socio-economic status families do not perform as well as children coming from high Socio-economic status families (Grartz, 1995).

Ahmeduzzaman (1992) conducted a study of socio-demographic factors, functioning style, social support and father's involvement with pre-schoolers in African families. It was found that the family income was the most important variable associated with different dimensions of father's involvement with children.

Devi and Mayuri (2003) examined the family and school factors that affect the academic achievement of school children studying in IX and X classes. The sample consisted of 120 children of Hyderabad city. An interview schedule was developed by the investigator to study the family factors. The study found a significant contribution of family factors like parental aspirations and socio-economic status to academic achievement.

Grewal(1995) carried out a study to find out the effect of socio-economic status on academic performance of students. Sample consisted of 550 students from 16 higher secondary schools of Bhopal studying in class XI with modal age of 16. The socio-economic status of parents was assessed by using Kuppaswamy's socio-economic scale. The results revealed that academic performance of students was influenced by socio-economic status of the families to which they belonged

Some researchers have revealed a negative relationship between family size and their academic achievements (Cherian, 1990), while Khan and Jemberu(2002) showed that the impact of socio-economic status on educational aspirations was minimal, while its influence on occupational aspirations was large,

Most studies on the relationship between socio-economic status and educational outcomes (Amato, 1987; Williams et al.1991; Mukherjee, 1995) bring out the fact that children from low income families generally show the following pattern in terms of educational outcomes compared to children from high socio-economic status families:

- (a) They have lower levels of literacy numeracy and comprehension.
- (b) Children from low socio-economic status families are more likely to leave school early.
- (c) They have lower higher education participation rates i.e. children from low socio-economic status families are less likely to attend university.
- (d) They have higher problematic school behaviour;
- (e) They are more likely to have difficulties with their studies; and
- (f) They have less successful school –to –labour market transition.

These results remain the same, irrespective of how socio-economic status is measured. Thus, the existing evidence on this question suggests that educational success depends very strongly on the socio-economic status of one's parents.

Parents Education

Looking into the educational status of the parents, it has been observed that the parent's years of schooling is an important socio-economic factor which should be taken into consideration in both policy and research, when looking at school age children (Pamela E Davis – Kean, 2005). The children, whose parents were educated, performed at a significant higher

academic level than who did not have school education (Bhatnagar and Sharma, 1992). Similarly, some researchers have found that the students belonging to fathers of service group and high educational qualification category, have significantly better achievement motivation as compared to their counterparts (Penda and Jena, 2000). Similarly, Pal and Phardhan (1996) found that mathematics competence of urban students was positively and significantly related to father's education.

Some researchers have found that the home environment also affects the academic performance of students and educated parents can provide such an environment that suits best for academic success of their children. Thus, academic performance of students heavily depends upon the parent's involvement in their academic activities to attain the higher level of quality in academic success (Barnard, 2004, Handerson, 1988). However, there is also a study (Pandey, 2008) which is based on the analysis of 92 higher secondary students of Mizo tribe and observed that academic achievement of students was not affected by educational level of parents. But the general perception continued to be that there is a positive relationship between the education level of parents and academic performance of their wards, may be through creation of more congenial atmosphere at home. Also, educated parents can better communicate with their children regarding the school work, activities and the information being taught at school. They can better assist their children in their work and participate at school (Fantuzzo and Tigue, 2000; Trusty, 1999).

Father' Occupation

A number of researchers have found a positive association between father's occupation and child's educational achievement and attainment. If father has better occupation, say a well-paid white collar job, then the child is likely to have a better educational performance at school. Since father is generally head of the family, the child intuitively imitates his/her father. A child may acquire high achievement, motivation from the father who had better job as compared to those children whose father was in blue collar occupations. For example, Gill and Sidhu (1998) carried out a study of academic achievement of the children belonging to different socio-economic groups in rural Punjab. The sample consisted of 80 students in 9th class. On the basis of the information taken from the students, the subjects were divided into their socio-economic groups i.e. servicemen, agriculturists and labourers. The results showed that the highest marks in

8th standard were obtained by children of the service group, followed by agriculturist and labour class.

Household Income

Household income may have effect on academic achievement of students. Firstly, higher income households have a choice of selection of school. Generally, the child of such family goes to a private school. Secondly, parent can provide better study material and space at home including learning aids. Thirdly, they may provide the child a tutor or send him/her to coaching classes. In this way, household income plays a significant role in learning and overall growth and development of the child. Past research has established that students from low income families are at a disadvantage, in terms of educational attainments (Jonathan,2012). This result is in conformity with the finding of an earlier study conducted by LangandRund (1986), who demonstrated that people from a background of lower socio-economic status tend to progress through school more slowly than the general population. Thus, household income seems to be an important factor in influencing the academic achievement of student.

The data of 7th All India School

Education Survey (7th AISES), conducted by NCERT with reference date of 30th September 2002, has been used in this study. As the reference date coincides with the initiation of implementation of SSA interventions in many states, this study may be served as a baseline for assessment of SSA interventions. Data on the aspects, which were not covered under the 7th AISES, were taken from SSA, DISE and Achievement surveys conducted by NCERT. A composite index given by Narain*et. al.*, measuring socio-economic development of states in India, was used in this study. On the basis of this index, various States and UTs were compared with respect to systemic quality in the field of elementary education. Kerala stands first when elementary education as a whole is considered. Though, Tamil Nadu was on top position at primary level education, very strong upper primary level education of Kerala pushed the state to fore front at elementary level. The states, which were lagging behind at elementary level were Bihar, Jharkhand and Nagaland. The dimensions where these states were lagging behind were identified so that administrators put focused efforts in those weak areas.

Type of School

Academic performance of students depends upon type of school management. Generally, the policies of school management are responsible for quality of education. These policies make a difference through different types of management of schools. Several studies have reported association between type of management and educational performance of students. Lubienski and Lubienski (2006), for example, reported that public school students scored lower on average than non-public school students.

Muralidharan and Kremer (2007), in their paper, have presented results from a nationally-representative survey of rural private primary schools in India, conducted by authors in 2003. They have compared the primary education in public and private schools in rural India. They have found that private unaided fee-charging schools are widespread in rural India, particularly in areas where the public system is dysfunctional. The number of such schools appears to be growing rapidly with both demand-side variables (desire for English-medium education, less multi-grade teaching, smaller classes, more accountable teachers) and supply-side variables (availability of educated unemployed youth) playing an important role in this rapid growth. Salaries, paid by these schools, are only about one-fifth of those paid by public schools, but these schools have many more teachers relative to the number of pupils, and the private school teachers are more sincere in teaching than public school teachers. They have suggested improving the quality of education in India in the private as well as public schools. The result showed that private schools have lower teacher absence and higher levels of teaching activity than public schools. The attendance of students was higher in the private schools relative to the public schools.

Kingdon (2007) pointed out that private schools often provide superior results at a fraction of the unit cost of government schools. Author have found that size of private sector is greatly under-estimated in official published statistics, particularly at the primary level, owing to excluding 'unrecognized' schools, given that more than 50 per cent of all private primary schools are unrecognized. Authors are of the view that even if one ignores the numerous unrecognized schools and look instead at recognized schools only, it is clear that the private schooling sector is growing extremely rapidly in urban areas and more slowly in rural areas. It was found that private schools are more effective in imparting learning and do so at a fraction of the unit cost of

government schools. These studies revealed that major reason for private schools' massive cost advantage over public schools was that they can pay market wages while government school teachers get bureaucratically set salaries, which teacher unions have fought hard to secure. The spread of fee-charging private schooling represents growing inequality of opportunity in education. It was concluded that, the pattern of growth of private schooling in urban areas (fastest at the primary level, slower at the middle and secondary levels) gives cause for equity concerns, since the children of the poor are best represented at the primary level of education and progressively less represented at further levels.

Govinda(2011) has done an in depth analysis on government and private schools using the factors like educational access, enrolment, dropout, attendance, progression, social and gender equity in education, level of achievement, quality of education, teachers and teachers education, local governance and community participation, using secondary data. Based on population norms, modifying traditional distance and opening schools in small habitations has yielded positive results. The author has also found that government schools are more expensive than private schools with lower teacher accountability in India. However, because of poor quality and scarcity of public education, private education has become the necessity for India.

Figlio and Stone (1997) have developed Multinomial LogitSector Selection Model to measure differences in students of mathematics of public and private schools. The data from the National Educational Longitudinal Survey (NELS), administered by the U.S. Department of Education's National Centre for Education Statistics (NCES), was used. The result shows that the private schools may have a number of advantages over public schools. The study differentiated between religious and non-religious private schools and compared them with public high schools. Religious schools have been found modestly inferior in mathematics and science, while nonreligious schools have been substantially superior. However, minority students, particularly in urban areas, have benefited from religious schools. Other factors that may make both religious and nonreligious private schools attractive include possibly better retention rates, increased security and discipline, and greater opportunities for a variety of specialized school-day and extra-curricular activities.

Khuluse(2004) has studied the role of school management teams in facilitating quality of education in schools in South Africa. The author found gender gap i.e. there were more males

at the School Management Structure than females. There has been imbalance of the racial composition in some schools as also insufficient involvement of staff in defining school goals. Some members of management have consult staff on curriculum needs or changes and to work collaboratively with staff to improve the quality of teaching in the classroom. Most schools do not work according to a properly structured evaluation or supervision programme. Most schools need to improve their strategic planning. The findings indicated that some School Management Teams are ineffective in facilitating quality education in their schools because they do not have the expertise to lead and manage schools.

Student-teacher ratio

Student teacher ratio is an important factor influencing the quality of education. A low student teacher ratio provides more possibility for students and teachersto interact in the class. Also, students can discuss their problems and clear their doubts if they can meet more frequently with their teachers. The ratio of student to teachers is obtained by total number of students enrolled in a school by dividing the number of teachers. Some of the empirical studies conducted on this issue are discussed below:

Maier, Molnar, Percy, Smith, &Zahorik(1997)andMolnar, Smith, &Zahorik(1998) conducted research studies, particularly Tennessee's Project Challenge and Wisconsin's SAGE program. In the SAGE (Student Achievement Guarantee in Education) classrooms, analysis of the average performance of students in grade-1 during 1996-97 and 1997-98 recommended the lower student-teacher ratio. Likewise, the analysis found the negative student achievement because of the poverty. Although the SAGE classrooms enrolled more students and facilitated with subsidized lunch, yet these classrooms got a higher level of student achievement as compared to the other school classrooms.

Alderman, Orazem&Paterno(2001) has conducted the study on the school quality, school cost, and the public/private school choices of low-income households in Pakistan. The study concluded that higher student-teacher ratio had a consistent negative effect on student achievement particularly on language skills.

Graddy and Stevens(2003) have carried out a study of private schools in United Kingdom to know the impact of school inputs on student performance. The findings suggested that student

teacher ratio was the important determinant for achieving better results after controlling for other school and student characteristics. This study found that the lower student-teacher ratio and smaller class size have impact on student achievement.

Levacic *et. al.*(2005) have estimated the relationship between school resources and pupil attainment at key stage using the secondary data. The analysis concluded that reduction in the student-teacher ratio had a statistically significant positive effect on math achievement. However, there was no impact of student-teacher ratio on science achievement and English achievement.

Daharet. *al.* (2009) conducted the study to find out the impact of student teacher ratio, class size and per student expenditure on the academic achievement of students at secondary stage in Punjab (Pakistan). Overall, a total of 288 schools were chosen, then 20 students and 10 teachers from each school were randomly selected as the sample of the study. The finding revealed that there was statistically significant relationship and the differential impact of student-teacher ratio for science students. However, these were insignificant for arts students. There was positive correlation, which means that higher student-teacher ratio produced the higher level of academic achievement. Likewise, the study found that the urban schools with higher student-teacher ratio achieve higher level of academic achievement. However, the rural schools produced lower level of academic achievement with the lower student-teacher ratio. Furthermore, the study found that the average student-teacher ratio in the 288 schools was 28 at secondary stage. However, it was 18 in the rural areas and 37 in the urban areas. This misallocation of student-teacher ratio between the rural and the urban areas was a great discrepancy.

OECD(2009) stated that the ratio of students to teaching staff is an important indicator of the resources devoted to education. A smaller ratio of students to teaching staff may have to be weighed against higher salaries for teachers, increased teacher training, greater investment in teaching technology, or more widespread use of assistant teachers and other paraprofessionals whose salaries are often considerably lower than those of qualified teachers. Moreover, as larger number of children with special educational needs are integrated into normal classes, more use of specialised personnel and support services may limit the resources available for reducing the ratio of students to teaching staff. The ratio of students to teaching staff is obtained by dividing the number of full time equivalent students at a given level of education by the number of

fulltime equivalent teachers at that level and in similar types of institutions. However, this ratio does not take into account instruction time compared to the length of a teacher's working day. The ratio of students to teaching staff in primary education, expressed in full-time equivalents, ranges from 25 students or more per teacher in Korea, Mexico and Turkey and in the partner country Brazil, to fewer than 11 in Greece, Hungary and Italy. The OECD average in primary education is 16 students per teacher.

Class Size

Class size is one of the factors which determine the quality of school. It is generally believed the small class size plays an important role to ensure good quality education. Accordingly to Banerjee *et. al.* (2003) overcrowding in lower classes might be contributing to the reasons for the school to appear unattractive to the child.

Angrist and Lavy(1999) used a regression discontinuity design to analyse the effect of class size on student achievement. The class sizes were determined by the Maimonides' rule in Israel. According to that rule, the maximum class size is 40. Two classes are automatically created if the total enrolment is greater than 40. Likewise, there will be three classes if the numbers of students are greater than 80 and so on. This study found that class size has a positive and significant effect on student achievement in reading comprehension and mathematics.

Bonesronning (2003) has investigated the effects of class size on student achievement in Norway. Contrary to Fuller & Clarke findings in 1994 that class size has no effect in the upper grades of many countries, including Botswana, Philippines, and Thailand,however, in Tanzania, there was a positive effect of class size on achievement. The author found that effect varies among student sub-groups. This effect was larger in schools with a higher proportion of students from intact families, however, it was conditional on student effort.

Krueger (2003) has examined the effect of class size on student achievement using secondary data of a large number of countries. First, it was shown that results of quantitative summaries of the literature depend critically on whether studies are accorded equal weight. When studies are given equal weight, resources are systematically related to student achievement. When weights are in proportion to their number of estimates, resources and achievements are not systematically related. Second, a cost-benefit analysis of class size

reduction is performed. Results of the study of Tennessee STAR class-size experiment suggest that the internal rate of return from reducing class size from 22 to 15 students is around 6 per cent.

Daharet. *al.* (2009) have conducted the study to find out the impact of student teacher ratio, class size and per student expenditure on the academic achievement of students at secondary stage in Punjab (Pakistan). There was positive relationship of class size with academic achievement. The positive relationship shows that larger class size produced the higher level of academic achievement. Likewise, smaller class size produces the lower level of academic achievement. Furthermore, the study also identified an average class size in the rural areas was 35; however, it was 61 in the urban areas. In the rural areas, class size was smaller with lower level of academic achievement. However, there was larger class size with higher level of academic achievement in the urban areas. This is a serious problem. Furthermore, it was also stated that there was a possibility that the schools where effective teachers and head teachers struggle hard, larger class size may produce higher level of academic achievement. On the other hand, the schools where teachers and head teachers do not work hard, smaller class size may produce lower level of academic achievement.

Lindahl(2005) found the significant effects of smaller class sizes on student achievement. The study examined the effect of class size in natural variation by using longitudinal approach. The study used a sample of a total of 556 students in 16 schools in Stockholm. The students were examined by a standardized test in mathematics on three occasions. The average student's percentile rank was between 0.37 and 0.98 units (depending on model specification) with a reduction in class size by one student. The study also showed more gains for immigrant students than native Swedes from the smaller class sizes.

Michaelowa(2001) has examined the determinants of learning achievement and efficiency consideration in primary schools in francophone sub-Saharan Africa to find education quality. The author has established an inverse correlation between class size and learning outcomes. It showed the decreased student learning with the increased class size; however, learning effectively stopped once class size exceeded 62.

Mosteller(1995) and Krueger(1999) found that the effect of class size on student achievement was very large in the Student Teacher Achievement Ratio (STAR) project

experiment. They have stated that smaller class size positively affected the standardized test scores. With the passage of time, this effect increased. However, this effect was larger for the beneficiaries of the free lunch program and the minority students. Likewise, students outperformed in the small classes in the regular and the regular with aid classes by a great margin.

OECD (2009) study pointed out that class size is a hotly debated topic and an important element of education policy in many OECD countries. Smaller classes are often perceived as allowing teachers to focus more on the needs of individual students and reducing the amount of class time they spend dealing with disruptions. Smaller class sizes may also influence parents when they choose schools for their children. In this respect, class size may be viewed as an indicator of the quality of the school system. Yet evidence on the effects of differences in class size upon student performance was mixed. At the primary level, the average class size in OECD countries in 2007 was slightly more than 21 students per class, but this number varies widely between countries. It ranges from 31 or more students per primary class in Korea and the OECD partner country Chile to fewer than 20 in Austria, the Czech Republic, Denmark, Finland, Greece, Iceland, Italy, Luxembourg, Mexico, Poland, Portugal, the Slovak Republic, and Switzerland (public institutions) and the partner countries Estonia, the Russian Federation and Slovenia.

Quality of Education

Govinda and Vergese(1993) have examined the quality of primary schooling in India: A case study of Madhya Pradesh. The study shows that a trained teacher makes considerable difference in terms of teaching style and classroom management. The authors are of the opinion that several researchers and reports indicated improvement in learning level of children depend not only on expansion of schooling provision but also on availability of ample instructional time and its effective use. It is the teacher who plays an important role in effective use of instructional time.

Kingdon(1996) has made an attempt to find the Quality and Efficiency of Private and Public Education in Urban India using secondary data. The author has given the evidences on the relative quality and efficiency of private and government-funded schools in Uttar Pradesh, it shows that standardizing of home background and controlling for sample selectivity greatly reduces the raw average achievement advantage of private school students over public school

students, but does not wipe it out. Private schools' standardized achievement advantage (or better quality) is complemented by their lower unit costs to enable them to be more efficient. The results support much of the existing international evidence on the relative efficiency of private and public schools. The findings from the case study of Uttar Pradesh suggest that the popularity of fee charging private schools in India was explained by their superior quality. Government and Private Aided schools are similar in their cost-efficiency but compare unfavourably with Private Unaided schools. This suggested that the quality and cost-efficiency of government funded schools need to be greatly improved. It also suggested that encouraging Private Unaided schools would lead to gains in efficiency as these institutions were both more technically efficient and more cost-efficient. Permitting more fee-charging schools in secondary education would also be equity-promoting because they support the redistributive role of publicly funded provision, allowing educational subsidies to be better targeted at the poor.

Cooper (1998) has conducted the study in US, to examine the success for all school restructuring program in more than 1,100 elementary schools in urban locations. The data collection strategies included surveys, one-on-one interviews, group interviews, focus groups, and school site observations. The goal of the analyses was to document the evolution of the implementation process and identify factors that contribute to the successful replication of Success for All and the scaling up process. The analyses examined factors related to quality of implementation in schools where the implementation was identified as high quality, medium quality, and low quality. The quantitative analyses identified six within-school factors and three socio-cultural factors that significantly influenced quality of implementation of the program. The within school factors that contributed to high quality implementation were the creation of a supportive culture for institutional change, the overcoming of program resistance on the part of a minority of teachers, a commitment to implement the structures of the program, a strong school-site facilitator, less concern among teachers for handling an increased workload and availability of program materials. The three socio-cultural factors that contributed to high quality implementation were lower student mobility, higher school attendance rate and a greater percentage of the student body being white. Qualitative analyses based on case studies of 25 schools provided further elaboration on the influence of the racial composition of the student body in the schools, the factors involved in program resistance, and the importance of each school having a full-time school-site facilitator.

Chapman and Adams (2002) pointed out that the increased concern for education quality has resulted from a variety of factors including: (i) inability to adequately staff and finance rapidly expanding education system; (ii) research-based evidence of low levels of learning in basic skills; (iii) new demands for advanced language, mathematics, and, increasingly, computer skills, stemming from industrialization; and (iv) financial crises that have had an adverse effect on education budgets – in some cases reducing internal efficiencies and eliminating plans for qualitative improvement.

Banerjee *et. al.* (2003) has presented the results of a two-year randomized evaluation of a large scale remedial education program, conducted in Mumbai and Vadodara, India, and the preliminary results of a randomized evaluation of a computer assisted learning program in Vadodara. The remedial education program hires young women from the community to teach basic literacy and numeracy to children who reached standard three or four without having mastered these competencies. The program, implemented by a NGO in collaboration with the government, was extremely cheap (it costs 5 dollars per child per year), and is easily replicable: It is now implemented in 20 Indian cities, and reaches tens of thousands of children. Authors found that the program was very effective: On an average, it increased learning by 0.15 standard deviations in the first year, and 0.39 in the second year. The gains were the largest for children at the bottom of the distribution: Children in the bottom third gained 0.18 standard deviations in the first year, and 0.59 in the second year. The results were very similar in the two standards, and in the two cities. At the margin, extending this program would be 4.5 to 6 times more cost effective than hiring new teachers. The preliminary results of the computer assisted learning program, which was planned to be widely implemented in India, were less impressive: on average, the program has increased test scores by an insignificant 0.10 standard deviations. The effect was higher (and significant) in schools where the remedial education program was also present. On the basis of these estimates, extending the computer assisted learning program would appear less cost effective than hiring new teachers.

Grover and Singh (2002) have conducted the study on the Quality of Primary Education in Madurai and Villupuram District in Tamil Nadu, India. They have done quality assessment based upon school observations, interviews and research conducted in two districts of Tamil Nadu. The salient findings were that key structures are in place for imparting quality primary education. However, several weaknesses in the system of educational administration and

management currently limit the quality of education provided. A strengthening of crucial elements of the education system is needed in order to achieve the two important goals of building 1) Strong accountability in the system and 2) evaluating the quality of the system by regular. Monitoring of student learning, and thus, improving the overall efficiency of the system. They have mentioned in their article that the expansion of primary education in India over the last decade has been phenomenal. But, by all accounts, the expansion of the Indian education system has led to deterioration in the quality of education. They have suggested to i) Redesign the system of district level education administration and school management; ii) Institute a system of monitoring and evaluation of student learning; iii) Improve the efficiency of the teacher training process; iv) Explore innovative options for financing the reforms.

Indian Institute of Education (2002) prepared the report on ‘Status and Evaluation Study of the Upper Primary Section of the Elementary Education System’ in India. The report has focused on various aspects of elementary education, infrastructure, teaching learning equipment, number of teachers, training of teachers and its impact. It was found that the lacunae are not at the policy level, but at the implementation level. Effective implementation of existing schemes like free mid-day meals, free provision of textbooks and attendance allowance has to be ensured in some way to reduce drop-out and raise retention and attendance.

Parker, Hannah and Topping(2006) have learned the collective teacher efficacy, pupil attainment and socio-economic status in primary school. Their study explored the relationships between Collective Teacher Efficacy (CTE), socio-economic status (SES) and pupil attainment levels in reading, writing and mathematics. Significant positive relationships were found between socio-economic status and attainment in reading and mathematics and attainment in reading and writing. Collective Teacher Efficacy appeared to have a much stronger independent impact than socio-economic status in writing. School climate or ethos, high quality in-service training as well as focus upon pedagogy were perceived as the most potent factors in raising attainment.

Mahmood and Khatoon(2011) have examined the effects of school type, gender and Mathematics anxiety on mathematics achievement. The population consists of 863 males and 789 females from 15 secondary schools of Uttar Pradesh (India). The Mathematics Achievement Test and Mathematics Anxiety Scale were used for data collection, while stepwise multiple

regression, ANOVA, t-test and correlation techniques were used for statistical analysis. The results of the analysis showed that among the three independent variables, school type had the greatest influence on mathematics achievement (46 per cent), Mathematics anxiety comes second in order while gender showed no significant influence. Moreover, the students of Missionary and A.M.U. schools had highest mathematics achievement, while students of Government and Government Aided schools had lowest achievement scores, moreover, scores of students of Muslim and Hindu managed schools slide in between the range of highest and lowest achievement. Further males reported more Mathematics achievement than females and students with low Mathematics anxiety had highest achievement scores. Findings also reveal a significant negative correlation (-0.48) between Mathematics achievement and Mathematics anxiety.

Bandyopadhyay and Govinda(2008) have given the analytical review of access to Elementary Education in India. The research on which this paper is based was commissioned by the Consortium for Research on Educational Access, Transitions and Equity (CREATE) for the benefit of developing countries. This CREATE Country Analytical Review (CAR) in India consisted of a fairly large exercise on the various sub-themes related to elementary education in India. The analysis has identified many fertile areas for research within CREATE not all of which can be covered in depth. These include need to understand the dynamics of extending access at system level, at the level of the individual and households that make local decisions on sustained participation; develop more integrated analysis of the multiple causes of exclusion that embrace poverty, gender, social discrimination and location; recognize that silent exclusion is real for those enrolled but learning little and for those who are displaced and outside normal educational administrative systems e.g. migrants; highlight the importance of early childhood health, nutrition and its consequences for subsequent successful completion of basic education; revisit issues that surrounded public school financing in pro-poor ways and the opportunities, limitations and hazards associated with new forms of public private co-operation with both for profit and not for profit providers; and to develop more sensitive and useful indicators and data interpretation methods that capture the nuances of equity and distributional injustices that are often concealed by existing targets for universalizing access.

Plan India (2009) has presented a summary of the study 'Participatory approach to identify reasons for exclusion among out of school children, conducted in 4 states of India, to find 'Why are children out of school?' The report provides in-depth insight into the

circumstances of communities and reasons for not sending their children to school in the age group 6-14 years, where plan operates. It was found that unfriendly behaviour of teachers, use of abusive language and corporal punishment, schools are far off, lack of sports equipment, recreational facilities, burden of work i.e. domestic chores and sibling care for girls, and farm work, cattle grazing for boys were the key factors that keep children out of school.

OECD (2005) has considered school factors related to quality and Equity- results from Programme for International Student Assessment based on the data of PISA 2000, (Programme for International Student Assessment). The study has examined the secondary data of 42 countries (27OECD countries and 14partner countries) of the structure of schooling – including the grouping of students, segregation of schools, management and financing, school resources, and the instructional climate – influenced the quality and equity of educational outcomes. This study analyzed evidence from PISA 2000, in which school factors were associated with better quality and more equitable student performance. The finding showed that the school performance differs, but far more so in some countries than in others PISA 2000. The socio-economic composition of schools was strongly related to student performance. Many school factors interact with the socio-economic composition of schools, raising important questions about equality in educational opportunities. Early selection was also closely associated with school difference and social disparities. School autonomy has been realized to a considerable extent with regard to responsibilities for student policies, financial resources, curriculum and instruction. Responsibilities within autonomous schools mainly lie with the school board and school principal. School autonomy was associated with better student performance. Independent private schools have more autonomy and a more advantaged student intake and this was also true for government-dependent private schools in 15 countries. Public schools had a comparatively lower quality of school conditions when measured by school climate and material resources, but not by teacher quality. Independent private schools and government-dependent private schools outperformed public schools in many countries, but this appeared to be largely due to an advantaged student intake.

Programme Evaluation Organisation(2010) Planning Commission, initiated the evaluation study of SSA to review the progress in terms of its objectives and related targets. The study also tried to assess the extent to which the approach\ strategies adopted under SSA have been effective, to identify the bottlenecks in the implementation of the scheme and suggest the

way forward to design future programmes and policies. The study covered eleven states for both rural and urban samples. Thirteen towns were canvassed for assessment of SSA interventions in urban schools in slum areas. The study has brought out certain achievements in terms of access to education. More than 98 per cent of the sampled rural habitations have access to elementary schools within 3 Kms. While 93 per cent of sampled slum children have access to neighbourhood schools within 1 Km. It is also worth mentioning that the number of un served habitations in the sampled villages have declined across all the states. The overall, gross enrolment ratio in the sampled districts rose from 89per cent in 2003 to 93per cent in 2007. In sampled slum areas school enrolment rose by 18per cent during the same period.

Aturupane, Glewwe, Wisniewski(2013) have conducted the study of grade 4 students in Sri Lanka to evaluate the impact of school quality, socio-economic factors and child health on students' academic performance. The findings provide that Sri Lanka has achieved universal primary completion, but many Sri Lankan primary school students perform poorly on academic tests. At the child and household level, educated parents, better nutrition, high daily attendance, enrolment in private tutoring classes, exercise books, electric lighting and children's books at home all increase learning, while hearing problems have a strong negative effect. Among school variables, principals' and teachers' years of experience, collaborating with other schools in a "school family", and meetings between parents and teachers all have positive impacts on students' test scores.

Conclusions

The main points which emerge from the review of existing literature are as follows:

- Socio-economic status of the family has a strong positive influence on the academic performance of the children. Children from low income families generally have low levels of literacy, numeracy and comprehension. They are likely to leave school early and less likely to go for higher education. They generally have more problematic school behaviours and have more difficulties with their studies.
- There is enough evidence in the existence literature which shows that family income, parent's education, father's occupation, parental aspirations, father's

involvement and home environment have strong positive influence on the academic achievement of children.

- There is some evidence to suggest that there is negative relationship between family size and academic achievement of children.
- Type of school emerges an important factor in determining academic achievement of students. Most of the existing empirical evidence points towards the fact that private schools often provide superior results at a fraction of the cost of public schools. The unit cost advantage of private school is largely attributable to the fact that these schools pay much lower salaries to teachers compared to government schools but they do have more teachers relative to number of pupils. The quality advantage of private schools is also because of their initial advantage in terms of better intake as more students from high socio-economic status families enter private schools compared to government schools. These schools also enjoy a degree of autonomy in their functioning which results in better student's performance.
- Among the other school level variables, the studies find principal's experience and supervisory role, regular interaction between parents and teachers, strong accountability in the system, regular monitoring of students' learning and evaluation, high quality of in service training and focus on pedagogy all go a long way in improving the learning outcomes of students.
- On the question of class size and student teacher ratio, most empirical studies suggest that small class size and low student teacher ratio have positive impact on academic performance. But most of the empirical evidence on this issue emanates from studies conducted in developed countries. However, studies carried out in developing countries and crosscountry studies do not always support this proposition.
- Some studies have also gone into the question of how to raise retention and reduce dropout rate. Their main suggestions include effective implementation of existing schemes like mid-day meals, free provision of text books and attendance allowance. Among the negative factors which discourage retention are listed unfriendly behaviour of teachers, use of abusive language, corporal punishment,

school being too far-off from habitation, lack of sports and recreational facilities at the school level and burden of work at home such as domestic chores and sibling care for girls and farm work and cattle grazing for boys which keeps children out of school.

CHAPTER-3

DATA BASE AND METHODOLOGY

The data base of the present study is the State Learning Achievement Survey (SLAS) conducted in 2013 for class III students. The survey covered all the 22 districts, 217 blocks, 2164 schools and 31793 students. The survey tested their capability in mother tongue Punjabi, English and Mathematics.

Section-1 A Profile of the Data Base

A profile of schools, students and teachers covered by this survey is discussed below.

Profile of Schools

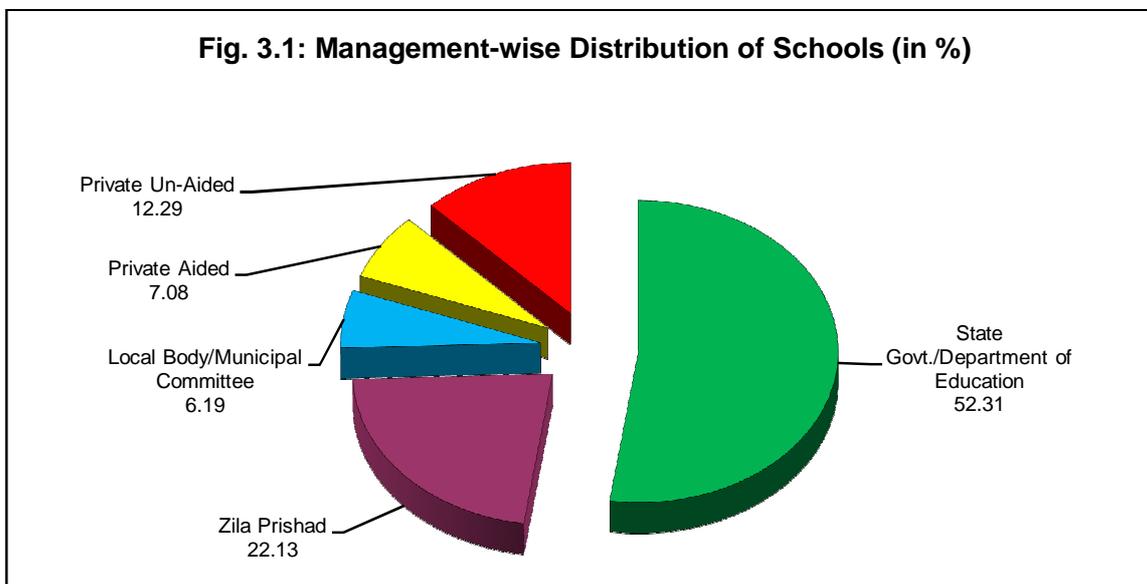
Management-wise Distribution of Schools

Table 3.1 shows the management-wise distribution of schools covered in the survey.

Table 3.1 :Management-wise Distribution of Schools

Type of Management	No	%
State Govt./Department of Education	1132	52.31
Zila Prishad	479	22.13
Local Body/Municipal Committee	134	6.19
Private Aided	153	7.08
Private Un-Aided	266	12.29
Grand Total	2164	100.00

Source: Compiled from SLAS-2013 data.



- Altogether, 2164 schools covered in the survey.
- 1132 (52.31 per cent) are State Government/Department of Education Schools.
- 479 (22.13 per cent) schools are Zila Prishad managed schools.
- 134 (6.19 per cent) of these schools run by Local Body/Municipal Committee/ Municipal Corporation schools.
- 153 (7.08 per cent) have been Private Aided schools.
- 268 (12.29 per cent) have been Private Un-aided schools.
- If we club State Govt. /Departmental Education plus Zila Prishad plus Local Bodies/Municipal Committee/Urban Local Body managed schools together and call them public schools, and also club Private Aided as well as Private Un-aided schools together and call them private schools, then we find that 1743 (80.34 per cent) are public schools and remaining 19.36 per cent are private schools which have been covered by the survey.

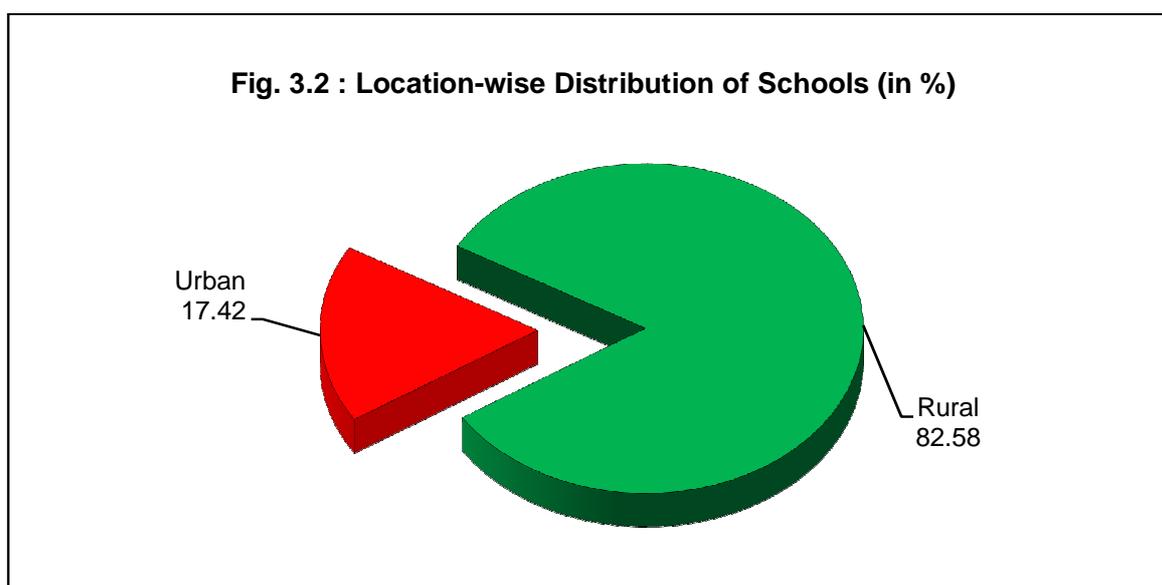
Location-wise Distribution of Schools

Table 3.2 gives location-wise distribution of schools covered in SLAS 2013. Out of the total 2164 school covered, 1787 (82.58 per cent) schools are located in rural areas and the remaining 377 (17.42 per cent) are urban schools.

Table 3.2 : Location-wise Distribution of Schools

Location of School	Number of Schools	Percentage
Rural	1787	82.58
Urban	377	17.42
Grand Total	2164	100.00

Source: Compiled from SLAS-2013 data.



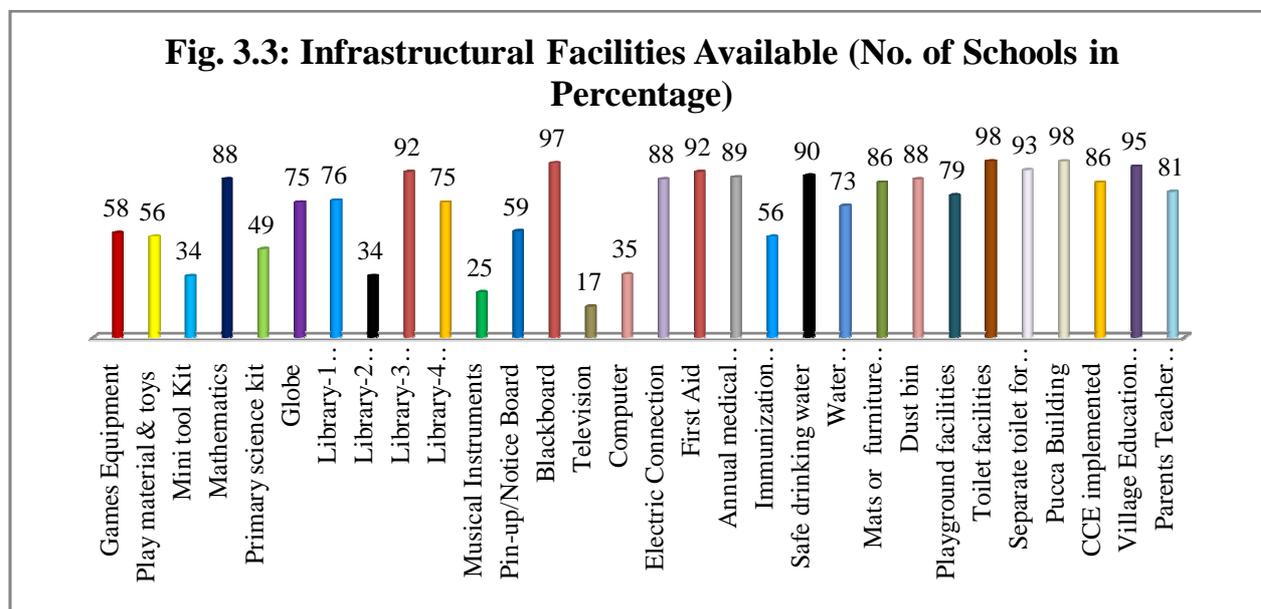
Infrastructural Facilities Available in the Schools

Table 3.3 and figure no. 3.3 presents the information about in infrastructural facilities available in 2164schools covered in the survey.

Table 3.3 :Infrastructural Facilities Available in the Schools covered by SLAS-2013

Sr. No	Facility	Yes	No	Percentage
1.	Games Equipment	1261	903	58
2.	Play material & toys	1212	952	56
3.	Mini tool Kit	726	1438	34
4.	Mathematics	1901	263	88
5.	Primary science kit	1068	1096	49
6.	Globe	1623	541	75
7.	Library-1 Reference books & dictionary	1651	513	76
8.	Library-2 Encyclopedia	738	1426	34
9.	Library-3 Children's books	1985	179	92
10.	Library-4 Magazines, Journals, Newspapers	1622	542	75
11.	Musical Instruments	539	1625	25
12.	Pin-up/Notice Board	1286	878	59
13.	Blackboard	2091	73	97
14.	Television	358	1806	17
15.	Computer	749	1415	35
16.	Electric Connection	1899	265	88
17.	First Aid	1981	183	92
18.	Annual medical check-up	1927	237	89
19.	Immunization facility	1203	961	56
20.	Safe drinking water	1956	208	90
21.	Water pitcher/glasses	1585	579	73
22.	Mats or furniture for all students	1867	297	86
23.	Dust bin	1902	262	88
24.	Playground facilities	1711	453	79
25.	Toilet facilities	2113	51	98
26.	Separate toilet for girls	2013	151	93
27.	Pucca Building	2114	50	98
28.	CCE implemented	1862	302	86
29.	Village Education Committee	2060	104	95
30.	Parents Teacher Association	1761	403	81

Source: Compiled from SLAS-2013 data.



It is heartening to note from the table that

- Nearly all schools (98 per cent) have pucca building.
- 98 per cent schools have toilet facilities.
- 93 per cent schools have separate toilet facility for girls.
- 97 per cent schools have blackboards.
- 95 per cent schools have set up village education committee.
- 92 per cent schools have First Aid kit.
- 92 per cent schools have children books in the library.
- 90 per cent schools have safe drinking water facility.
- 88 per cent schools have electric connection.
- 89 per cent schools go for annual medical check-up of children.
- 86 per cent schools have mats or furniture for all children.
- 79 per cent schools have playground facility.

However, there are some glaring gaps which need immediate attention:

- Nearly two-third schools (65 per cent) still do not have computer.
- 66 per cent schools do not have mini tool kit.
- 75 per cent schools do not have musical instruments.
- A whopping 83 per cent do not have games equipment.
- A majority of the schools (51 per cent) still do not have science kits.

Profile of Students

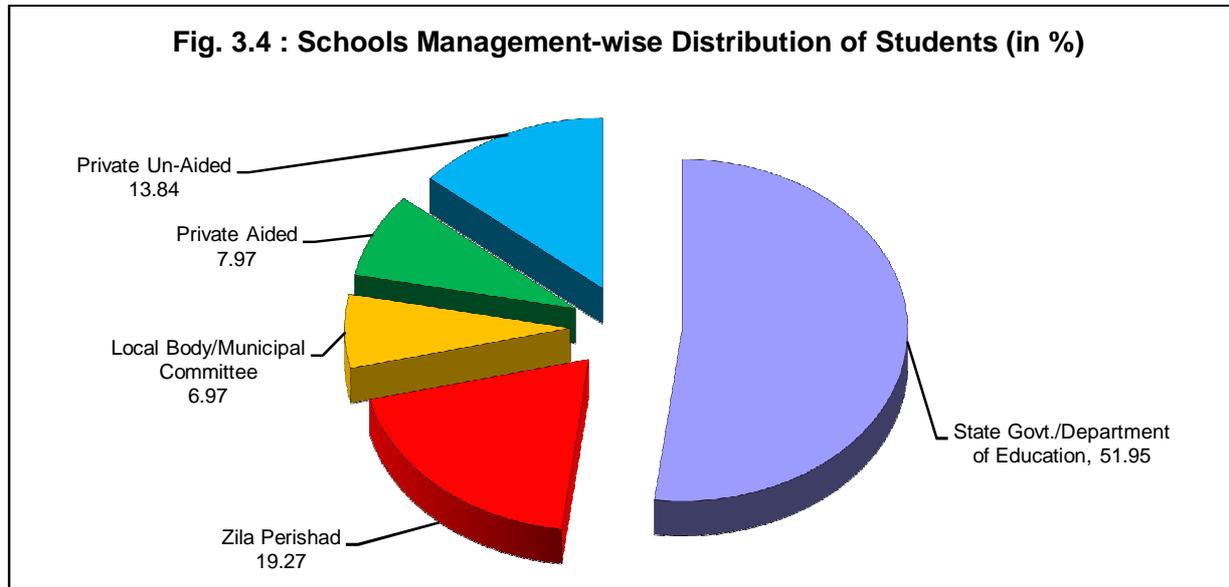
Schools Management-wise Distribution of Students

Table 3.4 and figure no. 3.4 presents the information about school management-wise distribution of students.

Table 3.4 : Schools Management-wise Distribution of Students

Management of School	State Govt./Department of Education	Zila Prishad	Local Body/Municipal Committee	Private Aided	Private Un-Aided	Grand Total
Number	16516	6128	2216	2533	4400	31793
Percentage	51.95	19.27	6.97	7.97	13.84	100.00

Source: Compiled from SLAS-2013 data.



- Of the 31793 students, which were covered by SLAS 2013, 16516 (51.95 per cent) have been studying in State Govt./Department of Education run schools. Another 6128 (19.27 per cent) have been studying in Zila Prishad run schools. 2216 (6.97 per cent) students have been studying in Local body/Municipal Committee/Urban Local Body managed schools. There have been 2533 (7.97 per cent) students who are studying in Private Aided schools and the remaining 4400 (13.84 per cent) were studying in Private Un-aided schools. Thus, 78.19 per cent students in the sample are from public schools (i.e. schools run by State Govt. /Department of Education + Zila Prishad + Local Body/Municipal Committee/Urban Local Body) and remaining 21.81 per cent are in private schools (Private Aided+ Private Un-aided).

- Location wise, 79.90 per cent students are from schools in rural areas and the remaining 20.10 per cent from schools in urban areas.
- Gender wise 16688 (52.49 per cent) students were boys and 47.51 per cent were girls.

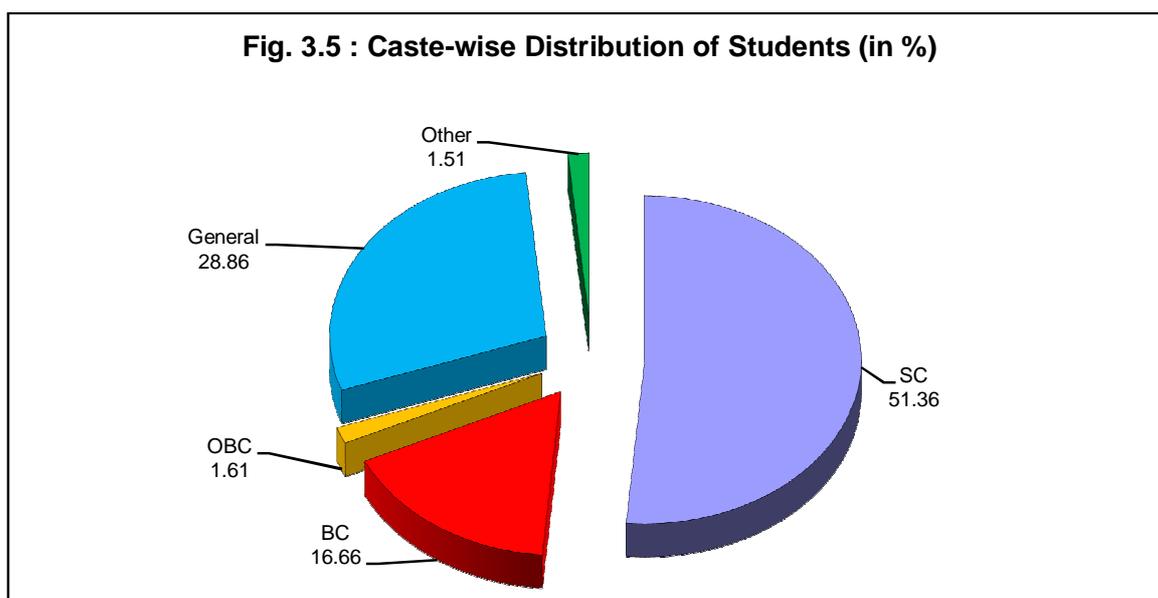
Caste-wise Distribution of Students

Table 3.5 and figure no. 3.5 presents the information about the caste-wise distribution of students.

Table 3.5 : Caste-wise Distribution of Students

Caste of Student	SC	BC	OBC	General	Other	Grand Total
Number of Students	16328	5298	512	9174	481	31793
Percentage	51.36	16.66	1.61	28.86	1.51	100.00

Source: Compiled from SLAS-2013 data.



- 16328 (51.36 per cent) students covered by SLAS-2013 belong to Scheduled Castes.
- 5298 (16.66 per cent) belong to Backward Caste category.
- 512 (1.61 per cent) are from OBC category.
- 9174 (28.86 per cent) are from the General Category households.
- The remaining 481 (1.51 per cent) are from other castes/tribes.
- Altogether, 69.63 per cent students are from SC/BC/OBC castes.

- Since nearly 81 per cent schools covered in the sample are either govt. schools or Zila Prishads or Local Bodies managed schools, which are largely catering to students coming from lower strata of the society, therefore we find amongst the students also that nearly 70 per cent students are from lower castes such as SCs, BCs and OBCs.
- 10060 (31.64 per cent) students in the sample come from below poverty line (BPL) families and the remaining 21733 (60.36 per cent) are from above poverty line families. Thus, nearly one-third students in the sample belong to the economically weaker sections of the society.
- 2149 (6.76 per cent) students are taking private tuitions.
- 20.53 per cent students are taking private tuition.
- Age wise distributions of students give an interesting picture. Normally, one would expect a student of class three to have completed 8 year of age but not older than 9 years. In our sample, however, 44.03 per cent students are those who have completed 8 years of age but have not yet completed nine years. Another 21.55 per cent are those, who have completed nine years of age but are younger than 10 years. Thus only 65.58 per cent students are in ideal age group for its class. In our sample 19.83 per cent students are under aged i.e. below 8 years of age, while 14.60 per cent are over aged children i.e. those with ten years old or older than that. In fact, there are 17 students in the sample who have completed 15 years of age.

Distribution as per Educational Status of Mother

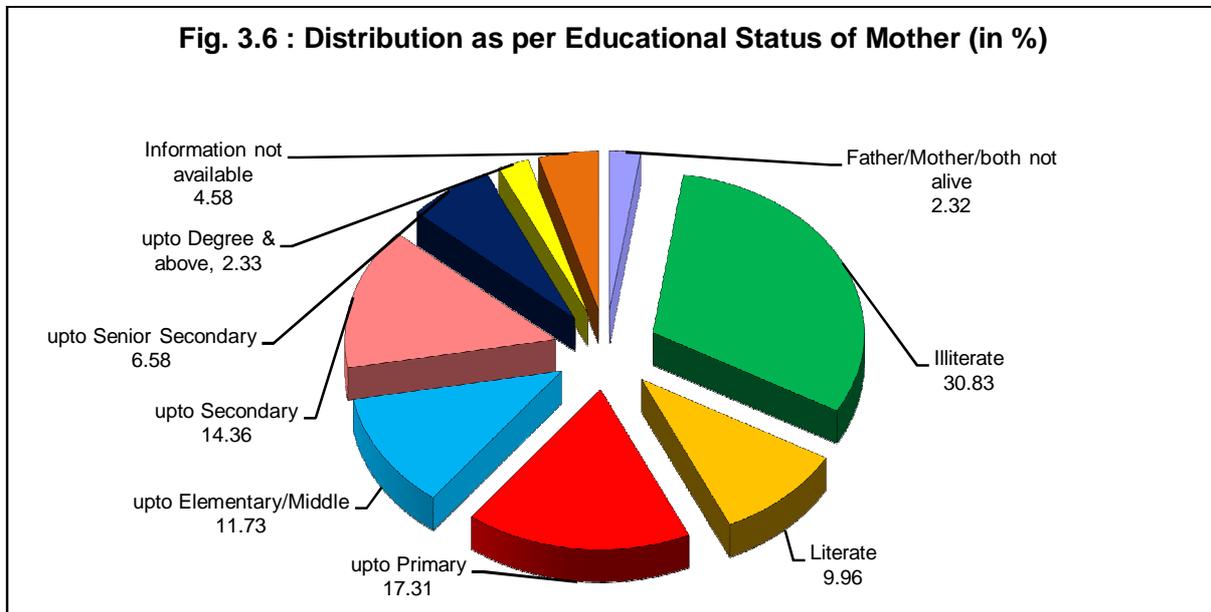
Table 3.6 and figure 3.6 gives distribution of students as per educational status of mother. The following points emerge.

- Nearly one-third children come from families where either the mother is not alive or she is illiterate.
- Another 9.96 per cent students come from families where their mother is literate i.e. can read and/or write but is below primary.
- Another 17.31 per cent students are those whose mothers are primary pass.
- The mothers of 11.73 per cent students have studied upto middle standard.

Table 3.6 :Distribution as per Educational Status of Mother

Occupation	Number	Percentage
Father/Mother/both not alive	737	2.32
Illiterate	9801	30.83
Literate	3168	9.96
upto Primary	5502	17.31
uptoElementary/Middle	3730	11.73
upto Secondary	4566	14.36
upto Senior Secondary	2092	6.58
upto Degree & above	741	2.33
Information not available	1456	4.58
Total	31793	100.00

Source: Compiled from SLAS-2013 data.



- The mothers of 21.94 per cent students have done schooling i.e. they are either matric or senior secondary pass.
- Only 2.33 per cent students are those whose mothers are graduate or above.
- For 4.58 per cent children, information is not available about their mother’s education.

Distribution of Students as per Occupation of Mother

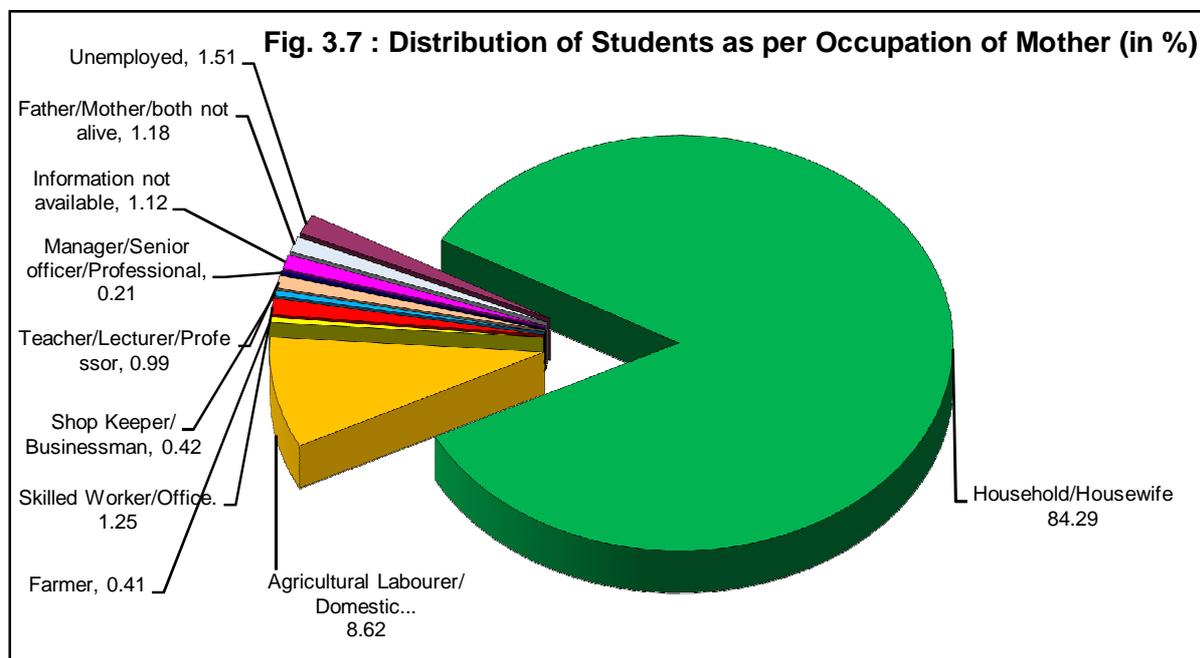
Table 3.7 and figure 3.7 presents the information about distribution of students as per the occupations of their mothers.

- Mothers of 84.29 per cent students in this sample are housewives or involved in household activities.
- The occupation of the mother of slightly above 10 per cent students is farming/agricultural labourer/ domestic servant/daily wagger or street vender.
- Another 1.51 per cent mothers are unemployed.
- Mother of 0.42 per cent students are in shop keeping or some trade or business.
- Mother of less than 2.5 per cent students are in proper white collar jobs, 1.25 per cent being skilled worker/office worker, 0.99 per cent in teaching profession (teachers/lecturers/professors) and 0.21 per cent being managers/senior officers/professional.

Table 3.7 :Distribution of Students as per Occupation of Mother

Occupation	Number	Percentage
Father/Mother/both not alive	376	1.18
Unemployed	481	1.51
Household/Housewife	26798	84.29
Agricultural Labourer/Domestic Servant/Daily Wager/ Street Vender	2742	8.62
Farmer	130	0.41
Skilled Worker/Office Worker	396	1.25
Shop Keeper/ Businessman	132	0.42
Teacher/Lecturer/Professor	314	0.99
Manager/Senior officer/Professional	67	0.21
Information not available	357	1.12
Total	31793	100.00

Source: Compiled from SLAS-2013 data.



Distribution of Students according to Occupation of Father

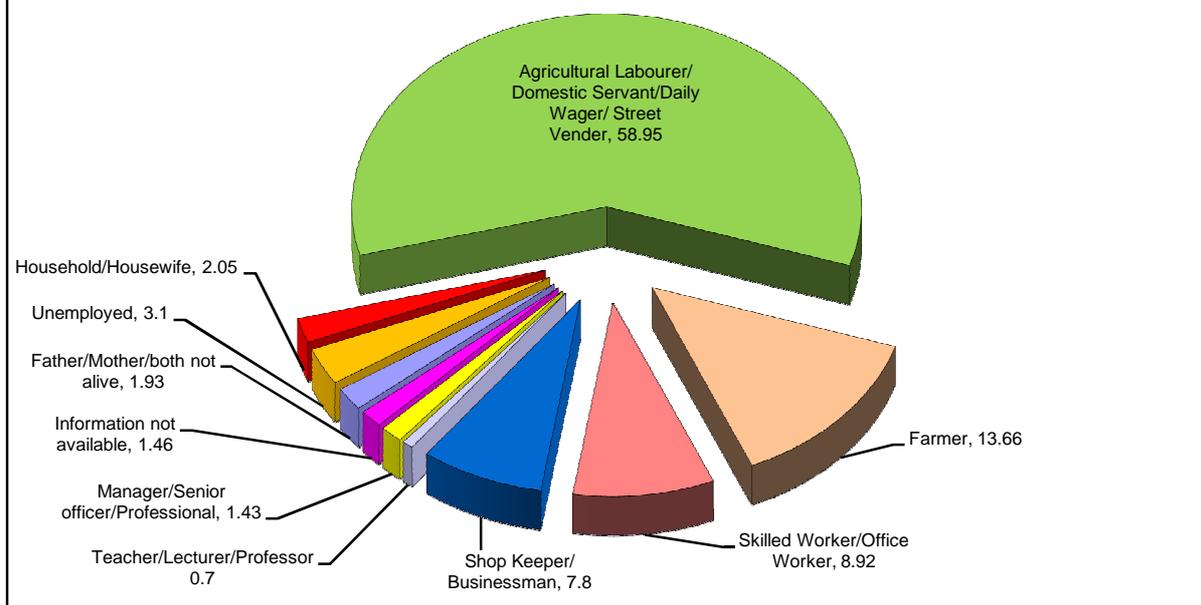
Table 3.8 and figure 3.8 presents the information about distribution students according to occupations of their fathers.

Table 3.8 :Distribution of Students according to Occupation of Father

Occupation	Number	Percentage
Father/Mother/both not alive	614	1.93
Unemployed	987	3.10
Household/Housewife	651	2.05
Agricultural Labourer/Domestic Servant/ Daily Wager/ Street Vender	18741	58.95
Farmer	4344	13.66
Skilled Worker/Office Worker	2836	8.92
Shop Keeper/ Businessman	2480	7.80
Teacher/Lecturer/Professor	221	0.70
Manager/Senior officer/Professional	456	1.43
Information not available	463	1.46
Total	31793	100.00

Source: Compiled from SLAS-2013 data.

Fig. 3.8 : Distribution of Students according to Occupation of Father (in %)



Father's occupation is one of the most important indicator of the socio-economic status of the family. Even otherwise, father is usually the role model for the children and they intuitively emulate their father and get inspired by him. Father's occupation also determines the family environment, which, in turns, effects the academic achievement of the child. A look at the table shows:

- Fathers of nearly 59 per cent students are doing manual labour, either as agricultural labourer or as domestic servant or are daily wages or are street vendors.
- Another 13.66 per cent students hail from farming families where the occupation of the father is farming.
- 8.92 per cent students come from families where their father is a skilled worker or is doing some office work.
- Another 7.80 students per cent are those whose fathers are shop keeper or in some such business or trade.
- Senior professional account for 1.43 per cent.
- Only 0.70 per cent students have their father in the teaching profession. Incidentally, more students have their mother in the teaching profession than their fathers. Against 314 students having their mother in the teaching profession, only 221 have their fathers in the teaching profession. This is one area where mothers out number fathers in the positive sense.

Profile of Teachers

Gender-wise Distribution of Teachers

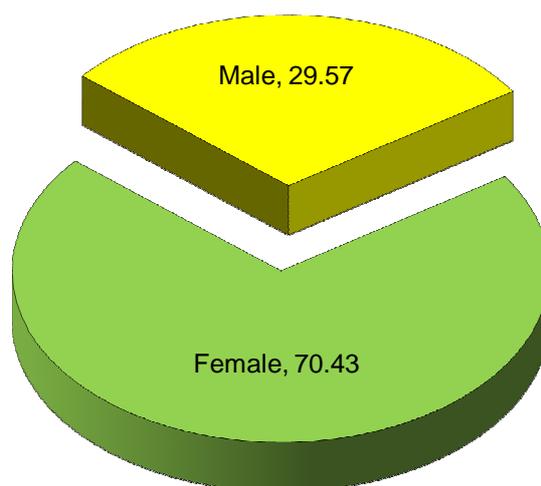
Table 3.9 and figure 3.9 presents the gender-wise distribution of teachers.

Table 3.9 :Gender-wise Distribution of Teachers

Category	Number	Percentage
Male	640	29.57
Female	1524	70.43
Total	2164	100.00

Source: Compiled from SLAS-2013 data.

Fig. 3.9 : Gender-wise Distribution of Teachers (in %)



- Out of 2164 teachers in our sample 1524 (70.43 per cent) are females and the remaining 640 (29.57 per cent) are males.

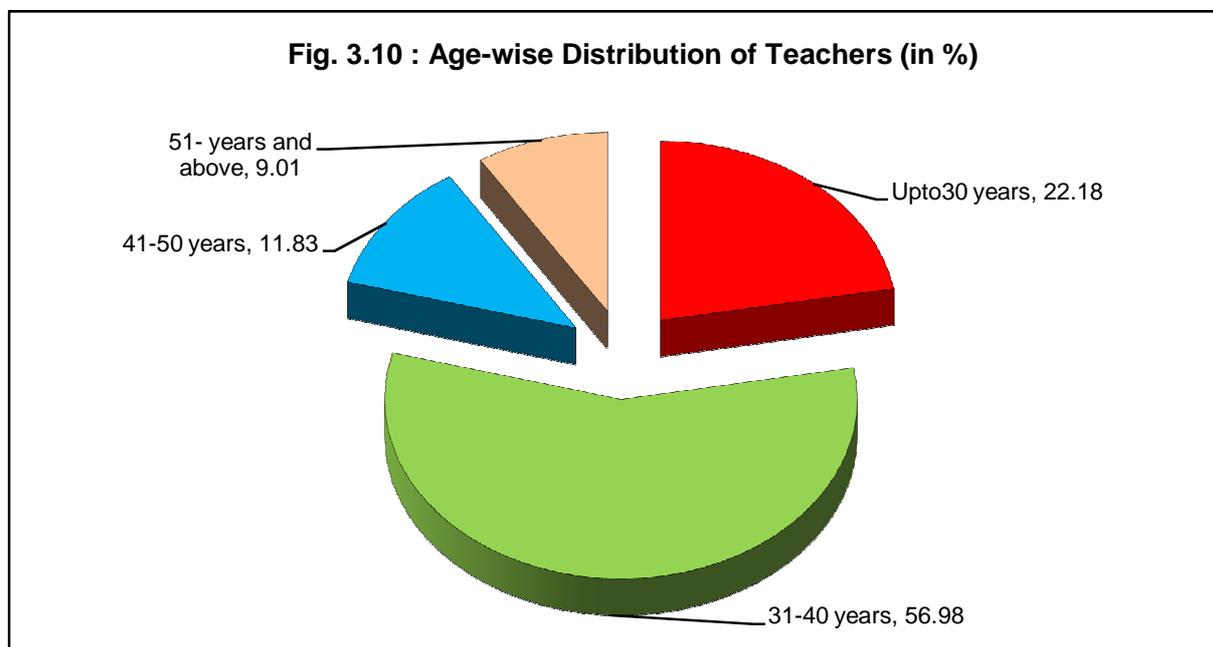
Age-wise Distribution of Teachers:

Table 3.10 and figure 3.10 presents the age-wise distribution of teachers.

Table 3.10 :Age-wise Distribution of Teachers

Category	Number	Percentage
Upto30 years	480	22.18
31-40 years	1233	56.98
41-50 years	256	11.83
51- years and above	195	9.01
Total	2164	100.00

Source: Compiled from SLAS-2013 data.



- 480 (22.18 per cent) teachers are upto 30 years of age.
- Another 1233 (56.98 per cent) are between 31-40 years of age. Therefore, more than 79 per cent of the total teachers are relatively young i.e. below 40 years of age.
- Those between 41-50 years account for 11.83 per cent of the total teachers.
- Only 9.01 per cent teachers are above 50 years of age.

Qualification-wise Distribution of Teachers

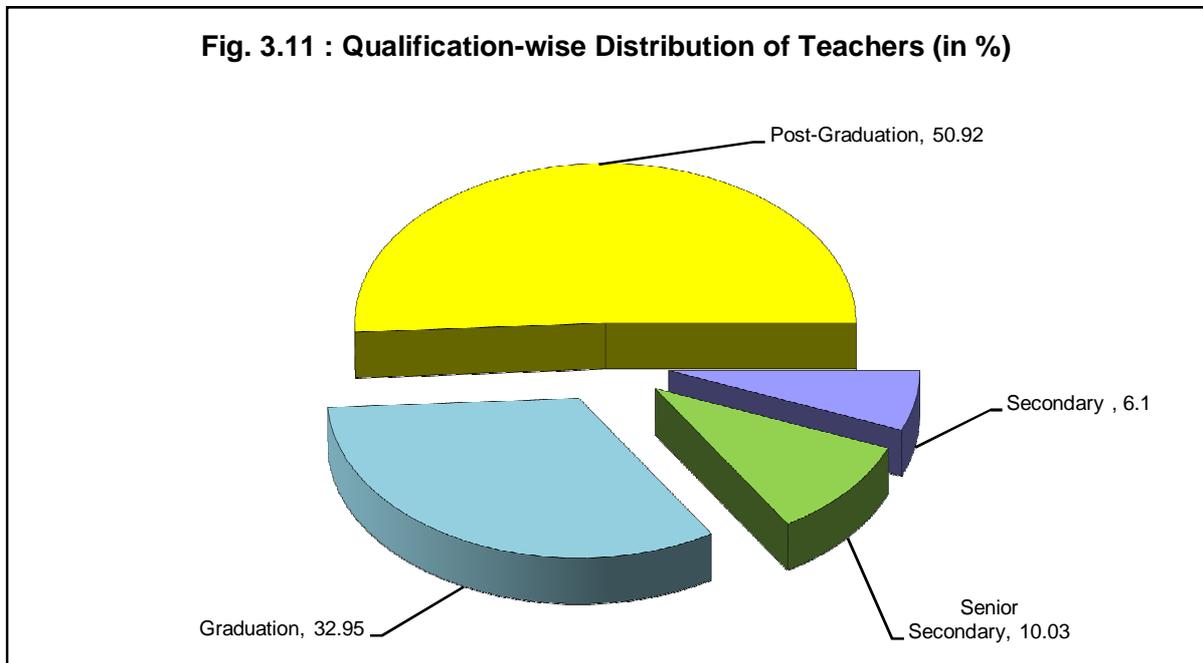
Table 3.11 and figure 3.11 presents the qualification-wise distribution of teachers.

Table 3.11 : Qualification-wise Distribution of Teachers

Qualification	Number	Percentage
Secondary	132	6.10
Senior Secondary	217	10.03
Graduation	713	32.95
Post-Graduation	1102	50.92
Total	2164	100.00

Source: Compiled from SLAS-2013 data.

Fig. 3.11 : Qualification-wise Distribution of Teachers (in %)



- It is heartening to note that a majority of the teachers (50.92 per cent) have done post-graduation.
- Another 32.95 per cent teachers are graduates.
- Thus, more than 83 per cent of all teachers in our sample are graduates or post-graduates.
- Only 10.03 per cent teachers are having senior secondary or higher secondary as a basic academic qualification.
- 6.10 per cent teachers are matric pass.

Employment Status-wise Distribution of Teachers

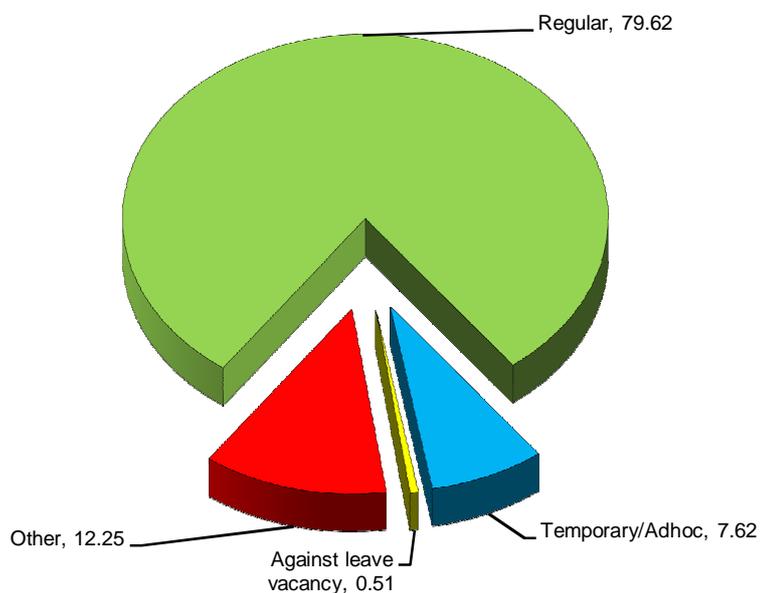
Table 3.12 and figure 3.12 presents the employment status-wise distribution of teachers.

Table 3.12 : Employment Status-wise Distribution of Teachers

Employment Status	Number	Percentage
Regular	1723	79.62
Other	265	12.25
Temporary/Adhoc	165	7.62
Against leave vacancy	11	0.51
Grand Total	2164	100.00

Source: Compiled from SLAS-2013 data.

Fig. 3.12 : Employment Status-wise Distribution of Teachers (in %)



- Nearly 80 per cent teachers are regular teachers.
- Another 7.62 per cent teachers are working on temporary/ adhoc basis.
- About half a per cent teachers are working against leave vacancy.

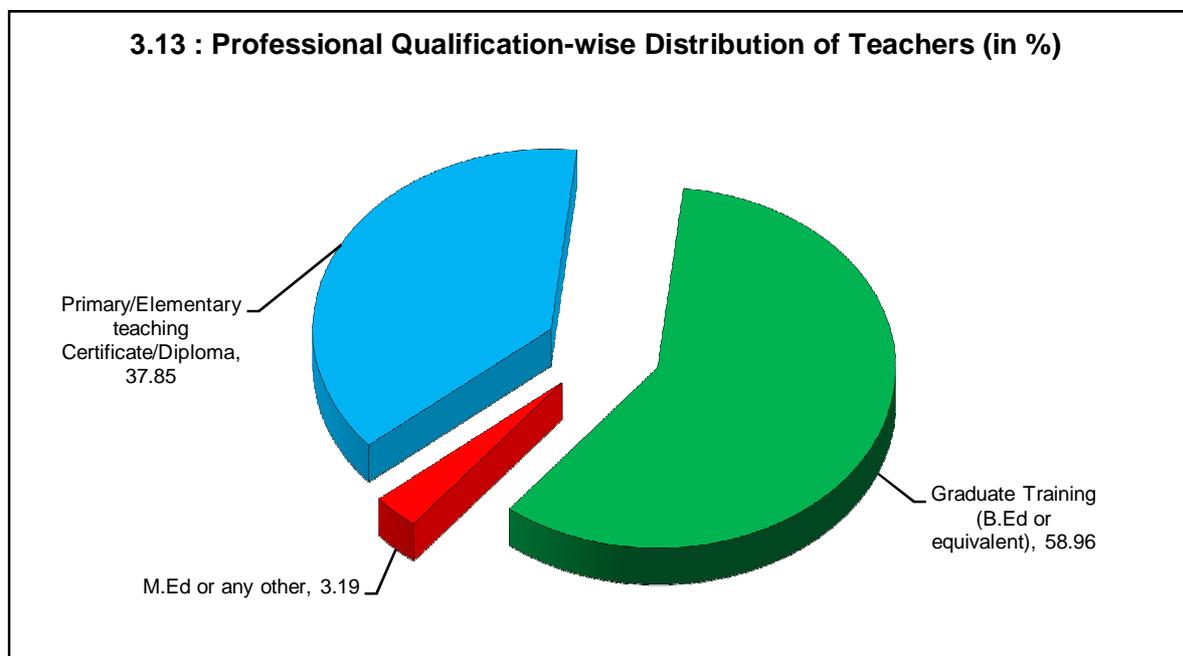
Professional Qualification-wise Distribution of Teachers

Table 3.13 and figure 3.13 presents the professional qualification-wise distribution of teachers.

Table 3.13 :Professional Qualification-wise Distribution of Teachers

Professional Qualification	Number	Percentage
Primary/Elementary teaching Certificate/Diploma	819	37.85
Graduate Training (B.Ed or equivalent)	1276	58.96
M.Ed or any other	69	3.19
Grand Total	2164	100.00

Source: Compiled from SLAS-2013 data.



- Nearly 59 per cent teachers have done graduation level training i.e. they have B. Ed or equivalent qualification.
- 3.19 per cent have post-graduation level training i.e. they have done M. Ed.
- The remaining 37.85 per cent have done certificate or diploma in primary/elementary teaching.

Caste-wise Distribution of Teachers

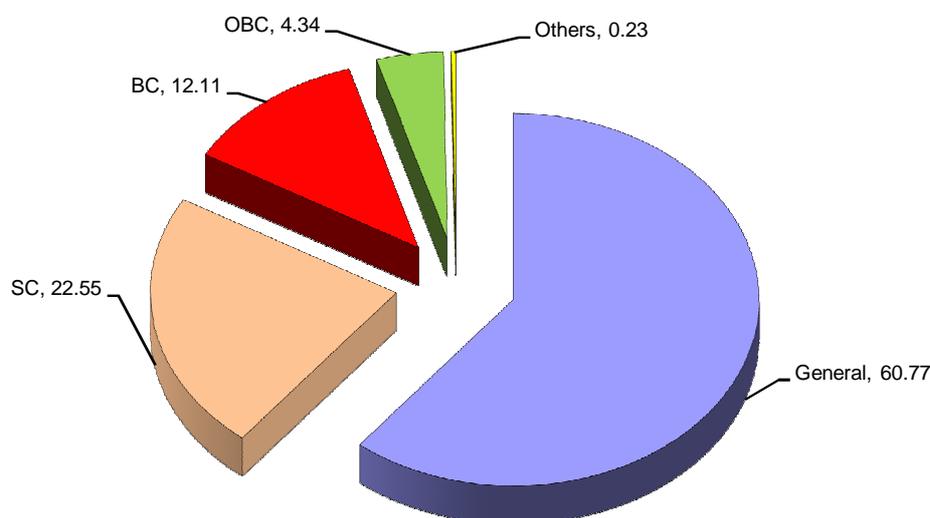
Table 3.14 and figure 3.14 presents the caste-wise distribution of teachers.

Table 3.14 :Caste-wise Distribution of Teachers

Category	Number	Percentage
General	1315	60.77
SC	488	22.55
BC	262	12.11
OBC	94	4.34
Others	5	0.23
Grand Total	2164	100.00

Source: Compiled from SLAS-2013 data.

Fig. 3.14 : Caste-wise Distribution of Teachers (in %)



- 60.77 per cent teachers belong to General Category.
- Scheduled Caste teachers account for 22.55 per cent of the total teachers.
- Another 12.11 per cent hail from Backward Caste and 4.34 per cent from other Backward Castes.

Thus, it is interesting to note that while nearly 70 per cent students in our sample belong to SC/BC/OBC categories, more than 60 per cent of the teachers teaching them belong to General Category.

To sum up, SLAS-2013 covered all the 22 districts, 217 blocks, 2164 schools and 31793 students. More than 80 per cent of the schools covered are public schools being funded and managed by department of education Punjab/ Zila Prishads/Local Bodies and 82.58 per cent of the total schools covered are in rural areas.

More than 78 per cent of the students covered are studying in public schools, the rest in private schools. 52.49 per cent students are males and the remaining 47.51 per cent are females. 69.63 per cent of the total students are from Scheduled Castes, Backwards Castes or Other Backward Castes. Nearly one-third of the students come from below poverty line families. Nearly 7 per cent students are physical challenged. About one-fifth of them are availing private tuitions.

Mothers of nearly one-third students are illiterate. More than 80 per cent of all the mothers are housewives. Another nearly 14 per cent are in farming. Thus, a majority of the students in sample hail from low social and economic status families, with their parents belonging to the labour class or farming families.

In contrast to this, more than two-third teachers are females. Nearly 80 per cent of them are young, below 40 years of age. More than 83 per cent of them are graduates or post-graduates. Almost all of them have some professional training. But unlike 70 per cent of the students who come from SC/BC/OBC background, more than 60 per cent teachers belong to General Category or are from high castes. Thus, socio-economic background of the students and teachers does not match with each other and they belong to two different strata of the society.

Section-2

Methodology

To analyse data, we have used various statistical techniques such as mean, standard deviation, t-test, Analysis of Variance (ANOVA), Logistic Regression etc. In India education system is predominantly examination oriented where marks obtained in the examination are generally taken as a bench mark for academic performance. Therefore, in the present study, we have taken marks obtained as an index of academic performance.

When we have to analyse academic performance of a group of students, we require some measure of the central tendency. Suppose, we to compare the performance of two sets of students. This can be done by comparing the two frequency distribution direct, but this is a tedious process. Another alternative is to take some central value of the two distributions and compare them instead of comparing the distributions themselves. One such central value is arithmetic mean. In this study, we have used arithmetic mean as a measure of central tendency. The other statistical techniques used are:

Standard Deviation

The difficulty with using mean as a representation of distribution is that it does not tell us anything about the scatter of the distribution around the mean. The scatter is called dispersion in statistics. When the dispersion of the distribution is also known in addition to the arithmetic mean, the description of the distribution of marks will be greatly improved. If we are asked how well the students did, we should answer by giving the arithmetic mean and the dispersion of that distribution. There are three measures of dispersion-range, the mean deviation and the standard

deviation. Out of these three, standard deviation is generally favoured over the other two because of its desirable mathematical properties. It is also preferred because it is expressed in the same units as that of data, making it more appropriate for any sort of analysis. In the present study, we have used standard deviation as a measure of dispersion. Symbolically as

$$\sigma = \sqrt{\frac{\sum (X_i - \bar{X})^2}{N}}$$

Where

X_i is value of the i^{th} observation

\bar{X} is mean of the distribution; and

N is number of observations

t-Test

Suppose, we have two groups of students - A (high income group) and B (low income group) and we want to test whether there is a significant difference between the marks obtained by two groups we require some method test to test the difference of two means. We have used t-test for this purpose. A t-test assesses whether the means of two groups are statistically different from each other. Symbolically as

$$t = \frac{\bar{X}_A - \bar{X}_B}{\sqrt{\frac{\text{Var. A}}{N_A} + \frac{\text{Var. B}}{N_B}}}$$

$$t = \frac{\text{Mean Difference}}{\text{Standard Error}}$$

ANOVA F-Test

Analysis of variance (ANOVA) is a statistical test that can be used in cases where there are more than two groups and differences among their measures are to be tested. In a way, it is an extension of t-test. The null hypothesis for ANOVA is that mean is the same for all groups. The alternative hypothesis is that the mean or average is not the same for all groups. The ANOVA test procedure produces in F-statistics which is used to calculate the P-value. Symbolically

$$F = \frac{\textit{Explained Variance}}{\textit{Unexplained Variance}}$$

or

$$F = \frac{\textit{between group variability}}{\textit{within group variability}}$$

We have used ANOVA F-test for testing the mean differences where there are more than two groups.

Binary Logistic Regression

A binary logistic regression is used where the dependent variable is a dichotomous variable i.e. having two outcomes such as 'yes' or 'no', 'success' or 'failure'. The predictors or explanatory variables may be categorical and/are measured to interval/ratio scale. A logistic regression calculates the probability of success on the probability of failure. The results of the analysis are in the form of odds ratio. The odds ratio is a measure of the size of effect describing the strength of association or non-independence between two binary values. The impact of gender, caste, economic status of the child's family, availability of private tuition, mother's education, father's occupation, number of siblings and help in study at home, type of school and location of schools on academic performance of the students has been studied by using this regression analysis. The software package namely SPSS-16 has been used to develop the logistic regression model.

CHAPTER-4

IMPACT OF PUPIL'S PERSONAL & DEMOGRAPHIC CHARACTERISTICS AND SOCIO-ECONOMIC BACKGROUND ON ACADEMIC PERFORMANCE

In a study on children aged 13-14 years in one of the Indian states, Kingdon (1999) found that home background and school influence are both important to student's academic achievement. A number of other studies have also examined the effect of various factors on student's academic performance. Some studies have found personal characteristics of the student such as gender, help in study at home, taking tuition, etc. and socio-economic factors like parent's education, their occupation, family income and number of siblings as significant determinants of student performance, others have found the school related factors such as type of school, location, class-size, school resources, teacher's educational qualification and training, their salary, their level of satisfaction and supervisory role of the principal etc as important determinant of their academic achievement. However, the relative effectiveness of these determinants has remained a debatable matter in the absence of any conclusive evidence. In this chapter, we will discuss the impact of child's personal and demographic characteristics and socio-economic status of his/her family such as parent's education, their occupation, family income and number of siblings etc on the academic performance of student. The impact of school level and teacher related variables will be discussed in the subsequent chapters.

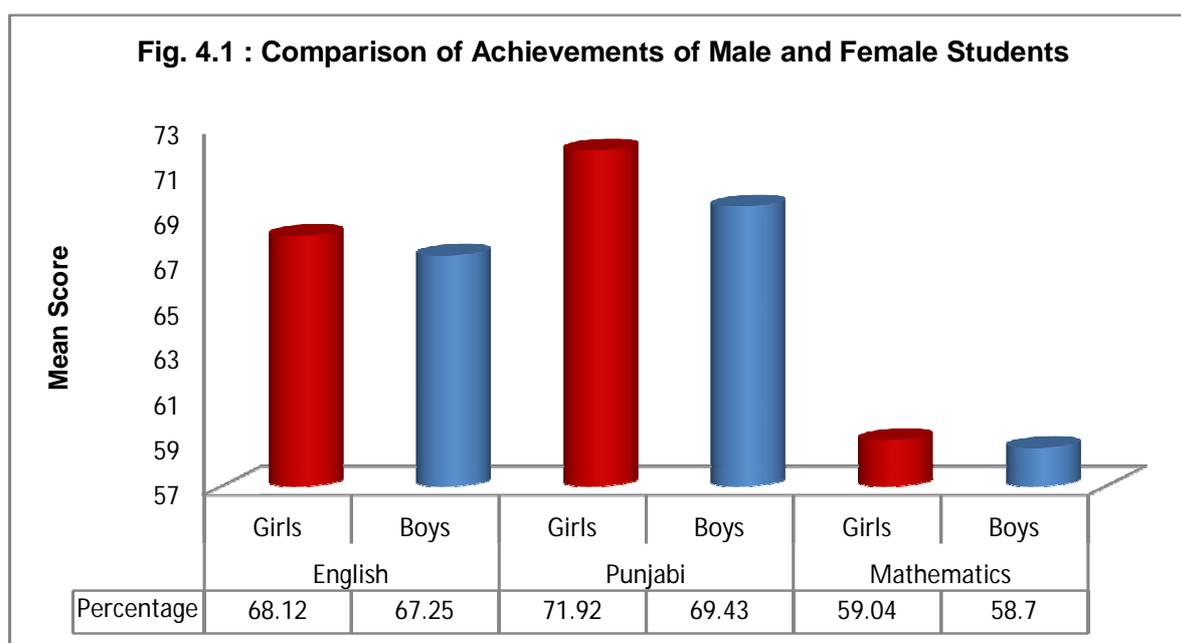
Gender as a Factor in Academic Performance

It is generally believed that girls are more deprived than boys. This is also reflected in the historically obtained patterns of educational attainment and levels of literacy thrown up by the Census of India figures. In fact, one of the objectives of the SSA programmes launched for universalisation of elementary education has been to bridge gender gaps at elementary education level with time bound objectives. Thus, we begin our empirical analysis with a discussion on the level of achievement of class III boys and girls in three subjects of English, Punjabi and Mathematics.

Table 4.1 : Comparison of Achievements of Male and Female Students

Subject	Gender	N	Mean score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	Girls	15105	68.12	20.83	0.87	3.764*	31791
	Boys	16688	67.25	20.66			
Punjabi	Girls	15081	71.92	20.56	2.49	10.703*	31725
	Boys	16646	69.43	20.77			
Mathematics	Girls	15075	59.04	22.63	0.34	1.339	31672
	Boys	16599	58.70	22.93			

Source: Compiled from SLAS-2013 data.
*Significant at 1 per cent level of significance.



A look at the table shows that mean score of girls is higher than boys in all the three subjects under consideration. The maximum difference is in Punjabi language where girls are leading boys by nearly two and a half percentage points. This is followed by English, where girls' average score compared to boys is higher by 0.87 per cent. The gap narrows down further in case of Mathematics, where average score of girls is only a shade (0.34 per cent) better than boys. A look at the standard deviation column shows that while standard deviation is roughly of the same magnitude in case of English and Punjabi, the scores are more dispersed in case of Mathematics. To find out, whether these differences in the score of girls and boys are statistically significant or not, we have calculated t-values. Our results show that while the difference in

mean scores is statistically significant in case of Punjabi and English, it is not significant in case of Mathematics. Thus, we can say with confidence that while girls have performed better in Language, there is no difference in score of girls and boys in case of Mathematics.

Rural-Urban Gap in Academic Achievement

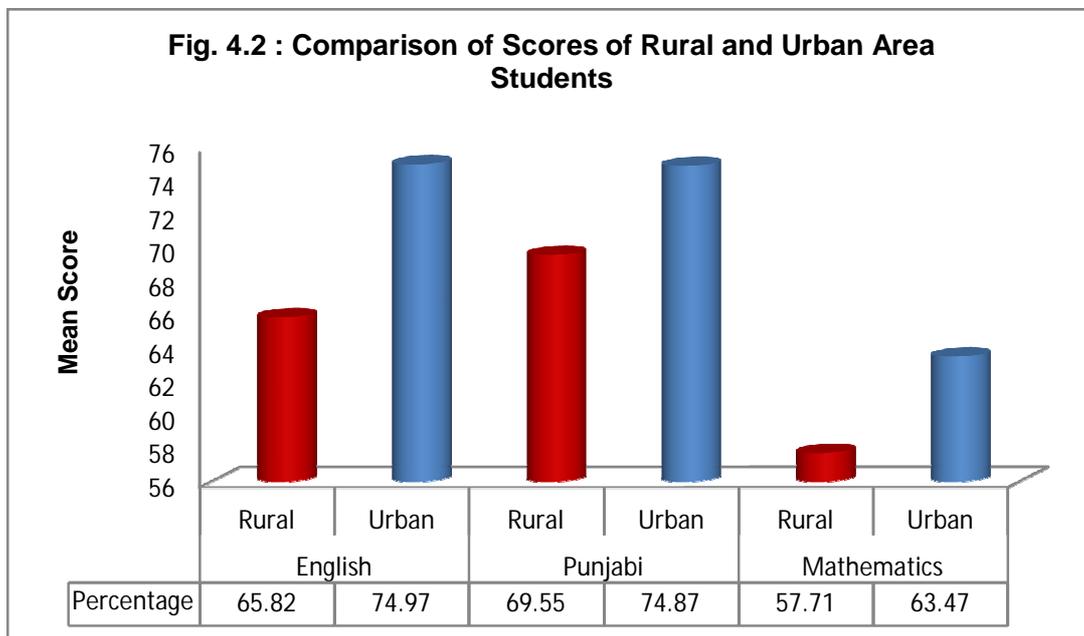
When we talk of gap of the elementary education level, we not only refer to gender and social category gap but also to rural-urban gap. In fact, Aggarwal (2000) finds rural-urban difference in achievement scores more striking as compared to gender disparities. This difference is at least partly attributable to better quality of schools in urban areas compared to rural areas. Urban area schools generally have better infrastructural facilities and are better equipped with teachers than rural area schools. The family background of urban area students is also better in terms of their parent's education level compared to parents of rural area children. There may be several other factors at play but the fact remains that students from rural background are at a relative disadvantage. The table below gives the relative score of rural and urban area students for class III in Punjab covered by SLAS-2013. The table shows that urban areas students are scoring higher marks compared to rural area students in all the three subjects. In English, they are ahead of rural areas students by 9.15 percentage points, which is a huge gap.

Table 4.2 : Comparison of Scores of Rural and Urban Area Students

Subject	Location	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	Rural	25403	65.82	20.786	9.15*	32.010	31791
	Urban	6390	74.97	18.916			
Punjabi	Rural	25378	69.55	20.79	5.32*	18.426	31725
	Urban	6349	74.87	19.81			
Mathematics	Rural	25326	57.71	22.807	5.76*	18.088	31672
	Urban	6348	63.47	22.159			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.



Not only have they had 9.15 per cent higher marks, a look at the standard deviation column shows that there is a much less dispersion around the mean compared to rural area pupils. The gap in Punjabi is 5.32 percentage points. Once again, standard deviation is also lower for urban area students. In mathematics, urban area students' average score is 5.76 per cent higher compared to the score of rural area students. A look at the t-values shows that these gaps are, statistically speaking, highly significant at 1 per cent level of significance. Thus our results show that the average score of urban area students is significantly higher than the average score of rural area students in all the three subjects.

Economic Background of Family and Students Academic Performance

Economic background of the family is likely to have effect on academic achievement of student. In the first place, a family with high income will have a choice of selection of school, because they send their ward to costly good quality school. Secondly, economically well off parents can provide more facilities at home, including modern teaching aids and computer etc. Thirdly, they may provide the child tuition or send him/her to coaching class. Fourthly, the family environment of economically better off families is likely to be more congenial and less stressful. In this way, economic background of the family plays a significant role in learning and overall growth and development of the child. To measure economic status of family, we should have information about income and wealth of the family. In our survey we do not have that information. Instead, we have information on whether the family of a child belongs to Below Poverty Line (BPL) category or above non BPL category. Although, it is a rough measure, but in

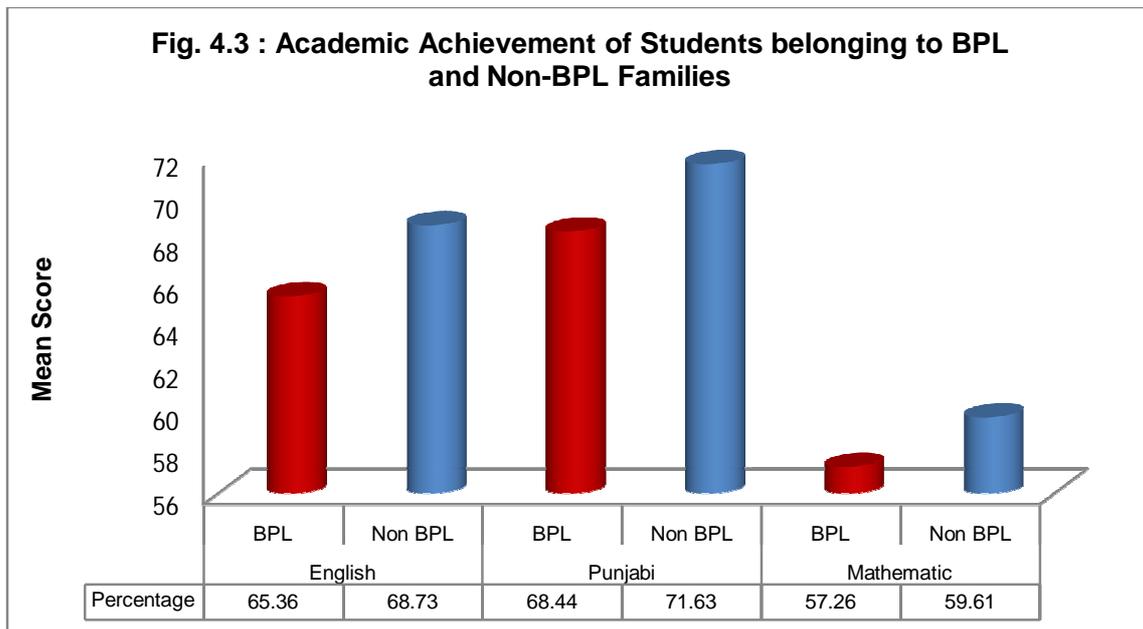
the absence of any other information, we have used BPL-Non-BPL category to find out the impact of economic background of the family on child's academic performance. The following table gives us information about the academic score of children belonging to these two categories.

Table 4.3 : Academic Achievement of Students belonging to BPL and Non-BPL Families

Subject	Economic Category	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	BPL	10060	65.36	20.087	3.37	13.53*	31791
	Non-BPL	21733	68.73	20.965			
Punjabi	BPL	10044	68.44	20.649	3.19	12.78*	31725
	Non-BPL	21683	71.63	20.666			
Mathematics	BPL	10020	57.26	22.754	2.35	8.54*	31672
	Non-BPL	21654	59.61	22.803			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.



The table shows that the average score of children from above poverty line families is higher by 3.37 percentage points in English, 3.19 percentage points in Punjabi and 2.35 percentage points in Mathematics. A look at standard deviation column shows that dispersion around the mean is more or less similar in case of English and Punjabi, but scores of both the categories are more dispersed in case of Mathematics. But the difference between the two means is significant at 1 per cent level of significance in all the three subjects. Therefore, our results show that children from above poverty line families have significantly better academic

performance compared to students from BPL families in our sample. Thus, it appears economic background of the family is a significant factor which affect the academic performance of students.

Social Caste of Pupils and their Academic Performance

Here, we will discuss whether caste of the student affects his/her academic performance. Normally, caste should not be an important factor in determining one's academic ability. But in the Indian context, caste becomes important because caste is intermingled with economic class. For example, in rural areas of Punjab, most of the landed assets are owned by upper caste households and the share of SC's, BC's and OBC's is relatively small. This, in turn, is reflected in the economic condition of the households belonging to different castes. Thus, caste affects academic performance largely through economic background of the family to which the child belongs. Hopefully, the spread of education in due course of time will break the nexus between caste and class, but at the moment, it does exist. Table 4.4 gives information on academic performance (represented by average marks obtained) of students belonging to different caste groups.

Table 4.4 :Caste-wise Academic Performance of Students

Caste	N	Mean Score	Standard Deviation
English			
SC	16328	63.77	21.00
BC	5298	68.19	19.52
OBC	512	71.76	17.41
General	9174	73.95	19.54
Others	481	69.57	19.60
Total	31793	67.66	20.75
Punjabi			
SC	16311	68.36	21.01
BC	5283	70.64	20.43
OBC	505	71.46	19.38
General	1950	74.56	19.84
Others	478	70.76	18.83
Total	31727	70.61	20.71
Mathematics			
SC	16239	56.70	23.06
BC	5282	59.18	22.81
OBC	508	60.07	19.79
General	9137	62.40	21.97
Others	478	59.58	23.11
Total	31674	58.86	22.79

Source: Compiled from SLAS-2013 data.

Fig. 4.4 (A): Caste-wise Academic Performance of Students (English)

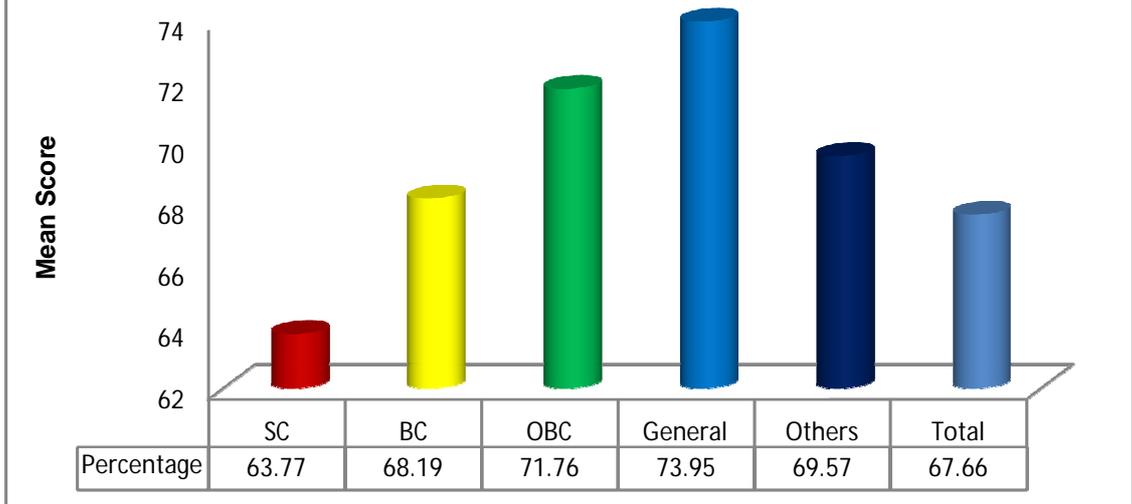
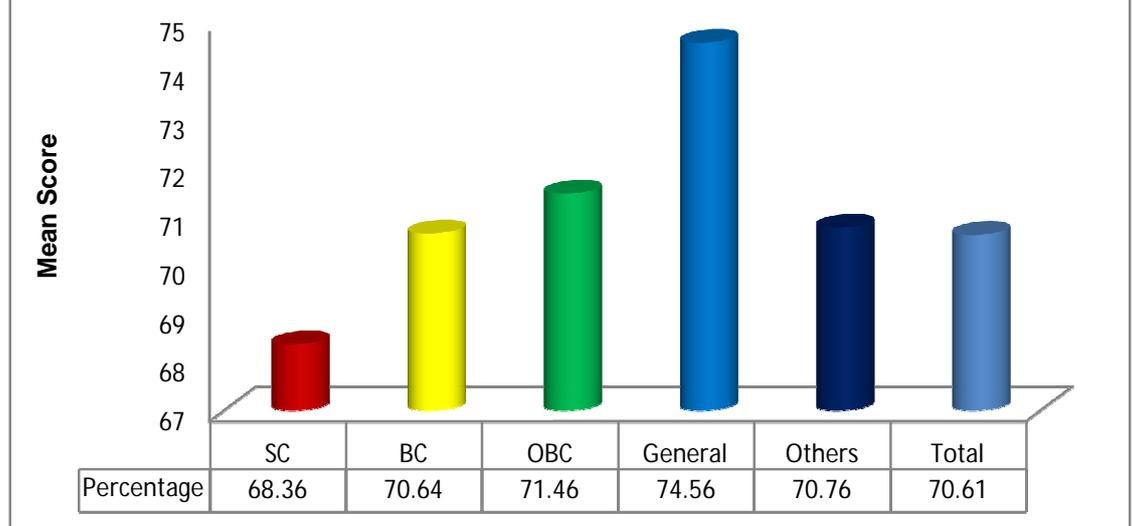
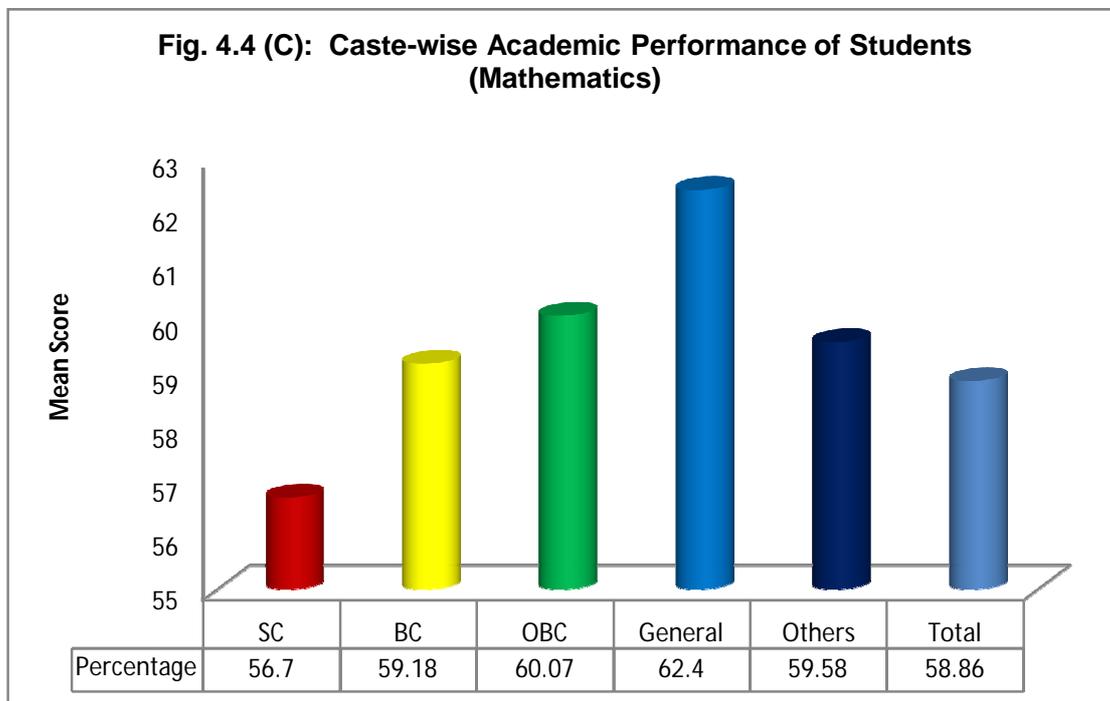


Fig. 4.4 (B): Caste-wise Academic Performance of Students (Punjabi)





A look at the table shows at least two things. First, a majority of the students in our sample are from SC background, mainly because people from higher castes with relatively better economic background prefer to send their children to private schools, which, in their perception, provide better education. If we club SC's, BC's and OBC's together more than two-third students in our sample are from these socially backward castes. General category students constitute slightly less than 29 per cent of the sample. Secondly, as we move from lower castes to upper castes in the social hierarchy, the academic scores of students go on increasing. For example, in English, there is a gap of more than 10 percentage points between the average score of General Category students and Scheduled Caste students. BC's, OBC's and 'others' fall in between these two extremes. This gap narrows down to 6.20 percentage points in Punjabi and 5.70 percentage points in Mathematics. Lower marks obtained by SC students are also much widely spread around the mean compared to the spread of marks of upper caste students. This is brought out clearly by the standard deviation figures. Whether this mean difference of 10 per cent in English or 6.20 per cent in Punjabi or 5.70 per cent in Mathematics is statistically significant or not, cannot be decided simply by looking at the figures. For that, we have applied one-way ANOVA test by using SPSS-16. We will test the following Hypotheses.

H₀: There is no difference in the performance (mean percentage score) of students belonging to different castes.

H₁: There is difference in the performance (mean percentage score) of students belonging to different castes.

Table 4.4 (a): One-way ANOVA Table to Test Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Sig
English	622774.180	4	155693.545	378.758	.000*
Punjabi	225795.808	4	56448.952	133.767	.000*
Mathematics	191616.894	4	47904.223	93.259	.000*

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.

From the table we find that the calculated value of F is significant at 1 per cent level of significance in all the three subjects. Thus, our one-way ANOVA test does not support the null hypothesis. There, in fact, is a significant difference between the mean percentage score of students across caste categories they belong to. We may, therefore, conclude that significant differences in means score is due to the fact that they belonged to different caste categories. Our findings are in line with the results of some earlier studies which find that boys and children belonging to the upper castes perform better (Dreze and Kingdon, 2001; Aggarwal, 2000; Filmer *et.al*, 1997).

Impact of Help in Study at Home on Academic Performance of Students

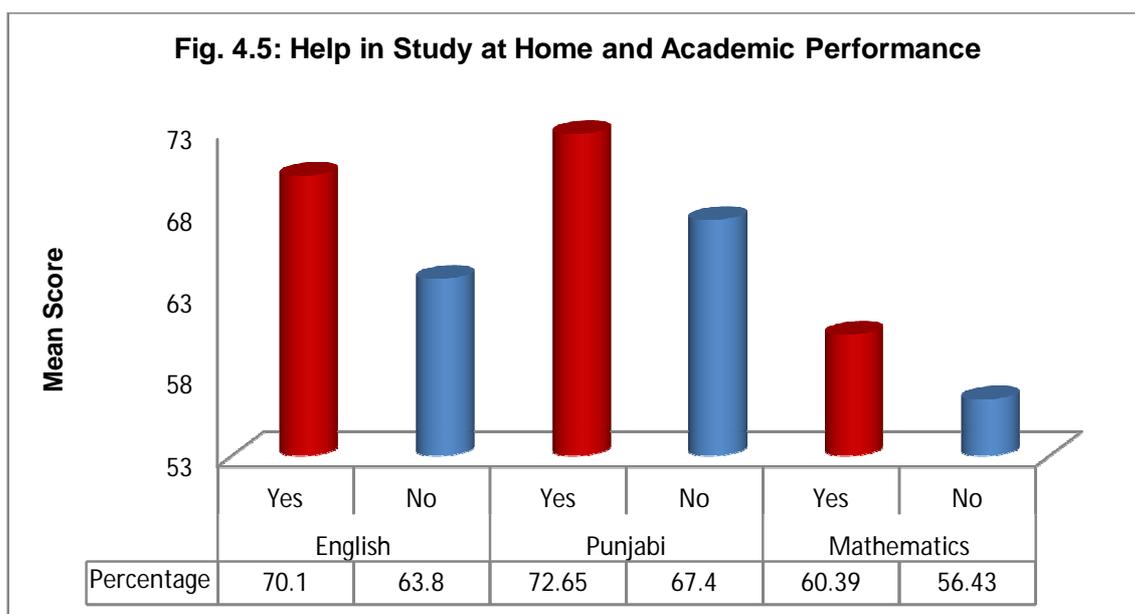
It is rightly said that a child's learning starts from home, which leaves an ever lasting impact throughout his/her life. Economically less privileged or unemployed parents may not meet the needs of their children fully. In a study of US children, Bauer (2004) pointed out that students' performance may be affected by a number of factors, including what is taught in schools, a student's native intelligence and out of school learning opportunities that are heavily influenced by a student's home environment. Environment, in turn, will determine whether a child gets help in study at home or not. So here, we will discuss what the impact of help in study at home is on student academic performance defined as percentage of marks obtained in various subjects.

Table 4.5 : Help in Study at Home and Academic Performance

Subject	Help available at home	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	Yes	19498	70.10	20.005	6.30	26.63*	31791
	No	12295	63.80	21.318			
Punjabi	Yes	19444	72.65	19.952	5.25	22.12*	31725
	No	12283	67.40	21.477			
Mathematics	Yes	19441	60.39	22.310	3.96	15.13*	31672
	No	12233	56.43	23.341			

Source: Compiled from SLAS-2013 data.

*Significant at 1per cent level of significance.



First of all, it is heartening to note that more than 61 per cent students get some help in study at home in all the three subjects and the remaining nearly 39 per cent do not get any help. Column 4 of the table shows that mean score of those, who get some help in study at home, is substantially higher than those who do not get any help. The difference in the mean score is highest, i.e. 6.30 percentage points in English, followed by 5.25 percentage points in Punjabi and 3.96 percentage points in Mathematics. Not only those, who get help in study at home, score higher marks on an average than those who do not receive any help in study at home, they also have less scatter around the mean. In all the three subjects, the 'Yes' group has lower value of standard deviation compared to the 'No' group. In case of all three subjects, this difference in the

mean score of 'Yes' and 'No' group is statistically highly significant as shown by the t-values in column 7. Thus, our results show that availability of help in study at home is very-very important at this stage (class-III) in determining their academic performance in various subjects. Policy makers must take note of this fact and do something for those unfortunate ones, who do not have any help in study at home for whatever reasons (may be parents are not educated or maybe they cannot afford any tuition or both).

Impact of Tuition on Academic Achievement of Students

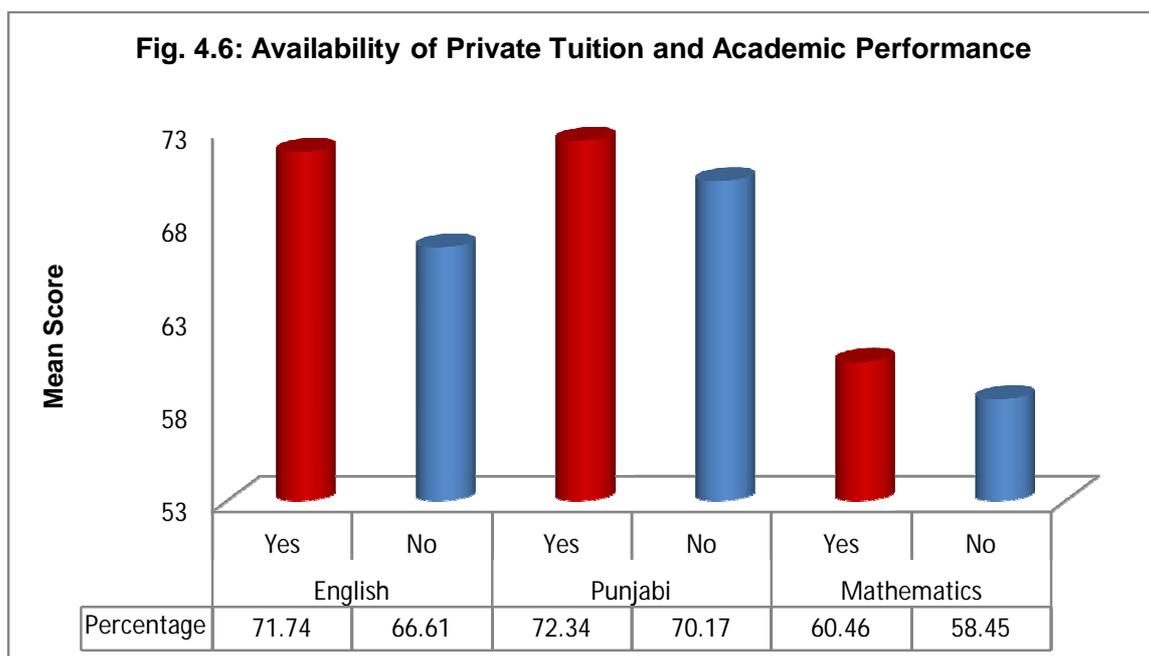
Another factor, which at the school level is considered important in determining the

Table 4.6 :Availability of Private Tuition and Academic Performance

Subject	Availability of Private Tuition	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	Yes	6527	71.74	19.577	5.13	17.87*	31791
	No	25266	66.61	20.915			
Punjabi	Yes	6495	72.34	20.11	2.17	7.59*	31725
	No	25232	70.17	20.84			
Mathematics	Yes	6497	60.46	22.18	2.01	6.36*	31675
	No	25177	58.45	22.93			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.



academic performance of students is the availability of private tuition. Private tuition, if available, does help the child in doing homework regularly which in turn affects his/her performance in the school. Of course, every child cannot be expected to have this facility whose parents can afford to pay for private tuition. In our sample one out of five students has this facility of private tuition at home.

The table 4.6 gives us the mean score of those who have access to this facility compared to those who do not have this privilege. A look at the table shows that the average score of those, who have the availability of private tuition, is higher than the average score of others who do not have this facility in all the three subjects. In English, the gap is more than 5 percentage points as where in Punjabi and Mathematics, it is slightly above two percentage points. Not only the group with tuition has higher marks, their dispersion around the means, as represented by the value of standard deviation, is also less. A look at the t-value column shows that the difference in the mean score of two groups for all the three subjects is statistically significant. Therefore, we can say on this basis that the availability of private tuition does help in significantly improving the academic performance of students.

Relationship between Family-size and Academic Achievement

Normally one would expect a negative relationship between family-size and academic achievement because larger the number of children, the lesser the attention each one of them gets from parents. Other things remaining the same, the number of facilities will have to be shared. Cherian (1990) conducted a study on family-size and academic achievement of children. The sample consisted of 369 boys and 652 girls in the age group of 13-17 years. The study found negative relationship between family-size and their academic achievement. In our data, we have information on number of siblings. We have made two groups. One consisting of those, where the student is the only child or have one sibling i.e. brother or sister. The other group consists of those where there are three or more children in the family. The following table gives information about their average scores in all the three subjects. First of all, a look at the 'Numbers' column shows that about 28 per cent children in our data come from families where he/she is either a single child or has only one sibling. This means, the remaining nearly 72 per cent children come from families where they have at least three or more children.

Table 4.7 :Impact of Family Size and Academic Performance

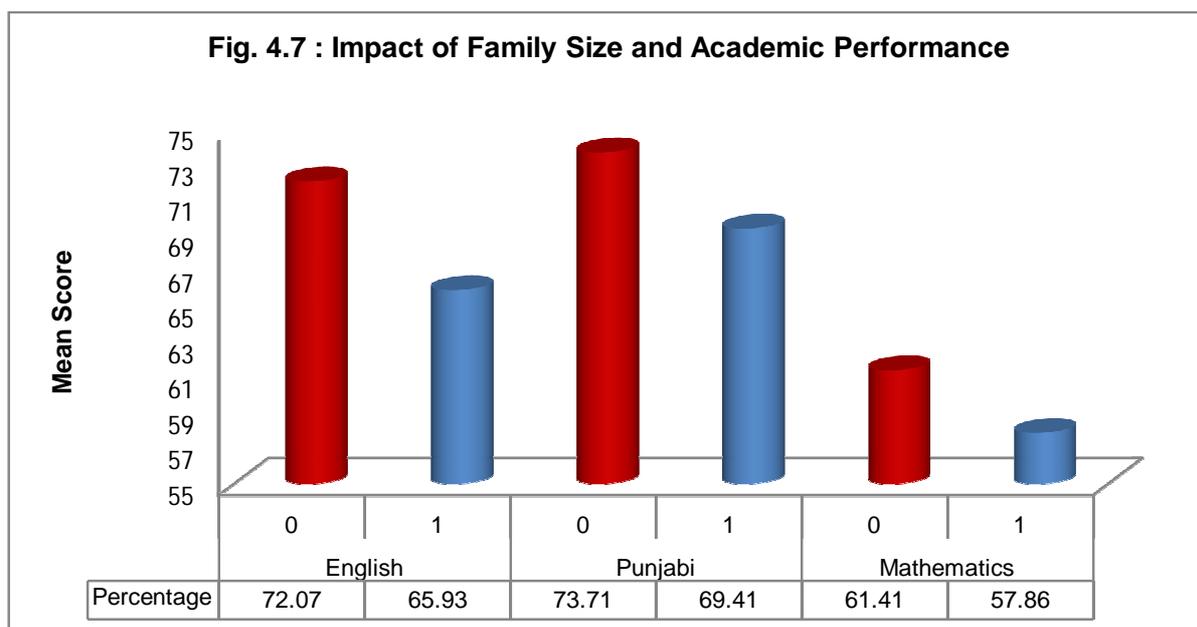
Subject	Family-Size	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	0	8961	72.07	20.088	6.14	23.95*	31791
	1	22832	65.93	20.751			
Punjabi	0	8914	73.71	20.334	4.30	16.72*	31725
	1	22813	69.41	20.725			
Mathematics	0	8917	61.41	22.450	3.55	12.51*	31675
	1	22757	57.86	22.852			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.

0 means single child or one sibling

1 means where there is more than one sibling



A look at the mean scores column shows that students from small families (with one or two children) have higher marks than their counterparts from larger families in all the three subjects. The difference in mean scores ranges from 6.14 percentage points in English to 4.30 percentage points in Punjabi and 3.55 percentage points in Mathematics. A look at the 't-value' column shows that these differences in means scores are statistically significant in case of all the three subjects at 1 per cent level of significance. Thus, our results confirm the finding of an earlier study by V. D. Cherian that there is an inverse relationship between family-size and academic achievements of students.

Impact of Student's Physical Disability on their Academic Performance

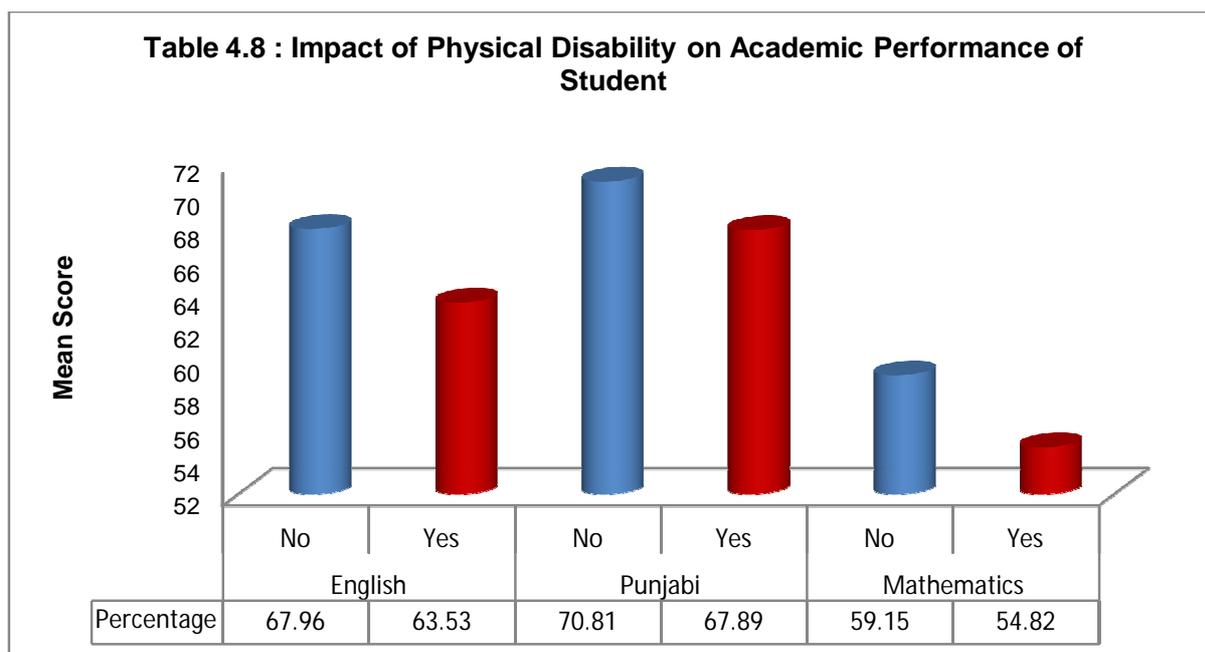
In our sample, out of 31793 students, 2149 (6.75 per cent) are having some physical disability. Physical disability, apart from creating physical hindrance, also creates a psychological inferiority complex in the child, which may affect his/her academic performance. Here, we shall test the impact of physical disability on their academic score in the three subjects. A look at the table shows that in English, normal students are scoring 4.43 per cent higher marks compared to their counterparts with physical disability.

Table 4.8 : Impact of Physical Disability on Academic Performance of Student

Subject	Physical Disability	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	No	29644	67.96	20.644	4.43	9.56*	31791
	Yes	2149	63.53	21.756			
Punjabi	No	29573	70.81	20.613	2.92	6.32*	31725
	Yes	2154	67.89	21.871			
Mathematics	No	29526	59.15	22.656	4.33	8.50*	31672
	Yes	2148	54.82	24.285			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.



In Mathematics, this gap is 4.33 per cent and it further narrows down to 2.92 per cent in case of Punjabi language. A look at the t-value column shows that this gap is statistically significant at 1 per cent level of significance in case of all the three subjects. Policy makers will have to take note of this fact and devise ways to bring the children with physical disability at par with other normal students so that they do not suffer academically on account of their physical disability.

Impact of Home Work checked on Student Academic Performance

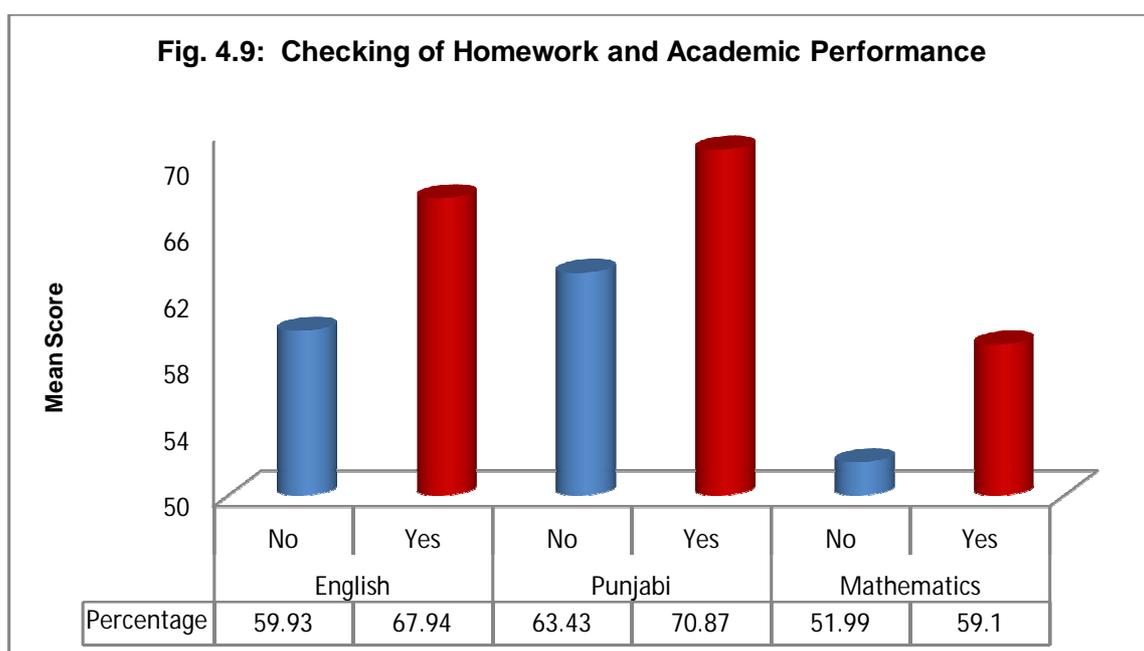
For a student of third standard, it is necessary that his/her home work is regularly checked

Table 4.9 :Checking of Homework and Academic Performance

Subject	Homework Checked	N	Mean Score	Standard Deviation	Mean Difference	T-value	Degrees of Freedom
English	No	1099	59.93	23.71	8.01*	12.60*	31791
	Yes	30694	67.94	20.58			
Punjabi	No	1102	63.43	23.68	7.44*	11.74*	31725
	Yes	30625	70.87	20.54			
Mathematics	No	1100	51.99	24.77	7.11*	10.18*	31672
	Yes	30574	59.10	22.68			

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.



and if there are problems with the home work, his/her difficulty is removed. The following table gives information on the average score of those students, whose home work is regularly checked vis-à-vis those whose home work is not checked. Though home work is checked in the school by the class teacher, but to have an authentic answer, the question was asked from the students. A look at the table shows that more than 96.5 per cent students in all the three subjects have reported that their home work is checked regularly. Only three and a half per cent students have reported that their home work is not checked regularly. A look at the mean score column shows that there is a substantial difference between the mean score of those, where home work is checked compared to those whose home work is not checked. The difference in the mean score is 8.01 per cent in English, 7.44 per cent in Punjabi and 7.11 percentage points in Mathematics. Apparently, there is a substantial difference but to check whether the mean score of the two categories are statistically different each other or not, we applied t-test. The results show that t-values for all the three subjects are statistically significant at 1 per cent level of significance. Therefore, we may conclude that the mean score of those students whose home work is regularly checked is significantly higher than those whose home work is not checked and this is true in case of all the three subjects.

Mother's Education and Academic Performance of Students

Mother is the basic provider of primary care for her children. The mother may also be the role model for a child. Mother's education may affect directly a child's development and his/her overall growth. If the mother is educated, it helps the child in getting mother's guidance in completing school's home work/assignment. An educated mother helps in creating a learning environment at home. Magnuson and McGrader (2000) found that in US, an increase in mother's education is significantly and positively associated with child's academic school readiness and negatively associated with his/her academic problems. Similar results have been reported from India by Bhatnagar and Shormas (1992), Penda and Jena (2000) and Pandey (2008). In the light of this kind of evidence in the existing literature, mother's education can be considered as one of the important factors in determining academic performance of the student. Following points emerge from these tables.

Table 4.10 (A) :Mean Percentage Score by Mother's Education (English)

Sr. No	Mother's Education Status	N	Mean Score	Standard Deviation
1.	Father/Mother/both not alive	737	60.28	22.92
2.	Illiterate	9801	63.85	20.69
3.	Literate	3168	65.14	20.63
4.	upto Primary	5502	66.96	19.92
5.	upto Elementary/Middle	3730	69.97	19.61
6	upto Secondary	4566	72.27	19.37
7.	upto Senior Secondary	2092	75.48	18.69
8.	upto Degree & above	741	82.12	17.43
9.	Information not available	1456	66.16	24.34
	Grand Total	31793	67.66	20.75

Source: Compiled from SLAS-2013 data.

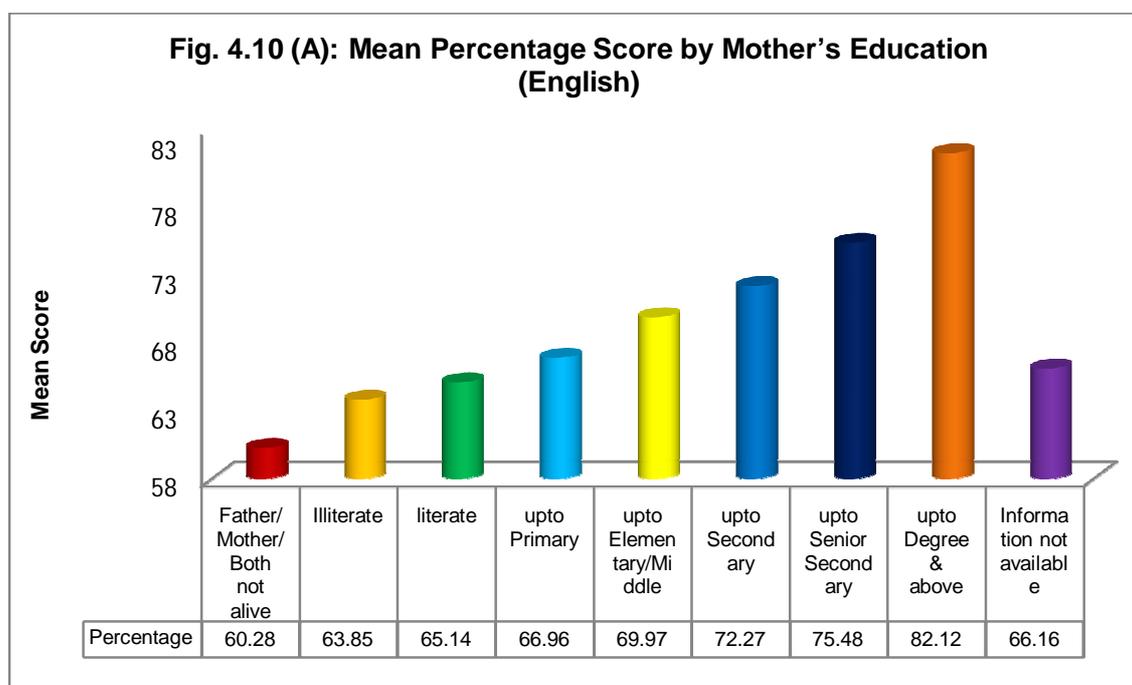


Table 4.10 (B) :Mean Percentage Score by Mother’s Education (Punjabi)

Sr. No	Mother’s Education Status	N	Mean Score	Standard Deviation
1.	Father/Mother/both not alive	735	66.17	22.42
2.	Illiterate	9790	67.96	20.92
3.	Literate	3162	69.69	20.09
4.	upto Primary	5511	70.65	20.13
5.	uptoElementary/Middle	3719	72.16	20.27
6	upto Secondary	4554	74.23	19.55
7.	upto Senior Secondary	2085	75.55	19.78
8.	upto Degree & above	736	79.14	18.09
9.	Information not available	1435	65.84	24.08
	Grand Total	31727	70.61	20.71

Source: Compiled from SLAS-2013 data.

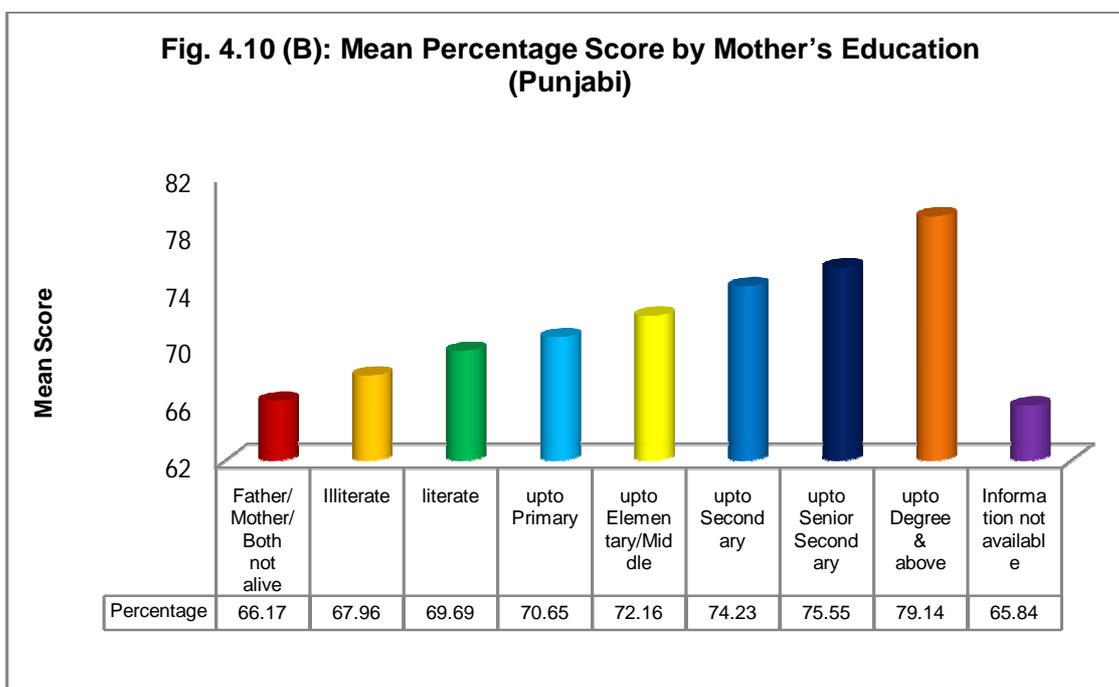
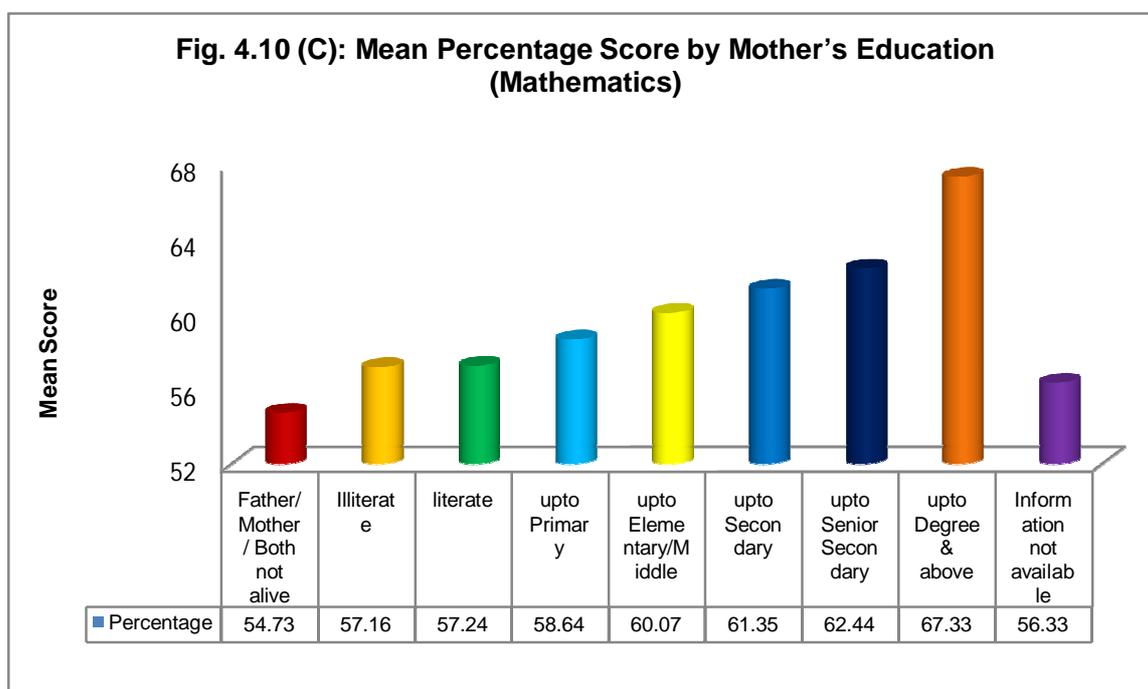


Table 4.10 (C) :Mean Percentage Score by Mother’s Education (Mathematics)

Sr. No	Mother’s Education Status	N	Mean Score	Standard Deviation
1.	Father/Mother/both not alive	738	54.73	23.25
2.	Illiterate	9757	57.16	23.09
3.	Literate	3141	57.24	23.09
4.	upto Primary	5507	58.64	22.46
5.	uptoElementary/Middle	3707	60.07	21.88
6	upto Secondary	4562	61.35	22.33
7.	upto Senior Secondary	2085	62.44	22.24
8.	upto Degree & above	733	67.33	20.84
9.	Information not available	1444	56.33	24.00
	Grand Total	31674	58.86	22.79

Source: Compiled from SLAS-2013 data.



- As we move from illiterate to degree and above in terms of education of the mothers, the average score go on increasing continuously. This is true in case of all the three subjects. Thus, the more educated the mother, the more than mean percentage score of child.

- The variance in scores of children whose mothers are educated, especially graduation and above is much less than variance in score of children with illiterate or less educated mothers.
- In English, the difference in the mean score of the children of lowest category and the most educated mother's category is nearly 22 percentage points which is a huge difference. The gap in the mean score of children of least educated and most educated category of mothers narrows down to nearly 13 percentage points in case of Punjabi and 12.80 percentage points in case of Mathematics. But the gap remains to be large.

Although, there appears to be a one to one correspondence between the mean percentage score of students and their mother's education in all the three subjects, but we can not say as it is whether these mean differences in various categories of mother's education are statistically significant or not. To be sure about that we have applied one-way ANOVA test which has been worked out by using SPSS-16. We will test the following Hypotheses.

H₀: There is no difference in the means percentage score of students due to different levels of education of their mothers.

H₁: There is difference in the means percentage score of students due to different levels of education of their mothers.

Table 4.10 (a): One-way ANOVA Table to Test Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Sig.
English	607931.307	8	75991.413	184.632	.000*
Punjabi	291717.849	8	36464.731	86.827	.000*
Mathematics	171810.170	8	21476.271	41.753	.000*

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significance.

We find that the calculated value of F is greater than the tabulated value of F at 1 per cent level of significance with degree of freedom 8. This is true in case of all the three subjects. Thus, our ANOVA test does not support the null hypothesis. There, in fact, was a difference between the mean percentage score of students which was caused because of the different levels of their mother's education. We, therefore, conclude that students mean percentage score, in fact, vary significantly across their mother's educational status categories with children of more educated mothers having significantly higher mean percentage score than children of less educated mothers.

Mother's Occupation and Student Academic Performance

Mother's occupation may have important bearing on student's academic performance. For example, if mother's occupation is agricultural labour or domestic service or daily wagger or street vender, the chances are she will be illiterate or will have very little education. She is always likely to be busy in work trying to earn some things for family's economic support. You cannot expect a woman working as a manual labour to find time or have capacity to attend to the child's educational needs.

Table 4.11: Mean Percentage Score by Mother's Occupation

Mother's Occupation	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
Father/ Mother/ both not alive	376	64.66	21.68	372	67.74	22.53	374	56.59	22.67
Unemployed	481	60.43	20.84	482	67.58	20.06	478	57.59	21.27
Household/ Housewife	26798	67.88	20.60	26720	70.73	20.62	26698	59.01	22.78
Agricultural Labourer/ Domestic Servant/ Daily Wager/ Street Vender	2742	65.76	19.99	2752	68.60	20.37	2725	57.44	22.68
Farmer	130	66.30	20.26	131	72.72	18.62	130	58.48	23.64
Worker/ Office Worker	396	71.48	20.72	398	72.61	19.60	399	61.91	22.56
Shop Keeper/ Businessman	132	75.92	19.30	130	74.69	19.69	133	61.44	22.87
Teacher/ Lecturer/ Professor	314	81.58	17.20	315	79.57	18.23	314	66.56	19.70
Manager/ Senior officer/ Professional	67	71.38	24.73	68	73.45	24.67	65	60.69	24.37
Information not available	357	59.01	28.01	359	64.04	26.88	358	51.08	25.53
Grand Total	31793	67.66	20.75	31727	70.61	20.71	31674	58.86	22.79

Source: Compiled from SLAS-2013 data.

Fig. 4.11 (A): Mean Percentage Score by Mother's Occupation (English)

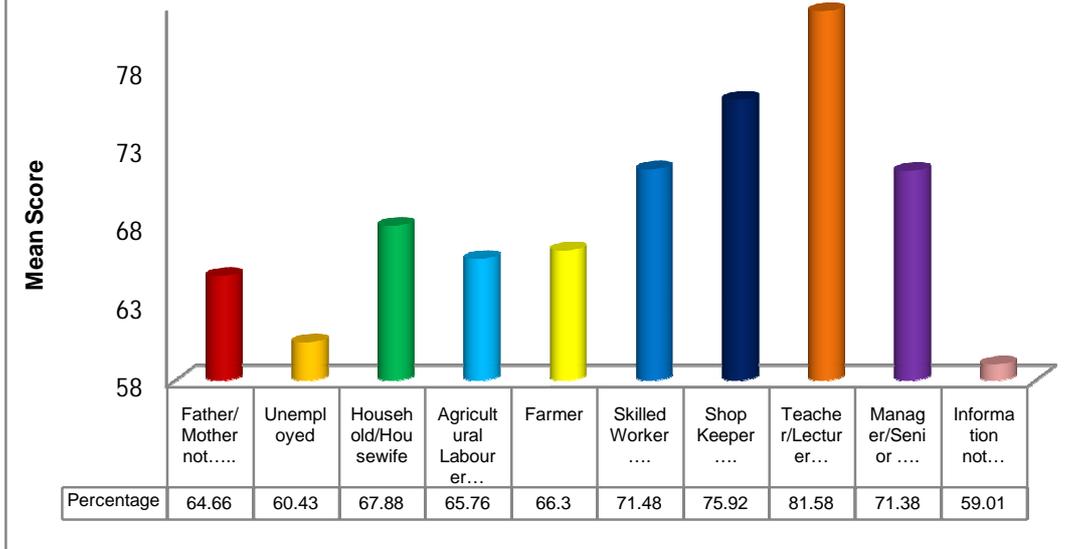
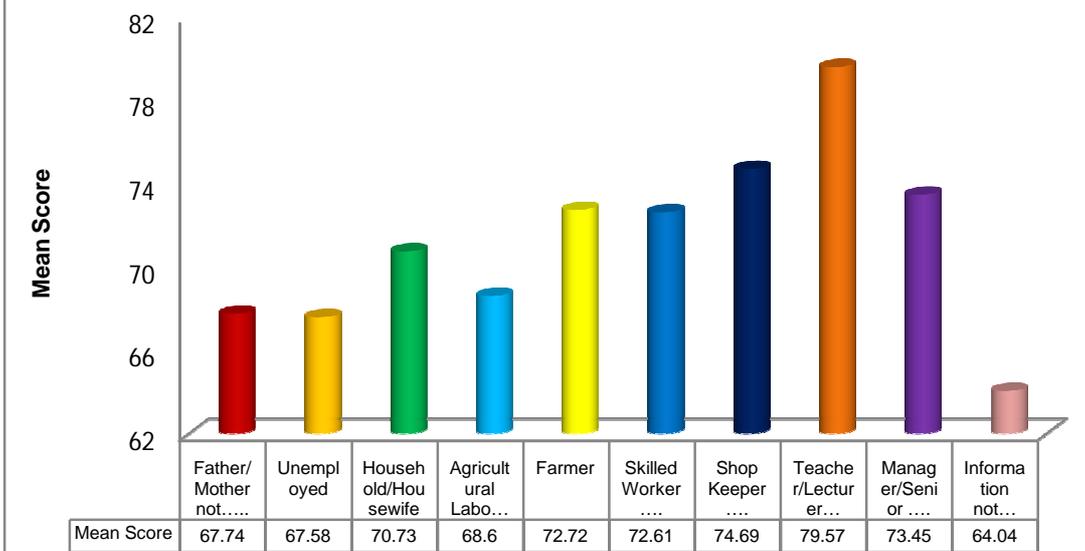
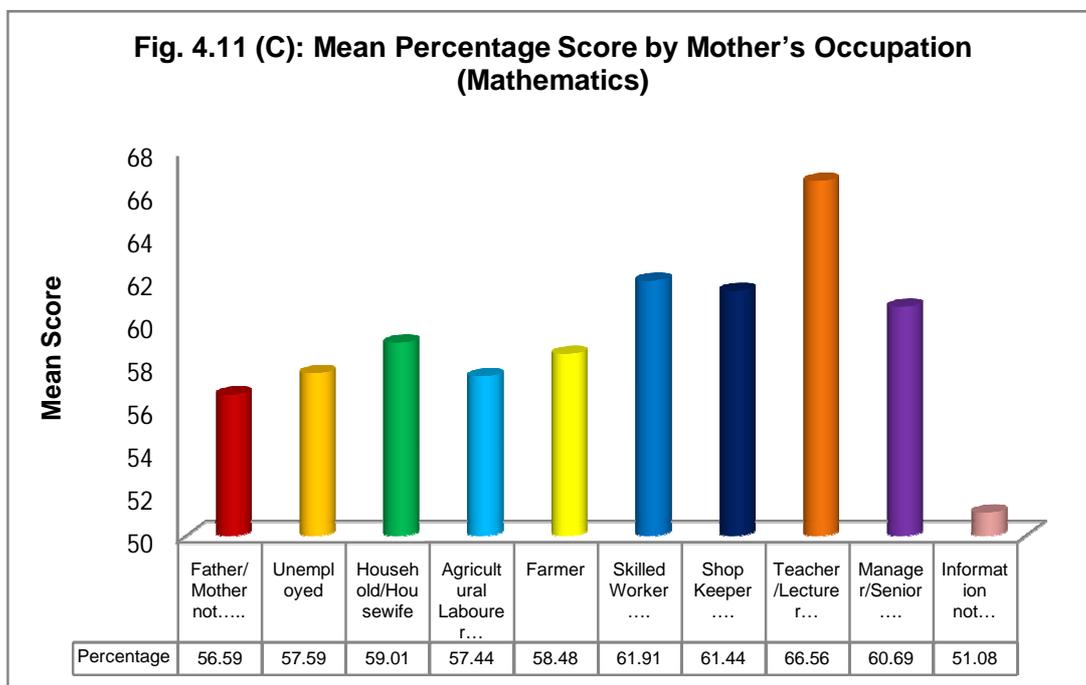


Fig. 4.11 (B): Mean Percentage Score by Mother's Occupation (Punjabi)





Nor she can be expected in any way to create an academic environment at home or have any significant inspirational role. If, on the other hand, she is in the teaching profession or is working as a senior officer, she can play an important role in creating academic friendly atmosphere at home and she can help the child in several ways. In the previous section, we have seen that mother's education plays an important role in student's academic performance. Similarly, we expect mother's occupation should also turn out to be important because to a large extent education and occupation are overlapping and represent essentially the same dimension. We present below in table 4.15 mean percentage of marks by mother's occupation. A couple of points emerge from the table

- I.) An overwhelming majority of the mothers of 84.29 per cent students are working as housewife. Another 8.62 per cent are manual labourer working in agriculture or elsewhere as domestic help, daily wager or street vender.
- II.) A very small proportion of them are in formal jobs. Slighter less than one per cent (0.99 per cent) are in the teaching profession and 0.20 per cent are officers or professional. Another 1.24 per cent are working as skilled worker or office worker. This, less than two and a half per cent of them, are in formal jobs, not always very well paid
- III.) As expected, there is a large gap in the mean percentage score of children belonging to various categories of mother's occupation. For example, it ranges from 60.43 per cent in

case of unemployed mothers category to 81.58 per cent for wards of mothers in the teaching profession. So, there is a huge gap of more than 21 percentage points. In Punjabi, this gap narrows down to about 12 percentage points. In case of Mathematics, it is about 10 per cent.

Apparently, the gap in the mean percentage of marks across various occupations of mother is quite large but we cannot say with certainty if it would turn out to be statistically significant or not. For that, we have applied one-way ANOVA test to find the significance of difference between means. We will test the following hypothesis:

H_0 : There is no difference in the means percentage score of students due to different occupational involvements of their mothers.

H_1 : There is difference in the means percentage score of students due to different occupational involvements of their mothers.

Table 4.11 (a) :One-way ANOVA Table to Test the Statistical Significance of Mean Differences

Subject	Sum of Squares	Degrees of Freedom	Mean Squares	F-Value	Sig.
English	143209.941	9	15912.216	37.334	.000*
Punjabi	65531.831	9	7281.315	17.048	.000*
Mathematics	53910.217	9	5990.024	11.562	.000*

Source: Compiled from SLAS-2013 data.

*Significant at 1per cent level of significance.

The table shows that the calculated value of F is greater than the tabulated value of F for 9 degrees of freedom at 1 per cent level of significance for all the three subjects. Thus, our ANOVA test does not support the null hypothesis. There, in fact, is a significant difference between the mean percentage score of students and their mother's occupation. We, therefore, conclude that mean percentage score of students in fact vary significantly across their mother's occupational categories. Wards of mothers having formal jobs or those who are into some

business or trade, are having significantly higher marks than the children of mothers who are unemployed or working as manual labour or are farmers.

Impact of Father's Occupation on Child's Educational Achievement

A number of researchers have found a positive association between father's occupation and child's education attainments. If father has a better occupation, say a formal white collar job, then the child is likely to have better educational performance at school. Since father is generally head of the family, the child intuitively imitates his/her father. A child may acquire high achievement motivation from the father, who had better job as compared to those children whose father was in a manual job or farming etc. It is argued that families, where the parents are advantaged socially, educationally and economically, foster a higher level of achievement aspiration in their children. Father being in a good well paid job, provides higher level of psychological support for these children through environment that encourage the development of skills necessary for success at school (Williams *et.al*, 1993).

An earlier study by Gill and Sidhu (1998), the question of academic achievement among children belonging to different socio-economic groups in rural Punjab reported that highest marks have been scored by children of the service group, followed by agriculturist and then followed by the labour class. The study had concluded that occupation of parents influenced the school performance of their children. Hence, we will also discuss the impact of father's occupation on student's academic performance. Table 4.17 gives mean percentage score in English, Punjabi and Mathematics by father/s occupation.

The following points emerge from the table;

- I.) A look at the numbers column shows that nearly 59 per cent (58.95 per cent to be exact) fathers are doing manual work either as agricultural labour, domestic servant, daily wage labour or a street vendor. Another 13.66 per cent are in farming. The third largest group consists of those, who work as skilled worker or office worker. They constitute 8.92 per cent of the sample. Another 7.80 per cent are either shop keepers or in some kind of business or trade. Around one and a half per cent of them are managers, senior officers or professional. Slightly more than two-third of a per cent (0.69 per cent) are in the teaching profession. The remaining about 5 per cent are either unemployed (3.1 per cent) or simply look after the household (2.05 per cent).

Table 4.12 : Mean Percentage Score by Father's Occupation

Father's Occupation	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
Father/Mother/ both not alive	614	66.97	20.93	609	70.47	21.21	610	59.73	22.86
Unemployed	982	59.32	20.77	988	65.48	21.05	980	55.42	21.81
Household/ Housewife	651	64.15	21.34	650	67.76	20.65	647	57.36	23.15
Agricultural Labourer/Domestic Servant/ DailyWager/ Street Vendor	18741	65.35	20.61	18741	69.13	20.73	18668	57.66	22.85
Farmer	4344	71.43	17.71	4343	73.31	20.20	4331	59.77	22.77
Worker/Office Worker	2836	72.55	18.64	2789	74.05	19.35	2831	62.81	21.84
Shop Keeper/ Businessman	2480	75.38	19.55	2467	75.27	19.75	2474	62.87	22.23
Teacher/Lecturer/ Professor	221	77.89	17.91	224	78.04	17.80	224	65.24	20.01
Manager/Senior officer/Professional	456	80.17	17.52	455	78.02	18.28	447	65.54	20.21
Information not available	463	60.84	26.70	461	64.18	26.15	462	51.60	25.80
Grand Total	31793	67.66	20.75	31727	70.61	20.71	31674	58.86	22.79

Source: Compiled from SLAS-2013 data.

Fig. 4.12 (A): Mean Percentage Score by Father's Occupation (English)

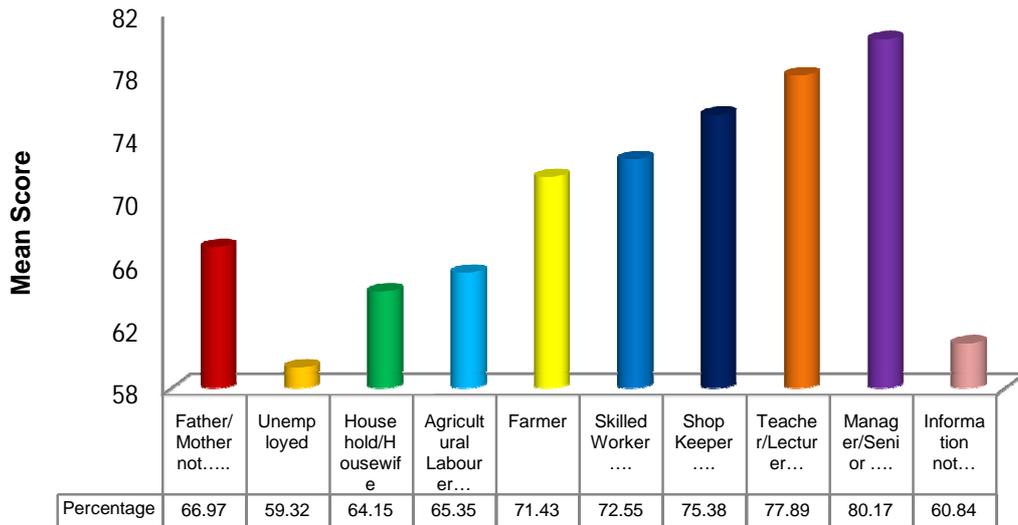
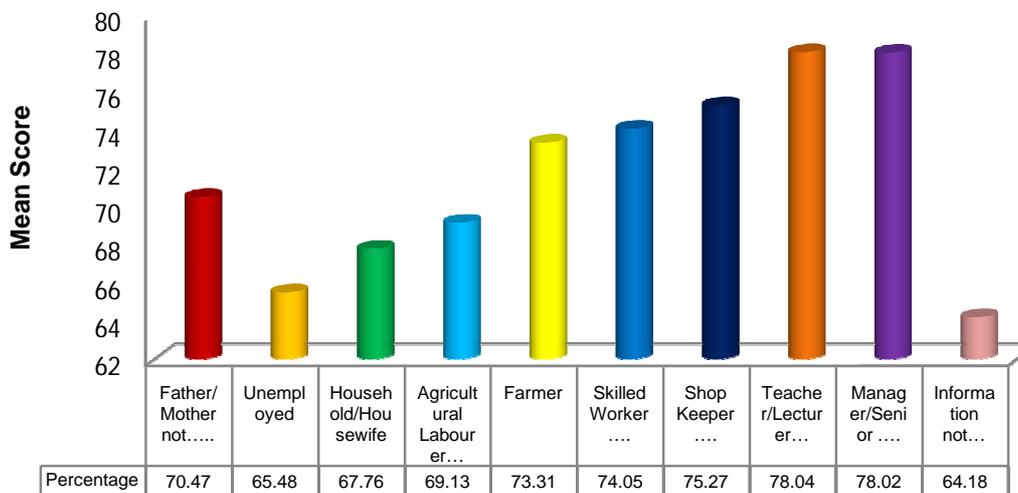
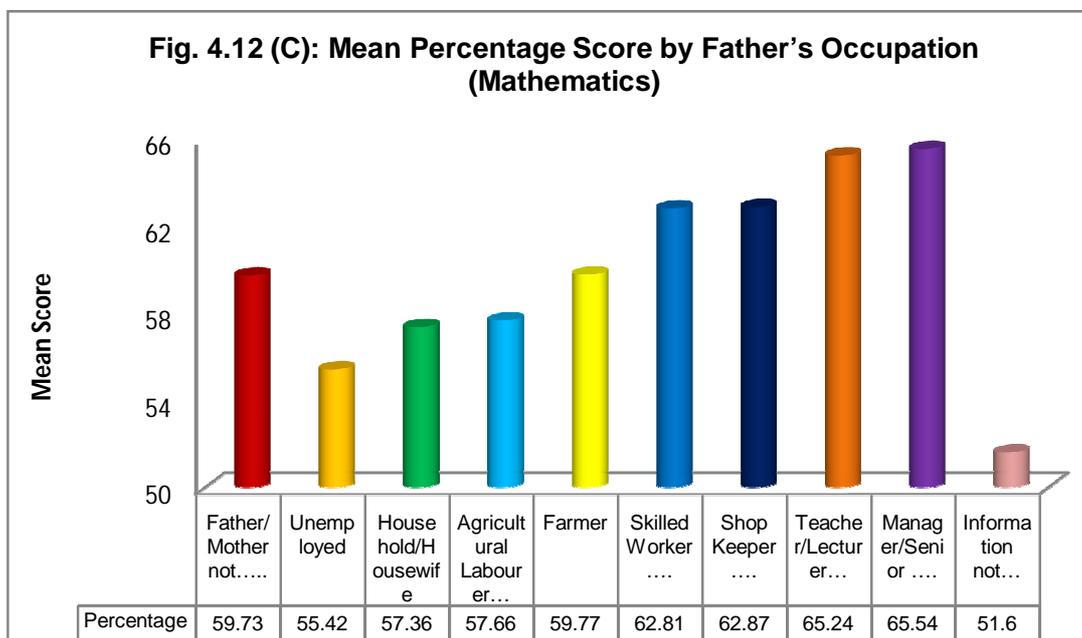


Fig. 4.12 (B): Mean Percentage Score by Father's Occupation (Punjabi)





- II.) When we look at the marks obtained by the students, we find that children of unemployed fathers and those working in the household and manual labour are at the lowest rung of the academic performance. A little above them are the children of those who are working as farmer, skilled worker or shop keepers. At the top are the children of those who are either in the teaching professions or are working as managers, senior officers or are professional. Broadly, this pattern can be seen in all the three subjects.
- III.) There is a wide gap in the mean score of those whose fathers are either unemployed or working as labourers and the children of teachers, professors, professionals and senior officers. For example, in English, there is a gap of nearly 21 per cent percentage points in marks obtained by the children of unemployed fathers and the children of white collar professionals. The gap narrows down to 12.54 per cent in case of Punjabi and 10.12 per cent in case of Mathematics. Thus, the spread between various occupations is quite large. However, we will not be able to say anything about the statistical significance of these mean values. We apply the one-way ANOVA test to test the significance of differences between means. In this test, we will be testing the following hypotheses:

H_0 : There is no difference in the means percentage score of students due to different occupational involvements of their fathers.

H_1 : There is difference in the means percentage score of students due to different occupational involvements of their fathers.

Table 4.12 (a) :One-way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Sig.
English	570884.372	9	63431.597	153.676	.000*
Punjabi	247063.717	9	27451.524	65.145	.000*
Mathematics	181275.224	9	20141.692	39.180	.000*

Source: Compiled from SLAS-2013 data.

*Significant at 1per cent level of significance.

From the above table, we find that the calculated values of F are significant at 1 per cent level of significance in all the three subjects. Thus, our ANOVA test does not support the null hypothesis. The mean score of different categories are, in fact, significantly different from each other and these differences are caused by children's father's occupation. We, therefore, conclude that mean percentage score of students vary significantly across their father's occupation and hence father's occupation is a very significant determinant of children's educational attainments.

Conclusions

To sum up, in this chapter, we tested the impact of some of the personal and demographic characteristics of the child on his/her academic performance. We also tested the impact of socio-economic background of the student's family on his/her learning outcomes. The impact of certain facilities available in the house such as availability of private tuition, help in study at home and regular checking of home work on his/her academic performance was also tested. And finally, we tested the impact of child mother's education and his/her parents occupation on child's academic performance. The main findings emerging from this chapter are:

- Girls outperform boys in both the languages i.e. English and Punjabi, but in Mathematics score, gender has no significant impact.
- Urban area students outperform rural area students in all the three subjects. The mean average score of urban area students is higher by 9.15 per cent in English, 5.32 per cent in Punjabi and 5.76 per cent in Mathematics. The difference in mean score is statistically significant in case of all the three subjects.

- Children from relatively better off (non-BPL) families have significantly higher score in all the three subjects compared to their counterparts from BPL families.
- All those students, who have availability of help in study at home score higher marks than those who do not have such help. This is true in case of all the three subjects.
- Those students, who have the facility of private tuition at home, scored higher marks compared to those who do not have this facility.
- Children, who did not have any sibling or had only one sibling, scored significantly higher marks than those who had two or more than two sibling i.e. children from smaller families outperform children from large families.
- Children with physical disability have significantly lower marks in all the three subjects compared to normal children. Perhaps, they need special care and attention.
- Children whose home work is checked regularly score significantly higher marks than their counterparts whose home work is not checked. This is true in case of all the three subjects.
- General category children outperform children from all other social categories. In fact, OBC children outperform BC/SC children and BC children outperform SC children. So, there is a one to one correspondence between the social hierarchy in Punjabi society and educational performance of the children.
- Mother's education has significant impact on the educational achievement of children. Percentage of marks in all the three subjects go on increasing as we move from illiterate to graduate & above level of education of the mother. In English, there is a huge gap of nearly 22 percentage points in marks obtained by children whose mother's education is graduation & above and the children of illiterate mothers. In Punjabi and Mathematics, the gap is nearly 13 percentage points. Given the fact that more than 40 per cent mothers in our sample are either illiterate or literate but below primary, and are, therefore, not able to help their wards in studies, it is a huge problem which needs immediate attention of the policy makers.
- As in the case of mother's education, similarly, in case of mother's occupation also, there is a strong relationship between mother's occupation and academic performance of their children. One again, there is a gap around 21 per cent in English, 12 per cent in Punjabi and 10 per cent in Mathematics between the average score or those whose

mothers are in the teaching profession and those whose mothers are either unemployed or doing some kind of manual labour. In fact, mother's education and mother's occupation represent roughly the same dimension and chances are that a cure, which is effective in case of one malice, will also be effective in case of the other.

- Our study also confirms the findings of several earlier studies that father's occupation has a strong statistical relationship with the academic performance of the child. Father, being in a good well-paid job, not only gives the child required facilities and necessary support but also motivates the child to achieve higher goals.

CHAPTER-5

IMPACT OF SCHOOL LEVEL VARIABLES ON ACADEMIC PERFORMANCE OF STUDENTS

There is a considerable debate in the literature about the determinants of academic performance. In developed countries, there is an overwhelming evidence on the importance of home factors but some scholars have also emphasised the importance of school level factors. For example, Heyneman and Loxley (1982) argued that whereas in developed countries, home background of students mattered much more, the reverse was true in low income developing countries. Some researchers, even in Britain, also showed that schools have an independent effect on student's attainment (Sparkes, 1999). In an Indian study, Kingdon (1999) found that both home background and school influences are important to student's achievement. Several Australian studies, using Longitudinal Survey of Australian Youth, found that students attending private non-Catholic schools were significantly more likely to stay on at school than those attending state schools. Similarly, Buckingham (2000) found that students from independent private schools are also likely to achieve higher school scores. While school related factors have been found to be important by several studies but it is also recognised that private schools may be having an advantageous position because they are more likely to have a greater number of students from high socio-economic status families and select students with stronger academic abilities and greater financial resources. On the other hand, teachers at disadvantaged schools often hold low expectations of their students which, in turn, compound the low expectations that students and their parents may also hold (Ruge, 1998). While, it may be true that school related factors have indirect link to socio-economic status, yet it cannot be denied that there are several school level factors which have important bearing on academic performance of students. These factors include the type of management of the school, its physical infrastructure and other facilities available, its location, pupil-teacher ratio, availability of instructional material with the school and above all the effectiveness of supervisory role of the principal of school. In this chapter, we will discuss all these factors one by one.

Type of School Management

Good management in school plays a vital role in the quality of education. It enables its teachers to contribute most effectively by providing training, introducing skill improvement programmes, which may increase their knowledge that helps making their students grasp the

subject more effectively. It may also promote individual development, discipline and may raise their self-confidence and understanding. The main role of school management is to draw effective planning, chalk out a strategy and a vision to improve the physical and social development of students. School management's responsibility is to inculcate a positive culture that helps to enhance the quality of education. Therefore, school management is a very important factor in facilitating quality education in schools

In our sample, we have five types of schools. First category consists of schools, which are run by State Government or its Department of Education. 1132 out of a total of 2164 schools covered in SLAS-2013 are government schools. These schools constitute 52.31 per cent of the total schools covered by our study. The second category consists of schools which are under Zila Prishads i.e. district level apex body elected by Panchayati Raj Institutions. There are, altogether, 479 schools in our sample, constituting 23.13 per cent of the total schools, which fall in this category. Then, there are schools which are run by Local Bodies like Municipal Committees or Corporations. These are 134 (6.19 per cent) schools in this category in our sample. These three categories, put together, can be called public schools because these are funded by the money provided by or collected on behalf of the state government. The fourth category consists of schools which are private schools owned and run by private management but are given financial aid by the state government. These schools are generally run by religious institutions, charitable trusts, private societies and education foundations etc. There are 153 (7.0 per cent) schools in this category in our sample. Lastly, there are un-aided private schools which are owned and management by private individuals, societies or organizations. These schools are private funded but they do follow state board syllabus. There are 267 schools in our sample, which fall in this category constituting 12.34 per cent of the sample. Now, we will discuss the mean score of sample students by type of school.

Table 5.1 : Type of Management of School and Academic Performance

School Type	English		Punjabi		Mathematics	
	N	Mean Score	N	Mean Score	N	Mean Score
SG/DoE	1132	65.10	1132	69.07	1130	57.29
Zila Prishad	479	61.84	479	66.68	478	56.03
LB/MC	134	74.24	134	76.01	134	63.33
Private Aided	153	76.46	153	74.95	153	64.20
Private Un-aided	266	78.56	266	78.23	266	65.44
Total	2164	67.40	2164	70.51	2161	58.87

Source: Compiled from SLAS-2013 data.

Fig. 5.1 (A): Type of Management of School and Academic Performance (English)

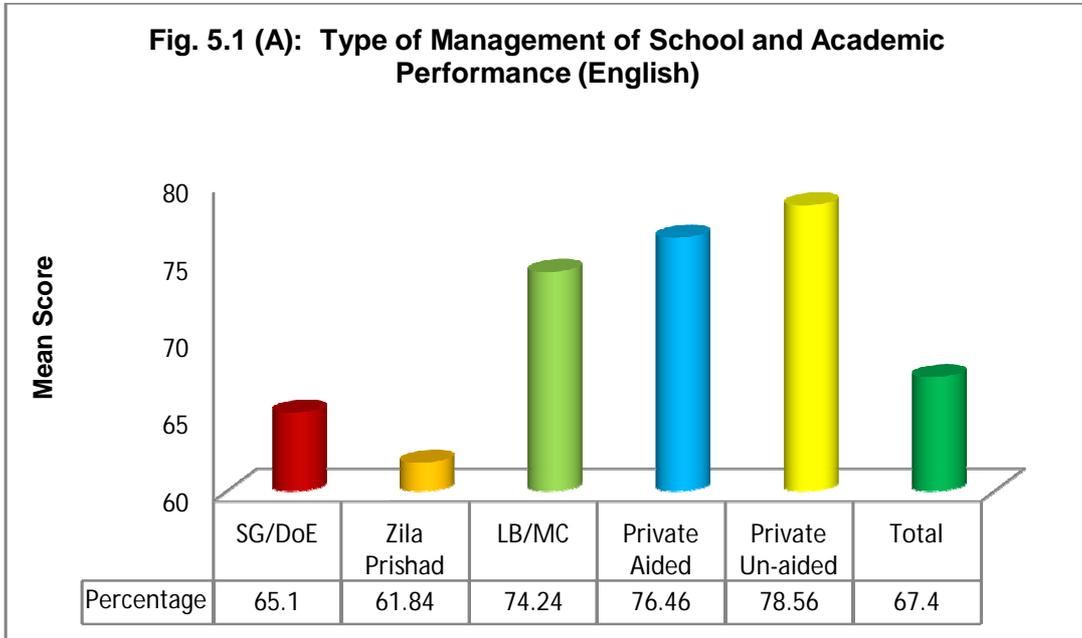
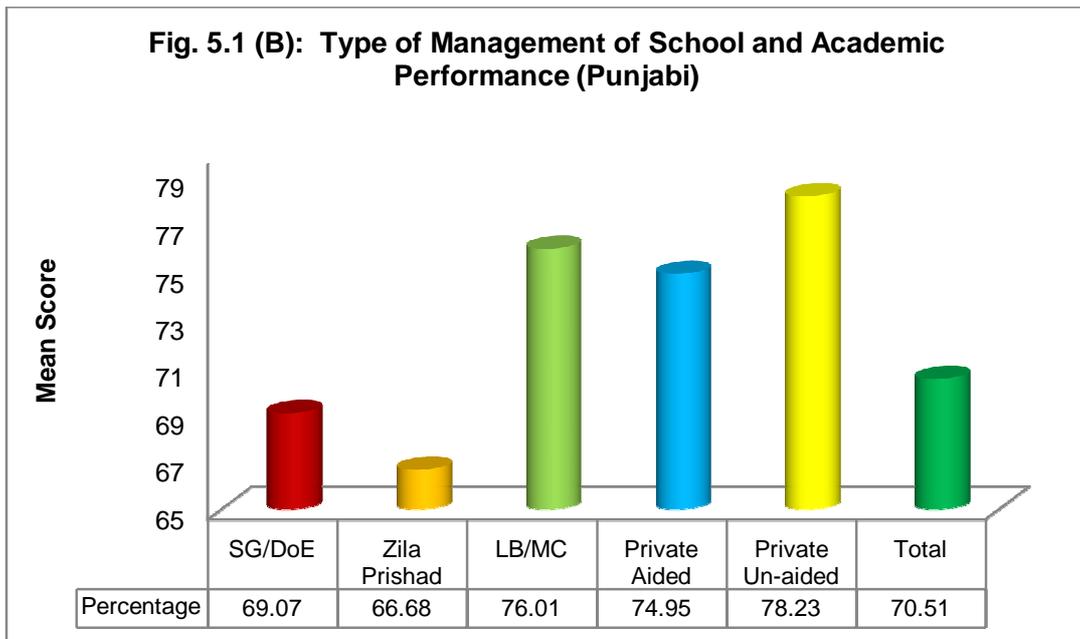
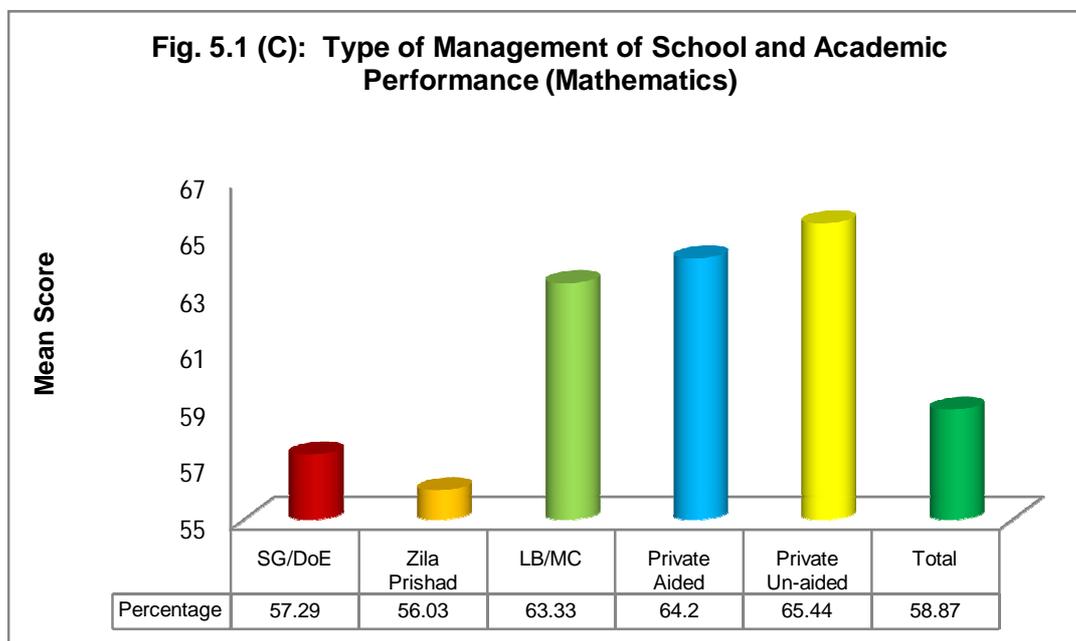


Fig. 5.1 (B): Type of Management of School and Academic Performance (Punjabi)





A look at the table shows that in English, the highest score of 78.56 per cent was achieved by students of private un-aided schools, followed by private aided schools (76.46 per cent) LB/MC run schools (74.24 per cent), state Govt./ Department of Education run schools (65.10 per cent). At the tail end are Zila Prishad run schools with a score of 61.84 per cent. There is a gap of 13.46 percentage points between the mean score of students of private un-aided schools and those of government schools while there is a huge gap of 16.72 percentage points between the mean score of private un-aided schools and Zila Prishad run schools.

A look at the column of score in Punjabi shows that it follows roughly the same pattern with the only difference being that LB/MC run schools category and private aided schools category have interchanged their positions. The top score is once again recorded by private un-aided schools, with a mean score of 78.23 per cent, followed by LB/MC run schools with 76.01 per cent and private aided schools 74.95 per cent. State government run schools are once again at number two position from below with 69.07 per cent and at the bottom of the pack are Zila Prishad run schools with 66.18 per cent. However, in case of Punjabi, the gap between various categories of schools is not as large as in the case of English. Nevertheless, there is a difference of 11.55 percentage points between the score of private un-aided schools which are at the top and Zila Prishad run schools which are at the bottom.

Scores in Mathematics, for all categories of schools, are lower compared to their scores in English and Punjabi. However, the pattern is the same, the highest score of 65.44 per cent is once again achieved by private un-aided schools. This is followed by private aided schools (64.20 per cent), LB/MC schools (63.03 per cent), SG/DoE schools (57.29 per cent) and Zila Prishad run schools (56.03 per cent). However, now the gap between the top and the bottom category of schools narrows down to 9.41 percentage points, which is still a large gap by almost any standards.

The foregoing discussion brings out clearly that both categories of private schools-private un-aided as well as private aided, are showing much better results compared to their counterparts in the SG/DoE run schools or Zila Prishad run schools. The quality gap is, in fact, large but still on this basis we cannot say whether the gap between various categories is statistically significant or not. To test that, we have applied one-way analysis of variance (ANOVA) test by using SPSS-16. We will test the following hypotheses.

H₀: There is no difference in the means percentage score of students studying in different schools managed by different authorities.

H₁: There is difference in the means percentage score of students studying in different schools managed by different authorities.

Table 5.1 (a) : One Way ANOVA Table to Test the Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Score	F-value	Sig.
English	72779.56	4	18194	76.29	.000*
Punjabi	32284.51	4	8071.12	38.06	.000*
Mathematics	25179.83	4	5037.97	17.63	.000*

Source: Compiled from SLAS-2013 data.

*Significant at 1 per cent level of significant.

The calculated value of F in the three subjects is significant at 1 per cent level of significance. Thus, one-way ANOVA did not support the null hypothesis. There, in fact, was a difference between the performance (mean percentages) of students and type of school management. We therefore, conclude that the significant difference in mean score or performance of students was due to type of school management.

Physical Infrastructure and Facilities available with School and Academic Performance of Students

We have prepared an index for measuring quality of school by taking infrastructure and physical facilities into account. The idea is that the more the facilities available with the school, the better the quality of school and we believe the better would be the output at school level in terms of quality of education. The methodology is the same which is normally used by scholars to measure the human development index for different states i.e. by assigning a value of '1' if a particular facility is available with the school and '0' otherwise. In our data, we have 30 facilities for which information was collected from each school covered in the SLAS-2013. By dividing the total score of a school by 30, we arrived at the index of physical infrastructure for that school. Then by looking at the distribution of all 2164 schools covered by our survey in terms of infrastructural score, we divided the schools into five categories. All those schools with a score of upto 0.60 have been designated as 'very poor' in terms of infrastructure. Those schools, which fall in the range of 0.61 to 0.70, are called 'poor'. Those in the range of 0.71-0.80 are called 'moderate' infrastructure-wise. Schools, which fall in to 0.81-0.90 range are called 'good' and those having a score of above 0.90 are called 'very good'. Table 5.2 gives us classification of schools in terms of their infrastructural facilities index and type of school management.

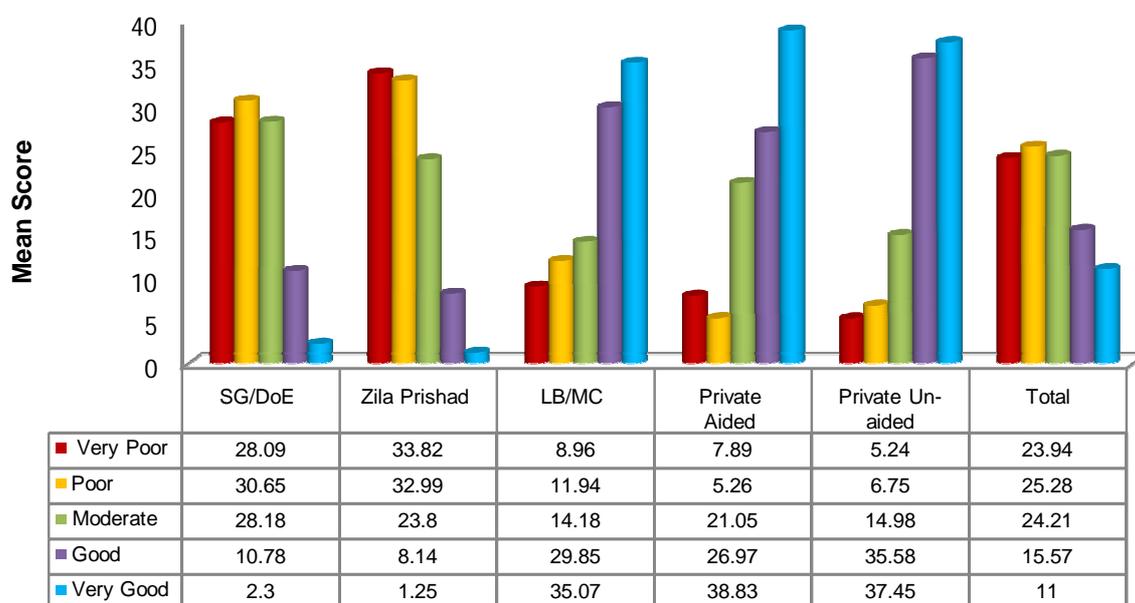
Table 5.2 : Classification of Schools in Terms of their Infrastructural Facilities Index and Type of School

Index Range	SG/DoE Schools	Zila Prishad Schools	LB/MC Schools	Private Aided Schools	Private Un-aided Schools	Total
Very poor upto 0.60	318 (28.09)	162 (33.82)	12 (8.96)	12 (7.89)	14 (5.24)	518 (23.94)
Poor 0.61-70	347 (30.65)	158 (32.99)	16 (11.94)	8 (5.26)	18 (6.74)	547 (25.28)
Moderate 0.71-80	319 (28.18)	114 (23.80)	19 (14.18)	32 (21.05)	40 (14.98)	524 (24.21)
Good 0.81-90	122 (10.78)	39 (8.14)	40 (29.85)	41 (26.97)	95 (35.58)	337 (15.57)
Very Good 0.91 & above	26 (2.30)	6 (1.25)	47 (35.07)	59 (38.82)	100 (37.45)	238 (11.00)
Total	1132 (100.00)	479 (100.00)	134 (100.00)	152 (100.00)	267 (100.00)	2164 (100.00)
Average Index	0.684	0.655	0.838	0.847	0.862	0.720

Source: Compiled from SLAS-2013 data.

* Figures in the brackets are percentages of the column total.

Fig. 5.2: Infrastructural Facilities Index and Type of School

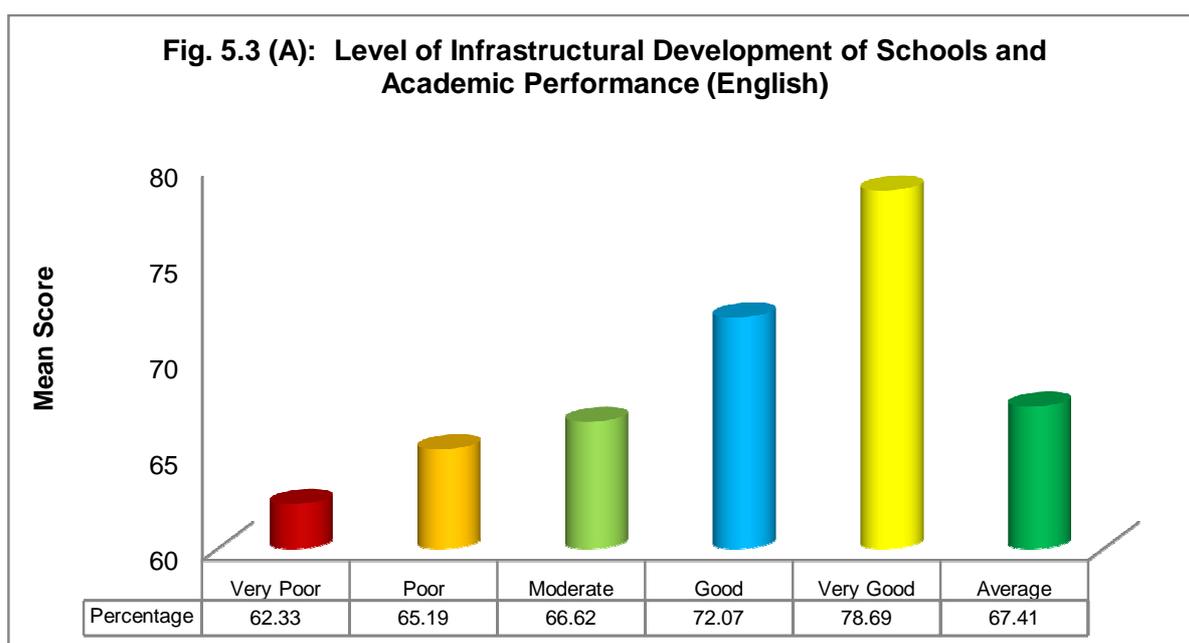


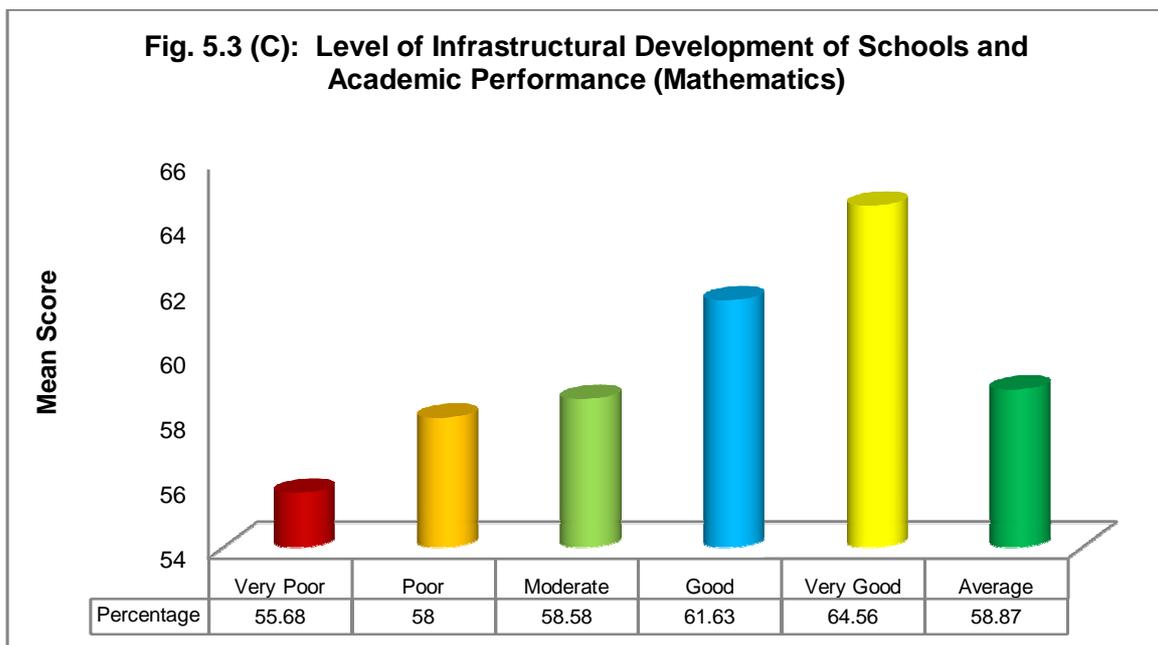
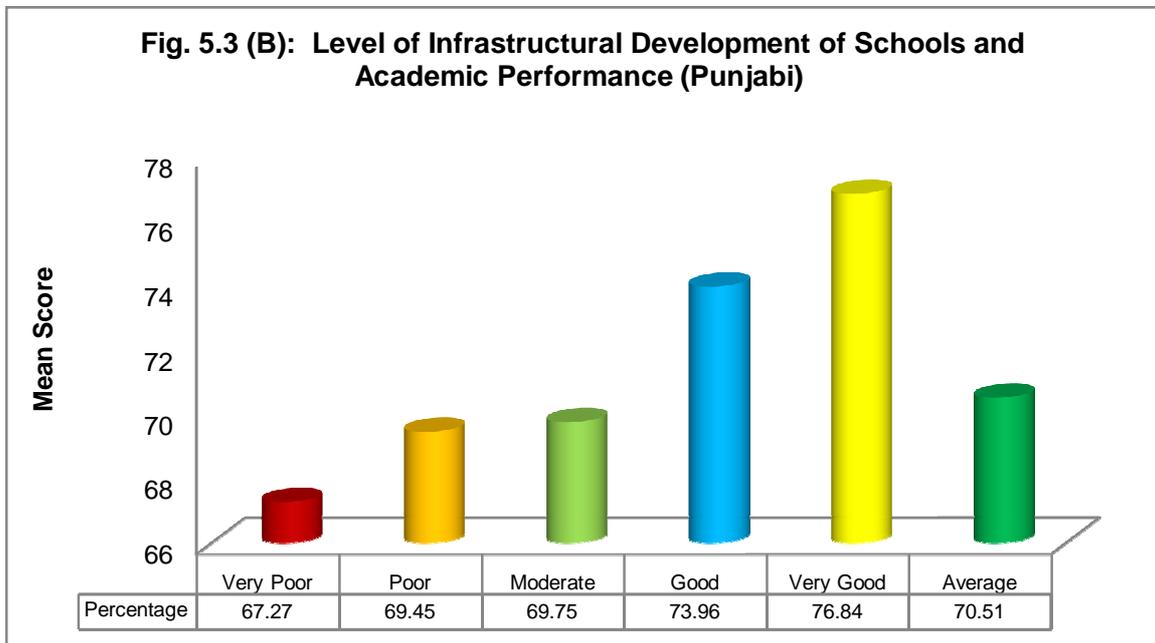
The table shows that the highest score of 0.862 is recorded by private un-aided schools, which are closely followed by private aided schools category with a score of 0.847 and LB/MC schools with a score of 0.838, SG/DoE run schools with a score at 0.684 are much below the state average of 0.720. The bottom of the pack is represented by Zila Prishad run schools which have a score of 0.655. 58.74 per cent SG/DoE run schools fall below the state average of 0.720. Two-third ZilaPrishad run schools are below the state average. On the other hand, 88 per cent private un-aided schools, nearly 87 per cent private aided schools and more than 79 per cent LB/MC run schools are having infrastructural index above the state average of 0.720. In the following paragraph, we will examine whether there is any relationship between level of infrastructural development of schools and the quality of education provided by them, as represented by academic score of students.

Table 5.3 : Level of Infrastructural Development of School and Academic Performance

Complete Index	English			Punjabi			Mathematics		
	N	Mean Score	Std. Deviation	N	Mean Score	Std. Deviation	N	Mean Score	Std. Deviation
Very Poor (upto 0.60)	518	62.33	17.17	518	67.27	15.41	518	55.68	17.77
Poor (.61-70)	547	65.19	15.76	547	69.45	14.98	546	58.00	17.15
Moderate (.71-80)	524	66.62	15.12	524	69.75	14.57	523	58.58	16.67
Good (.81-90)	337	72.07	15.63	337	73.96	13.87	336	61.63	17.64
Very Good (.91-100)	238	78.69	13.59	238	76.84	14.33	238	64.56	14.74
Average (0.720)	2164	67.41	16.48	2164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.





A look at the table shows that as we move from ‘very poor’ to ‘poor’ to ‘moderate’ to ‘good’ and to ‘very good’ category of schools, the average mean score of all the subjects continue to increase . In English, there is a gap of 15.08 percentage points between the mean score of students in the ‘very good’ schools and ‘very poor’ schools. On the other hand, the standard deviation falls from 17.77 in case of ‘very poor’ to 13.59 in the case of ‘very good’ schools. The gap between mean score in case of Punjabi between the ‘very good’ and ‘very poor’

category of schools is 13.24 percentage points and in case of Mathematics, it is 13.19 percentage points. Thus, the academic performance of students in schools with better infrastructural facilities is markedly better than students studying in schools with poor infrastructural facilities. However, as we cannot say whether these means are statistically significant different from each other or not, therefore to test that, we have applied one-way ANOVA to test the statistical significance of the difference between the performance of students and the level of infrastructural development at schools. The following hypothesis will be tested:

H₀: There is no difference in the means percentage score of students studying in different schools with different levels of infrastructural development.

H₁: There is difference in the means percentage score of students studying in different schools with different levels of infrastructural development.

Table 5.3 (a) :One-way ANOVA to Test the Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	53979.558	4	13494.890	54.591	.000*
Punjabi	19924.313	4	4981.078	22.878	.000*
Mathematics	16012.620	4	4003.155	13.813	.000*

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

From the table, we find that the calculated value of F is greater than the tabulated value of F at 1 per cent level of significance with degrees of freedom 4. Thus, one-way ANOVA did not support the null hypothesis. There, in fact, is a significant difference between the mean percentage score of students and level of infrastructural development of schools. We may therefore, conclude that significant differences in mean score or performance of students has been due to different levels of infrastructural facilities of schools.

Impact of School Location on Academic Performance of Students

Location of school is considered to be an important indicator of the quality of education being provided, primarily because schools located in urban areas generally have better infrastructural facilities. Most teachers also prefer to serve in urban areas. Therefore, one hardly finds a teaching position lying vacant in urban areas whereas rural area schools are always short

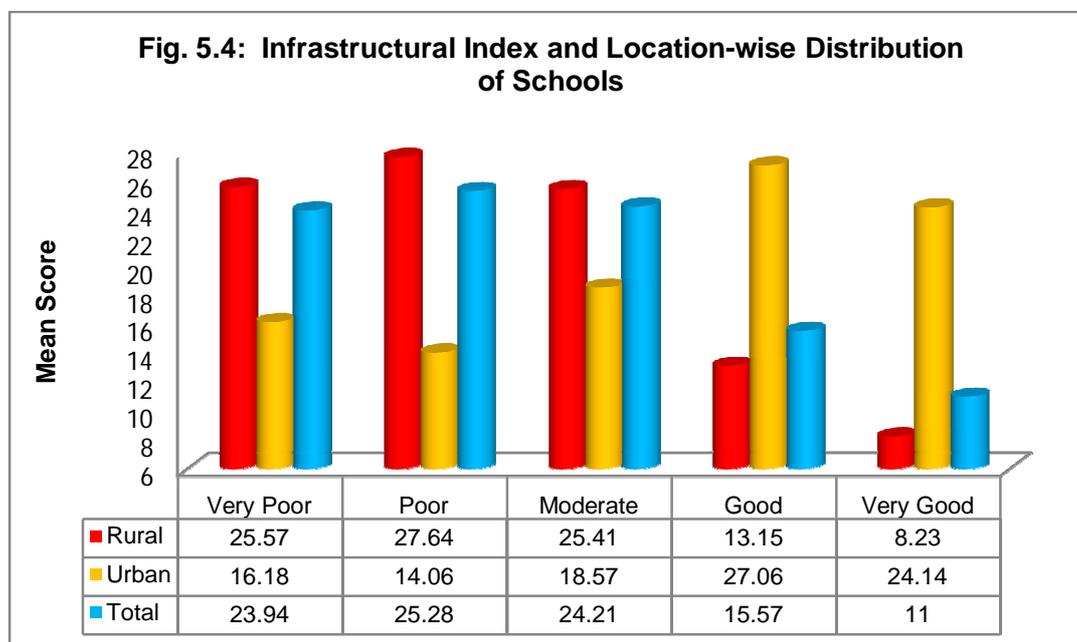
of teachers. Table 5.4 below shows how for urban area schools have better infrastructural facilities.

Table 5.4 : Infrastructural Index and Location-wise Distribution of Sample Schools

Infrastructure Index Category	Rural	Row Percentage	Urban	Row Percentage	Total	Row Percentage
Very Poor (upto 0.60)	457 (25.57)	88.22	61 (16.18)	11.78	518 (23.94)	100.00
Poor (.61-70)	494 (27.64)	90.31	53 (14.06)	9.69	547 (25.28)	100.00
Moderate (.71-80)	454 (25.41)	86.64	70 (18.57)	13.36	524 (24.21)	100.00
Good (.81-90)	235 (13.15)	69.73	102 (27.06)	30.27	337 (15.57)	100.00
Very good (.91-100)	147 (8.23)	61.76	91 (24.14)	38.24	238 (11.00)	100.00
Total	1787 (100.00)		377 (100.00)		2164 (100.00)	

Source: Compiled from SLAS-2013 data.

* Figures in the brackets are percentages of the column total.



A look at the table shows that while 53.21 per cent of the rural area schools fall in 'poor' and 'very poor' categories, only 30.24 per cent of the urban area schools fall in these two categories. On the other hand, while 51.20 per cent urban area schools fall in the 'good' or 'very good' categories and only 21.38 per cent of the rural area schools are listed in these two

categories. Obviously, there is a large gap in urban area schools and rural schools in terms of physical infrastructure and facilities available with them. It should get reflected in their quality of education provided as represented by academic score of students in these two types of schools.

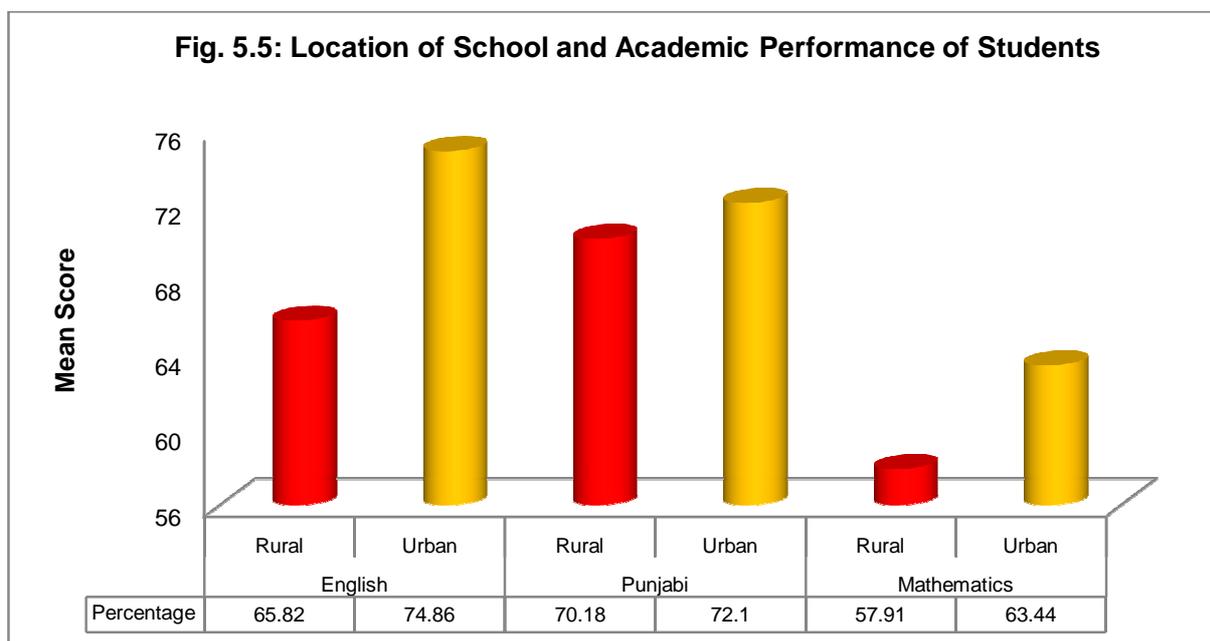
Table 5.5 : Location of School and Academic Performance (Mean Score) of Students

Subject	Location	N	Mean Score	Std. Deviation	t-value	Degrees of Freedom	sig.
English	Rural	1785	65.82	16.42	9.911	2162	.000*
	Urban	379	74.86	14.43			
Punjabi	Rural	1787	70.18	15.20	2.259	2162	.024
	Urban	377	72.10	14.22			
Mathematics	Rural	1784	57.91	17.19	5.713	2159	.000*
	Urban	377	63.44	16.38			

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

* Significant at 5 per cent level of significance.



A look at the table 5.5 shows that in all the three subjects, student's score in urban area schools is higher than student's mean score in rural area schools. In English, the difference between the urban and rural schools is more than 9 percentage points, whereas in Mathematics, it is 5.53 percentage points and in Punjabi, it narrows down to 1.92 per cent. To see whether these mean scores of students from rural and urban area schools are statistically significantly different from each other or not, we have applied 't-test'. The t-value column shows that mean scores are

statistically significant different from each other in English and Mathematics at 1 per cent level significance and in Punjabi, these are significantly different at 5 per cent level of significance. But in all the three subjects, means are significantly different within the acceptable confidence limits. Therefore, we may conclude that students of urban area schools are scoring significantly higher marks in all three subjects compared to their counterparts from rural area school

Pupil-Teacher Ratio and Academic Performance

Student-teacher ratio is considered a good indicator of quality of education. A low student-teacher ratio suggests greater opportunity for students and teachers to be more interactive in the class. Students can discuss their problems and difficulties in their courses with their teachers more often. This ratio is arrived at by dividing total number of students in a school by the total number of teachers in the school.

Table 5.6 : Student-Teacher Ratio and Academic Achievement of Students

Student-Teacher Ratio	N	Mean Score	Std. Deviation	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English								
Below 25	1318	67.36	16.27	643.645	2	321.823	1.185	.306
25-30	246	66.11	17.50					
30 & above	600	68.02	16.50					
Total	2164	67.40	16.48					
Punjabi								
Below 25	1345	71.12	13.99	937.893	2	468.946	2.128	.119
25-30	249	69.86	16.40					
30 & above	567	67.22	16.03					
Total	2161	70.61	14.85					
Mathematics								
Below 25	1345	59.26	17.42	1087.263	2	543.632	1.834	.160
25-30	249	56.99	18.07					
30 & above	567	58.79	16.31					
Total	2161	58.87	17.22					

Source: Compiled from SLAS-2013 data.

Fig. 5.6 (A): Student Teacher Ratio and Academic Achievement of Students (English)

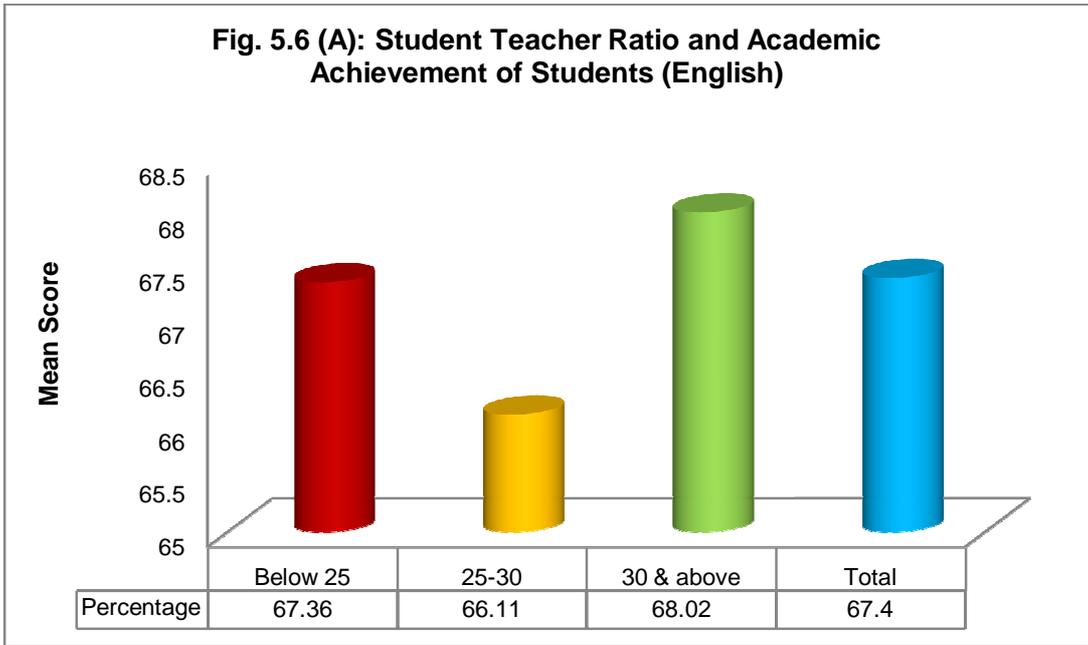
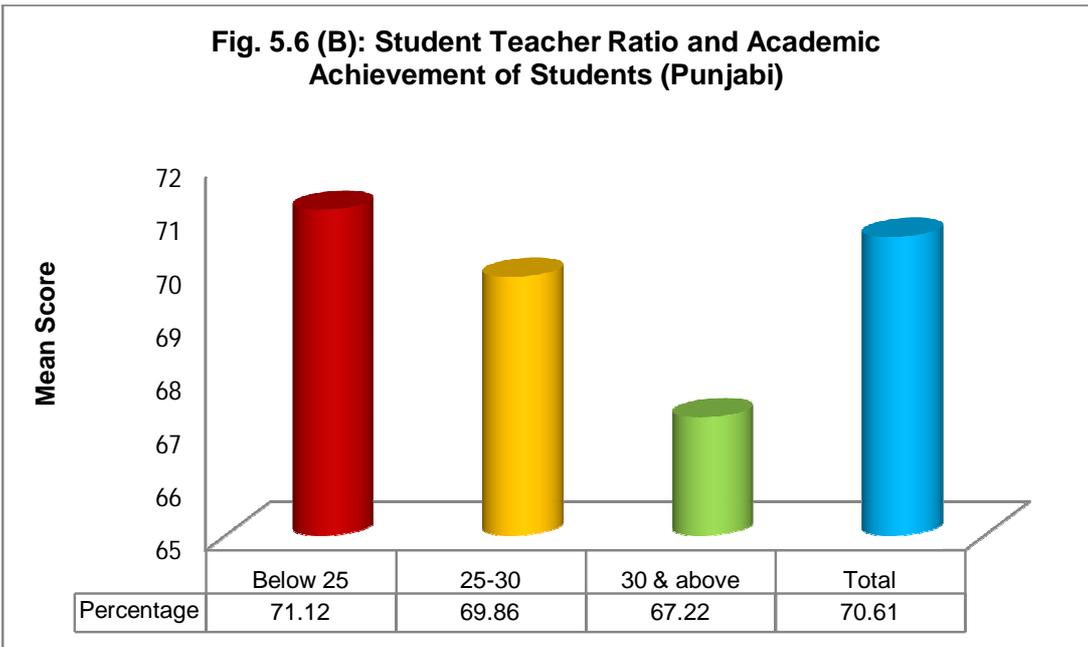
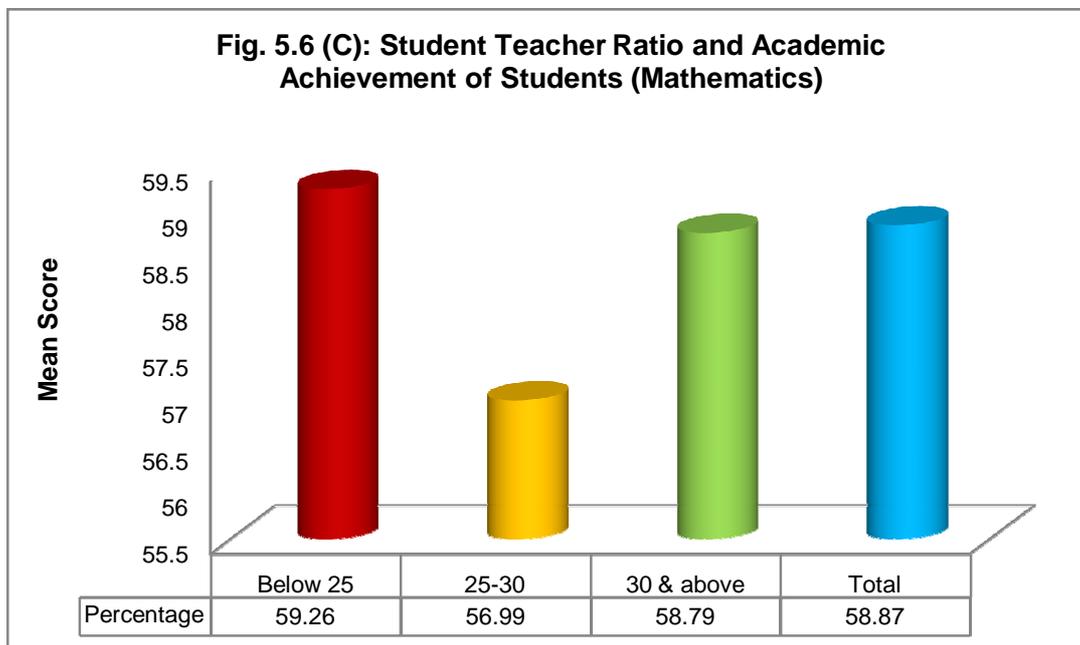


Fig. 5.6 (B): Student Teacher Ratio and Academic Achievement of Students (Punjabi)





The empirical evidence on the issue of student-teacher ratio or class size and academic achievement of students is a mixed one. While studies from developed countries find a negative relationship between class size and academic achievement (Graddy and Stevens, 2003), some studies from developing countries, in fact, find a positive relationship between the two. For example, Daharet.al (2009), after analysing data from Pakistan, found a positive correlation i.e. a higher student-teacher ratio produced the higher level of academic achievement. Again, the same study found that urban schools with higher student-teacher ratio achieve higher level of academic achievement and the rural schools produced lower level of academic achievement with the lower student-teacher ratio. Thus, the empirical evidence on this question is not unambiguous and needs further research. We discuss below our results thrown up by the SLAS-2013 data.

A look at the table shows that there is no pattern in mean scores vis-a-vis pupil-teacher ratio. For example, in English, it is 67.36 per cent for below 25 size class, falls down slightly to 66.11 per cent for 25-30 size class and again rises to 68.02 per cent for the above 30 size class. In Punjabi, however, the mean score seems to fall for below 25 class size, mean score is 71.12per cent, it falls to 69.86 per cent for 25-30 size class and goes down further to 67.72per cent for the above 30 category. In Mathematics, it is 59.26per cent for the below 25 category, falls to 56.99 per cent for the 25-30 category and again goes upto 58.79 per cent for the above 30 category. Our ANOVA test results show F value being 1.185 for English, 2.128 for Punjabi and 1.834 for Mathematics. All the three values of F are statistically insignificant within the acceptable

confidence limits. Thus, we can conclude that there is no significant relationship between student-teacher ratio and academic achievement of students as far as our study goes.

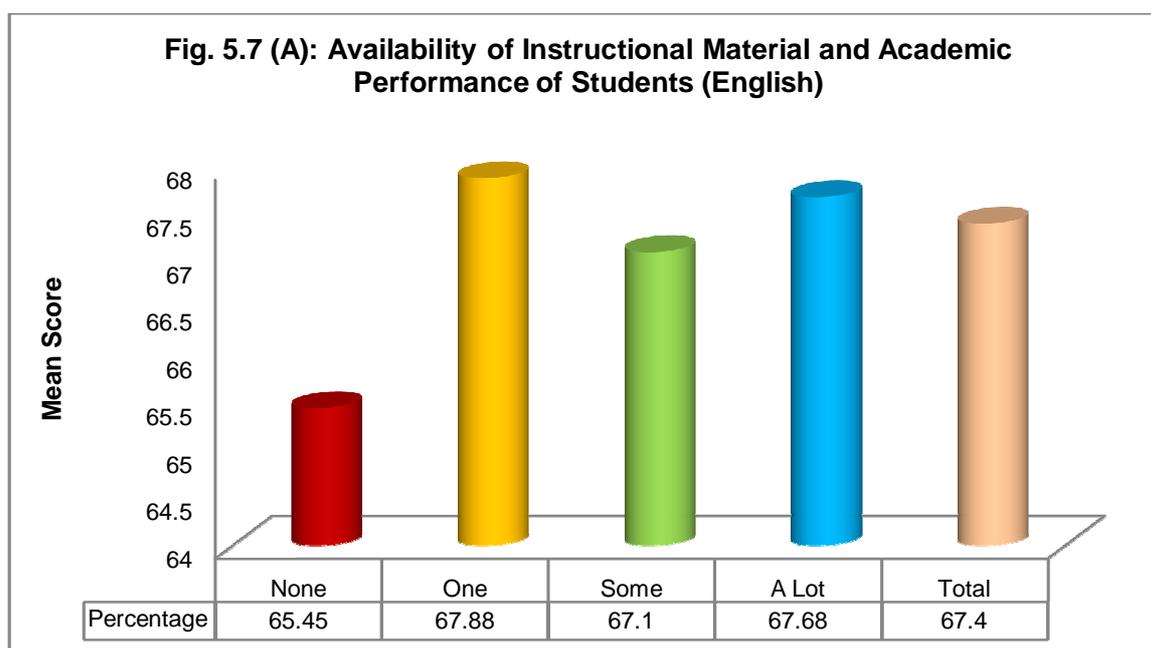
Availability of Instructional Material in the School and Academic Performance of Students

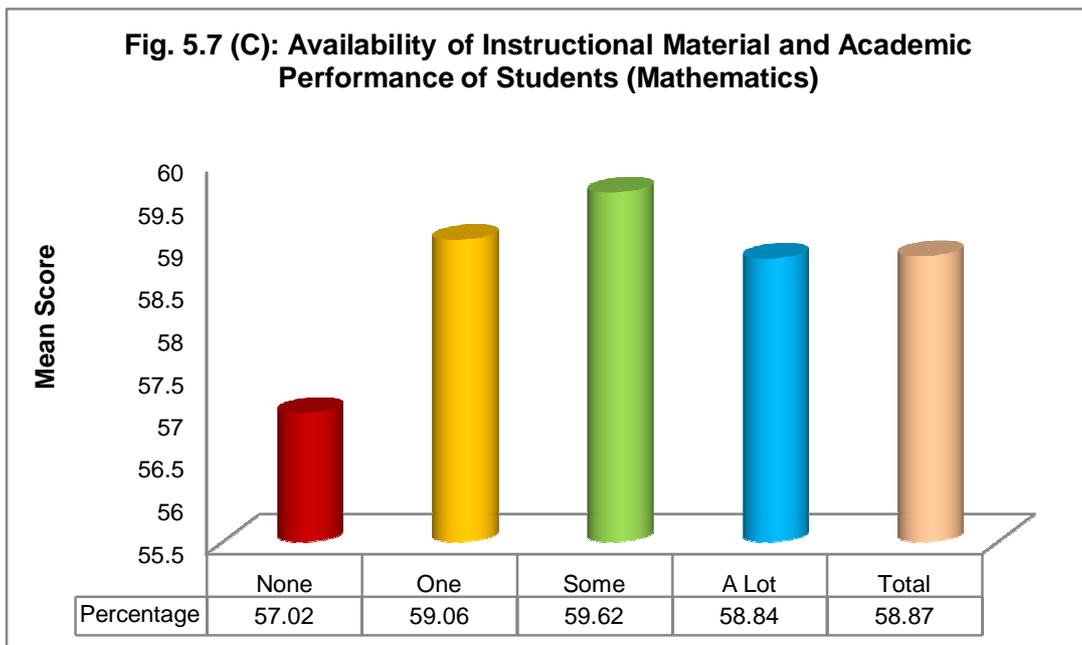
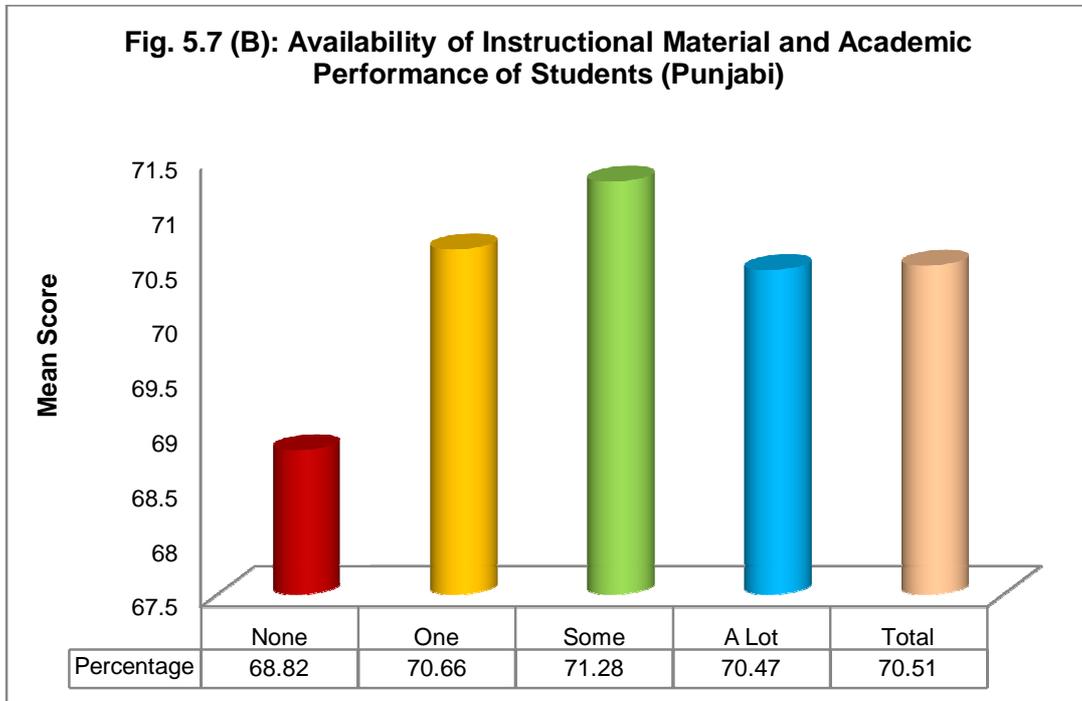
Availability of instructional material in the schools is supposed to help teachers in making their students learn the subjects in a better way. In a way, it's a medium through which quality of education and hence the learning outcomes can be improved. SLAS-2013 did collect data from schools covered in the survey about the availability or otherwise of instructional material in the school. The information collected is recorded under four headings i.e. 'none', 'one', 'some' and 'a lot'. We have calculated students score in English, Punjabi and Mathematics for schools corresponding to each one of these four categories. The results are presented in the table below.

Table 5.7 : Availability of Instructional Material and Academic Performance of Students

Instructional Material	English			Punjabi			Mathematics		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
None	249	65.45	17.35	249	68.82	15.40	248	57.02	17.53
One	934	67.88	16.76	934	70.66	15.49	933	59.06	17.19
Some	400	67.10	15.61	400	71.28	13.68	399	59.62	16.58
A lot	581	67.68	19.20	581	70.47	15.06	581	58.84	17.55
Total	2164	67.40	16.48	2164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.





A look at the table shows that nearly 11.50 per cent schools do not have any instructional material. The mean score of students in this category of schools is the lowest in all the three

subjects. Nearly 43 per cent schools fall in the second category of having (one) instructional material. The score of this category in all the three subjects is nearly 2 percentage points higher compared to the first category with ‘none’ instructional material. The score of students in the next two categories of schools having ‘some’ and ‘a lot’ instructional material is not markedly different from the second category schools in all the three subjects. For example, in English scores of ‘one’, ‘some’ and ‘a lot’ category of schools are 67.88 per cent, 67.10 per cent and 67.68 per cent respectively, which are more or less similar. Similarly in Punjabi, the scores of students in the second, third and fourth category schools are 70.66 per cent, 71.28 per cent and 70.47 per cent respectively. Again, we find there is no marked difference in scores across school categories. Roughly, the same picture emerges from Mathematics, where the scores of second, third and fourth categories of schools are 59.06 per cent, 59.62 per cent and 58.84 per cent respectively. Again, there is no visible difference. Still to find if any two means are statistically different from each other in any of the three subjects, we have applied one-way ANOVA test using SPSS-16. We will test the following hypothesis

H₀: There is no difference in the means percentage score of students studying in different schools with different levels of instructional material.

H₁: There is difference in the means percentage score of students studying in different schools with different levels of instructional material.

Table 5.7 (a) :One-Way ANOVA Table to Test the Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	1241.760	3	413.920	1.525	.206
Punjabi	965.357	3	321.786	1.421	.235
Mathematics	1113.838	3	371.067	1.251	.290

Source: Compiled from SLAS-2013 data.

F-values are not significant within the acceptable confidence limits.

From the above table, we find that F-values are not statistically significant within the acceptable confidence limits for any of the three subjects. Therefore, we accept the null hypothesis that there is no significant difference between the mean percentage score of students and type of school in terms of instructional material.

Impact of Enrichment Classes on Students Academic Performance

Some schools are running enrichment classes in English and Mathematics. It has been tried to analyse whether these enrichment classes have significant impact on the academic performance of students as represented by their mean score in these two subjects. Table 5.8 shows average score of schools which are taking enrichment classes as also of those schools which are not having such classes.

A look at the table shows that in English, the score of those having enrichment classes is 67.69 per cent compared to 66.05 per cent of those schools which are not holding such classes.

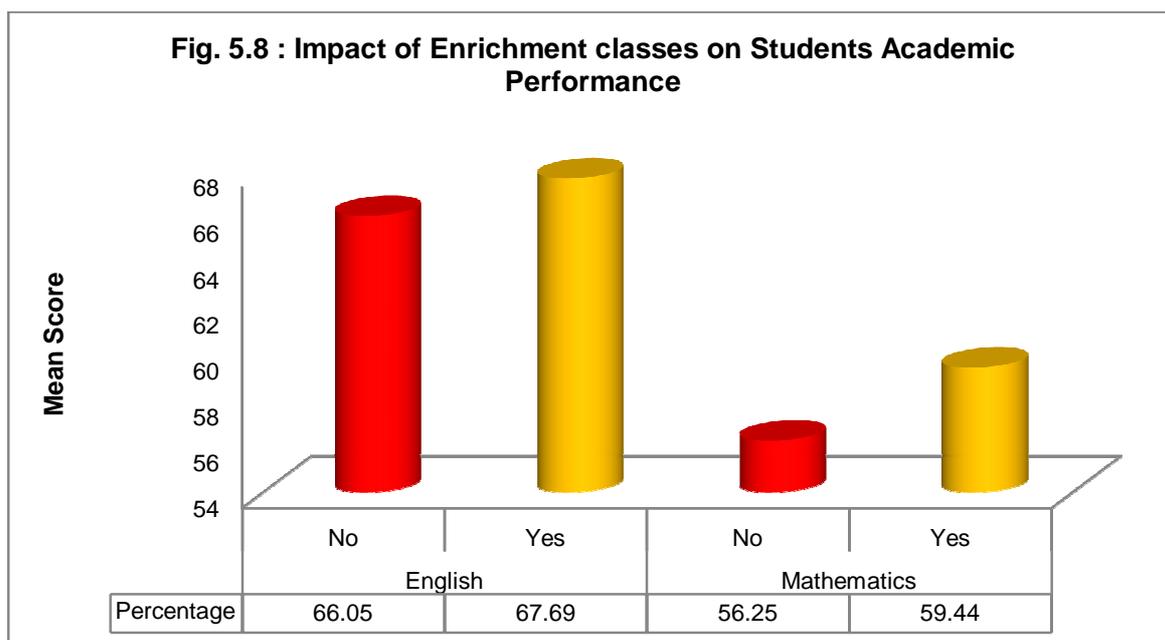
Table 5.8 : Impact of Enrichment classes on Students' Academic Performance

	N	Mean Score	Std. Deviation	t-value	Degrees of Freedom	Sig. (2 tail)
English						
No	379	66.05	16.64	1.760	2162	0.079**
Yes	1785	67.69	16.43			
Mathematics						
No	383	56.25	16.95	3.288	2159	.001*
Yes	1778	59.44	17.23			

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

** Not significant at 5 per cent level of significance, but significant at 10 per cent level of significance.



Note : Enrichment Classes not held for Punjabi subject

To see whether the difference of 1.61 per cent between the two means is statistically significant or not, we applied t-test. The computed value of t is 1.760, which is not statistically significant within the acceptable confidence limits. The table also gives results for Mathematics, where we find that the average score of those schools where enrichment classes are held, is 59.44 per cent compared to 56.25 per cent for those schools where such classes are not held. The computed t-value is 3.288 which is statistically significant at 1 per cent level of significance. Thus, we conclude that enrichment classes do have significant impact on marks obtained in Mathematics, but there is no clear cut proof of that happening in English, despite the fact that average score improved with enrichment classes in English also but the mean scores are not statistically different from each other within the acceptable confidence limits.

Supervisory Role of the Principal and Students Academic Performance

Principal is the leader and boss of the teaching staff in a school. The quality of governance, accountability and disciplinary climate, which are crucial for improving the quality of educational outcomes, are all dependent on the effectiveness of the supervisory role of the school principal. Principal not only supervise the staff and students but he/she also inspires them for achieving excellent performance. A good and effective principal may develop a built in process for monitoring the functioning of fellow staff members and providing a conducive environment needed for academic, physical and social development of students.

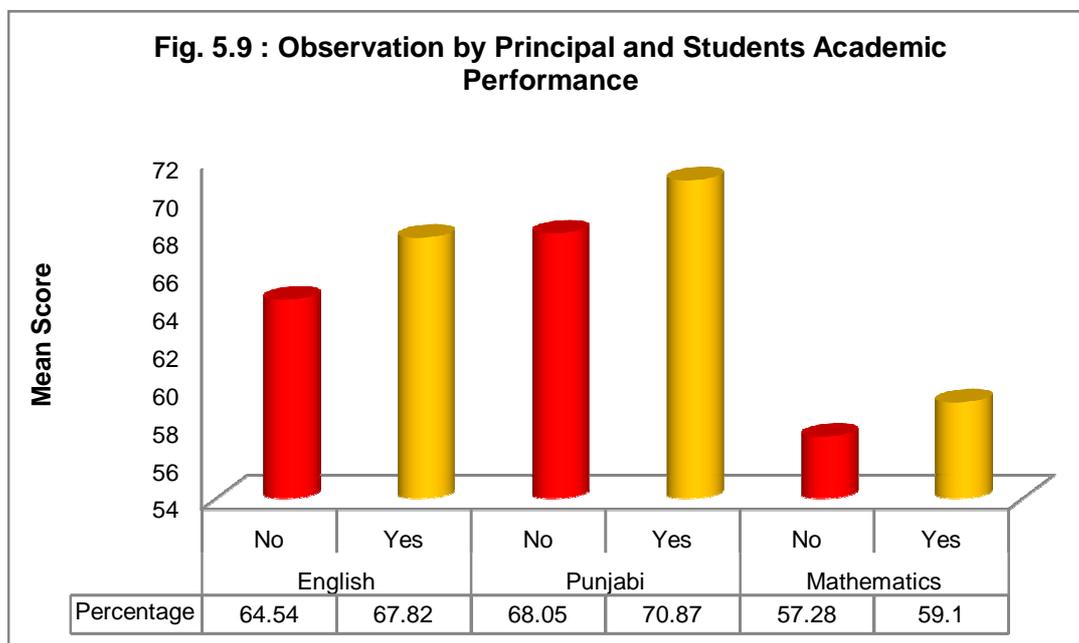
Table 5.9 : Observation by Principal and Students' Academic Performance

	N	Mean Score	Std. Deviation	t-value	Degrees of Freedom	Sig. (2 tail)
English						
No	273	64.54	15.83	3.073	2162	.002*
Yes	1891	67.82	16.53			
Punjabi						
No	273	68.05	15.01	2.891	2162	.004*
Yes	1891	70.87	15.02			
Mathematics						
No	273	57.28	16.85	1.639	2159	.101**
Yes	1888	59.10	17.26			

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

* Not significant within the acceptable confidence limits.



The table above shows that mean academic score of students where principal's observation is therevis-a-vis those schools where principals observation is missing for whatever reasons. In all the three subjects, the mean score of students is higher in schools where principal's observation is present. The mean difference is 3.28 percentage points in English, 2.82 percentage points in Punjabi and 1.82 percentage points in Mathematics. But we are not sure whether these mean differences between two sets of schools are statistically significant different from each other or not. To test that we applied students t-test to see whether the two means differ from each other statistically significantly or not. We find that the computed t-values are statistically significant in the case of English and Punjabi within the acceptable confidence limits, but the same is not true in case of Mathematics. Therefore, we may conclude that the principal's observatory role has significant effect on score in languages i.e. English and Punjabi but does not have the same effect in case of Mathematics.

Conclusions

To sum up, in this chapter, we examined the impact of seven school level factors on the academic performance of students as represented by their mean scores. The results can be summed up as follows:

- Type of school management has turned out to be a highly significant factor in explaining academic outcome of students. Students studying in private un-aided schools, private aided schools and LB/MC run schools have scored significantly

higher marks compared to students studying in Govt. and ZilaPerishad run schools. One-way ANOVA test has shown F-values to be highly significant at one per cent level of significance for all the three subjects.

- Our results show that the availability of physical infrastructure and facilities in schools have significant impact on level of academic achievement of students in all the three subjects.
- Students from urban area schools score significantly higher marks in all the three subjects compared to the marks obtained by students from rural area schools.
- Observation by principal of the school has been found to have a significant impact on the marks obtained in English and Punjabi but not in Mathematics
- Score in Mathematics is significantly affected by enrichmentclasses, which incidentally do not have any significant impact on performance of students in English.
- Pupil-teacher ratio and availability of instructional material has been found to be of no consequence as both these factors do not have any significant impact on academic performance of students

Thus, it is the type of school and availability of physical infrastructure and other facilities, which are the most important school level factors, followed by location which also has significant impact on academic performance of students. Principal's observations turn out to be important in case of languages i.e. English and Punjabi and enrichmentclasses in case of Mathematics. Pupil-teacher ratio and instructional material were not found to be of any significance.

CHAPTER-6

IMPACT OF TEACHER RELATED FACTORS ON ACADEMIC PERFORMANCE OF STUDENTS

Teacher is a pivot in the teaching learning process. He/she sets the tone of his/her class room, builds warm environment, mentor and nurture students, become role model and listen and look for sign of trouble. The most important and common role a teacher plays in the class room is to teach knowledge. The role of a teacher at the elementary level is to help students apply concepts such Mathematics, languages and basics of science through class room instructions and presentations. His/her role is also to prepare lessons, grade papers, manage the class room, meet with parents and work closely with the school staff. Being a teacher is much more than just executing lesson plans. In today's world a teacher's role is a multifaceted profession. He/she carries the role of surrogate parents, class disciplinarian, mentor, counselor, book keeper, role model, planner and many more. At the elementary school level, a teacher is often the sole source of a student's learning experience and what students learn in their formative years shape how they are in the future. With this brief background of expectations from the teacher, in this chapter, we will try to find out the impact of various teacher related factors on the academic accomplishment of students on the basis of data thrown up by the SIAS-2013.

Mean Percentage Score by Age of Teacher

We have divided teachers into four categories in terms of their age i.e. those upto 30 years of age, 31-40 years, 41-50 years and 51 years & above, to see how young teachers perform in comparison with their senior, older and more experienced teachers.

A look at the table 6.1 brings out two things clearly

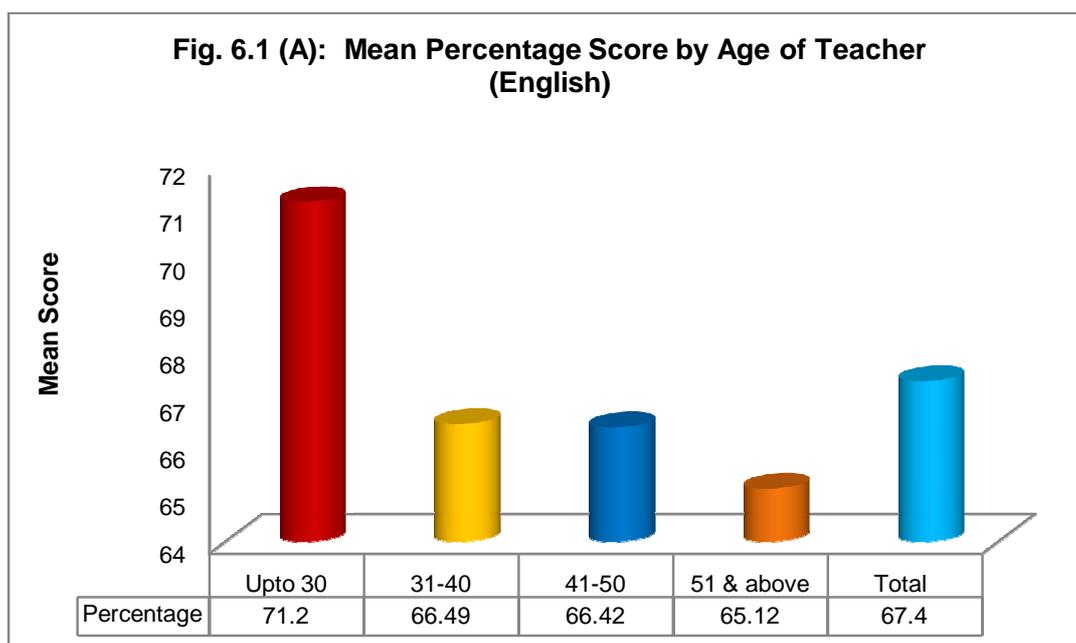
- i. More than 79 per cent teachers are relatively young i.e. upto 40 years of age. In fact, slightly above 22 per cent are upto 30 years of age. This shows that a fairly large number of teachers have entered the schools in recent years. In fact, teachers above 50 years of age constitute only 9 per cent of the total.

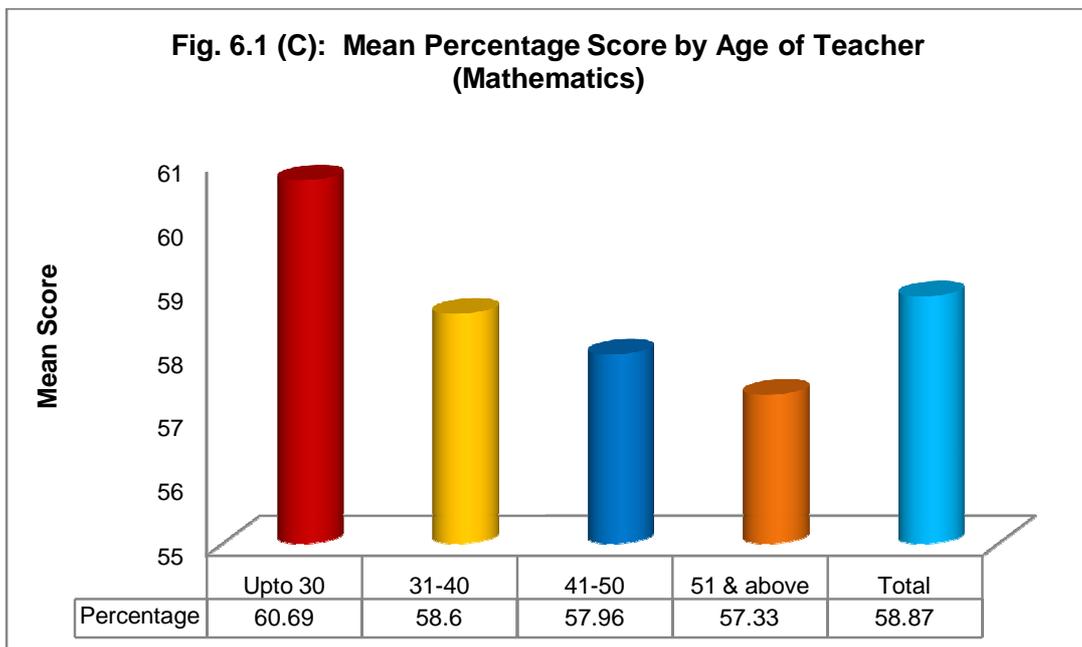
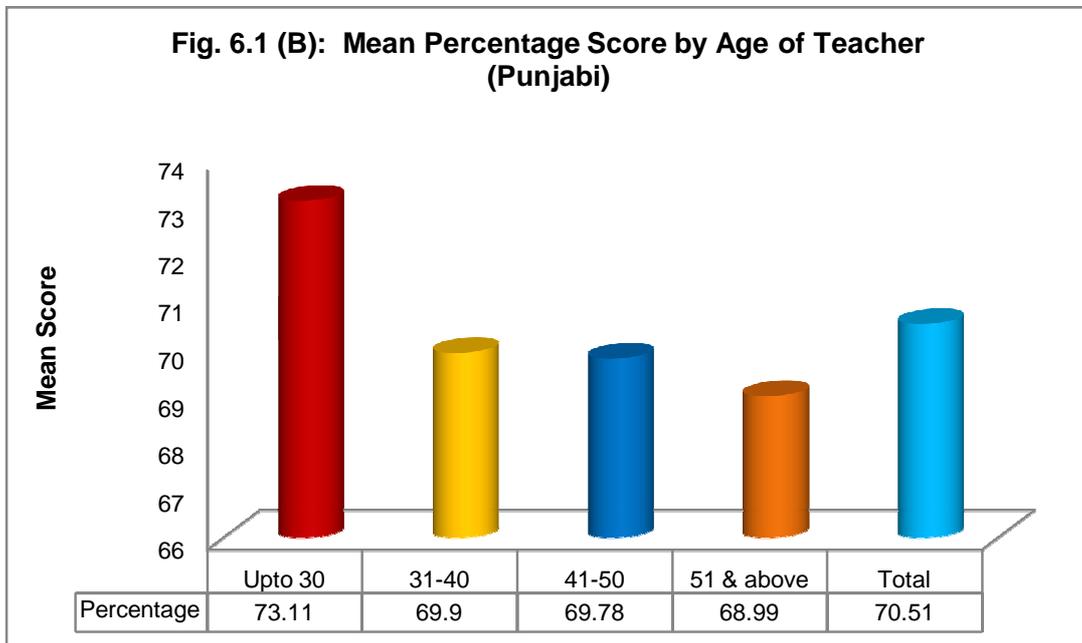
- ii. A look at the mean score column brings out clearly that young teachers upto 30 years of age have outperformed their older colleagues in all the three subjects. The second position in the three subjects is held by teachers in the 31-40 years age group. Thus, it is heartening to note that not only large numbers of teachers have entered the school education in recent years, they appear to be of good quality, energetic and committed teachers.

Table 6.1 :Mean Percentage Score by Age of Teacher

Subject	Age Category (in yrs)	N	Mean Score	Std Deviation
English	Upto 30	480	71.20	16.32
	31-40	1233	66.49	16.30
	41-50	256	66.42	17.10
	51 & above	195	65.12	15.84
	Total	2164	67.40	16.48
Punjabi	Upto 30	479	73.11	15.94
	31-40	1233	69.90	14.50
	41-50	255	69.78	14.65
	51 & above	197	68.99	16.04
	Total	2164	70.51	15.05
Mathematics	Upto 30	479	60.69	17.43
	31-40	1225	58.60	17.18
	41-50	260	57.96	17.22
	51 & above	197	57.33	16.70
	Total	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.





It is, however, somewhat intriguing why older teachers with more experience should not be performing as well as their less experienced younger colleagues. One possibility is that senior teachers having larger teaching experience do not consider it essential to revise or update themselves with new trends in their subjects and hence they are not able to perform as well as their younger less experienced counterparts. The secondary, possibility is that they are vested with additional responsibilities, thus affecting their teaching work adversely. But we are yet not

sure whether mean score are in fact significantly different from each other across teacher's age categories. For that we will apply one-way ANOVA to test the significance of means. We will be testing the following hypotheses.

H₀: There is no difference between the mean percentage score of students taught by teachers belonging to different age groups.

H₁: There is difference between the mean percentage score of students taught by teachers belonging to different age groups.

Table 6.1 (a) :One Way ANOVA Table to Test the Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	9199.476	3	3066.492	11.450*	.000*
Punjabi	4282.492	3	1427.497	6.347*	.000*
Mathematics	2362.173	3	787.391	2.660**	.047*

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

* Significant at 5 per cent level of significance.

The ANOVA table shows that the calculated F-values are significant at 1 per cent level of significance in case of English and Punjabi and it is significant at 5 per cent level of significance in case of Mathematics. Thus, the computed F-values are statistically significant within the acceptable confidence limits for all the three subjects. Therefore, we reject the null hypothesis and accept the alternative hypothesis. So, we may conclude that there is a significant difference between the mean percentage score of students and the age of teachers with younger teachers outperforming their older colleagues.

Gender of Teacher

It is generally believed that lady teachers are good in teaching languages but may not be as good in Mathematics. For male teachers, it is considered to be the other way around. To find out whether gender of teacher has any impact on the academic score of students, we give below teacher gender wise mean scores of students in different subjects.

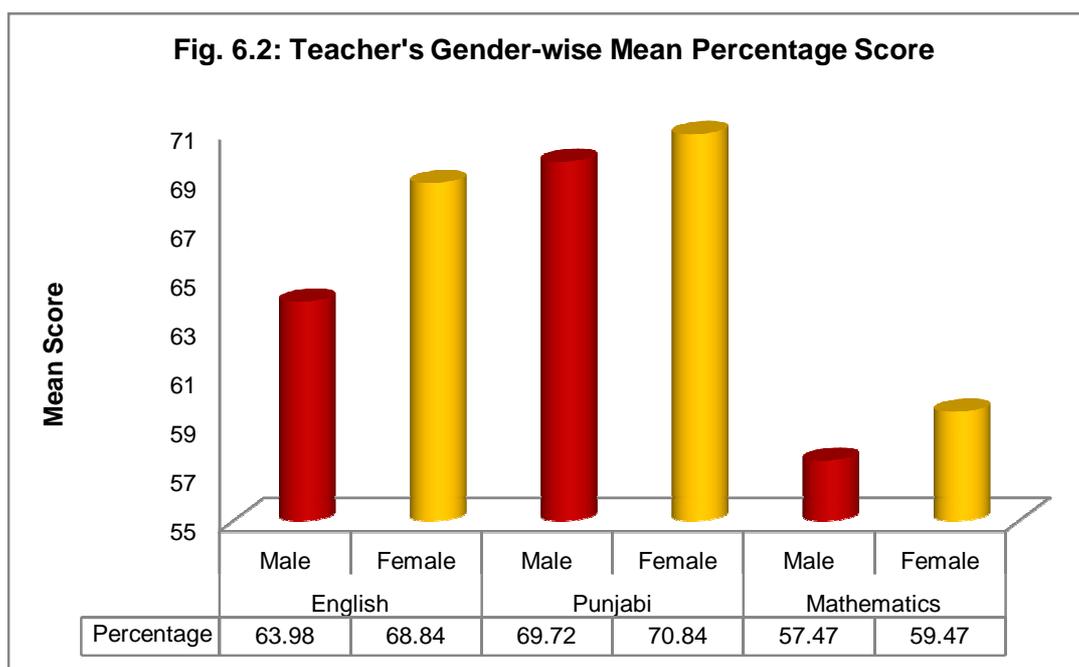
Table 6.2 : Teacher's Gender-wise Mean percentage Score

Subject	Teacher's Gender	N	Mean Percentage Score	Std. Deviation	Mean Difference	T-value	Degrees of Freedom
English	Male	640	63.98	16.89	4.86	6.317*	2162
	Female	1524	68.84	16.09			
Punjabi	Male	638	69.72	15.58	1.12	1.587	2162
	Female	1526	70.84	14.81			
Mathematics	Male	642	57.47	17.42	2.00	2.471**	2159
	Female	1519	59.47	17.11			

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

* Significant at 5 per cent level of significance.



A look at 'N' column of the above table shows that only 29.57 per cent teachers in our sample are males, the remaining more than 70 per cent teachers are females. A look at the mean percentage score column shows that in all the three subjects, the mean score of students being taught by female teacher is higher than score of students taught by male teachers. The gap in marks attributable to the gender of the teacher is 4.86 percentage points in case of English, 1.12 percentage points in case of Punjabi and 2.00 percentage points in case of Mathematics. Not only the mean scores in all the three subjects are higher in case of female teacher taught students, even

the variance of marks as represented by standard deviation figures is also low may be only marginally. To find out whether these differences in mean scores between the two groups of students taught by male and female teachers are statistically significant or not, we have calculated t-values. A look at the t-value column shows that in case of English, the mean difference between the marks of two groups is statistically significant at 1 per cent level of significance. In case of Mathematics, t-value is significant at 5 per cent level of significance. But in case of Punjabi, calculated t-value is not significant within the acceptable confidence limits. Thus, while female teachers outperform male teachers in case of English and Mathematics, there is no difference in case of Punjabi

Caste of Teacher and Academic Performance of Students

State plays an extremely important role in the labour market for teachers in India. State has a near monopoly in providing qualifications and is nearly a monopsonist buyer since most teachers find employment in the public sector schools. Salaries of the teachers in the state owned or funded schools are set by state through Pay Commissions and other political processes. Salaries paid to teachers in private schools are usually a fraction of what is paid to government school teachers. Thus, the first priority of a trained teacher is to get job in a government school. In government schools, at the time of selection, a certain percentage of jobs are reserved for scheduled castes and backward castes. Normally, relaxation in age is also given to candidates from these reserved categories. As a result, one normally finds that the last candidate selected from reserved categories almost always have lower marks than the last candidate selected from the general category. The competition in the reserved categories is less than competition in the general category.

Thus, on an average, a candidate selected from the reserve categories has inferior academic record compared to a candidate selected from the general category. It would be interesting to know whether the differential in quality of general and reserved category of teachers, which exist at the entry level, persists over time and whether it gets reflected in their output as measured by marks obtained by students taught by these different categories of teachers or not. The following table gives mean percentage score of students taught by teachers belonging to different caste categories.

Table 6.3 : Mean Percentage Score by Caste of Teacher

Subject	Caste Category of Teacher	N	Mean Percentage Score	Std. Deviation
English	SC	488	63.80	17.14
	BC	262	66.34	15.25
	OBC	94	69.01	16.81
	General	1315	68.89	16.20
	Others	55	53.51	21.59
	Total	2164	67.40	16.48
Punjabi	SC	489	68.89	15.08
	BC	260	69.75	16.06
	OBC	96	70.42	14.27
	General	1314	71.29	14.84
	Others	5	67.11	16.92
	Total	2164	70.51	15.05
Mathematics	SC	488	57.45	17.44
	BC	261	56.38	17.93
	OBC	95	59.26	17.19
	General	1312	59.95	16.87
	Others	5	36.66	15.91
	Total	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.

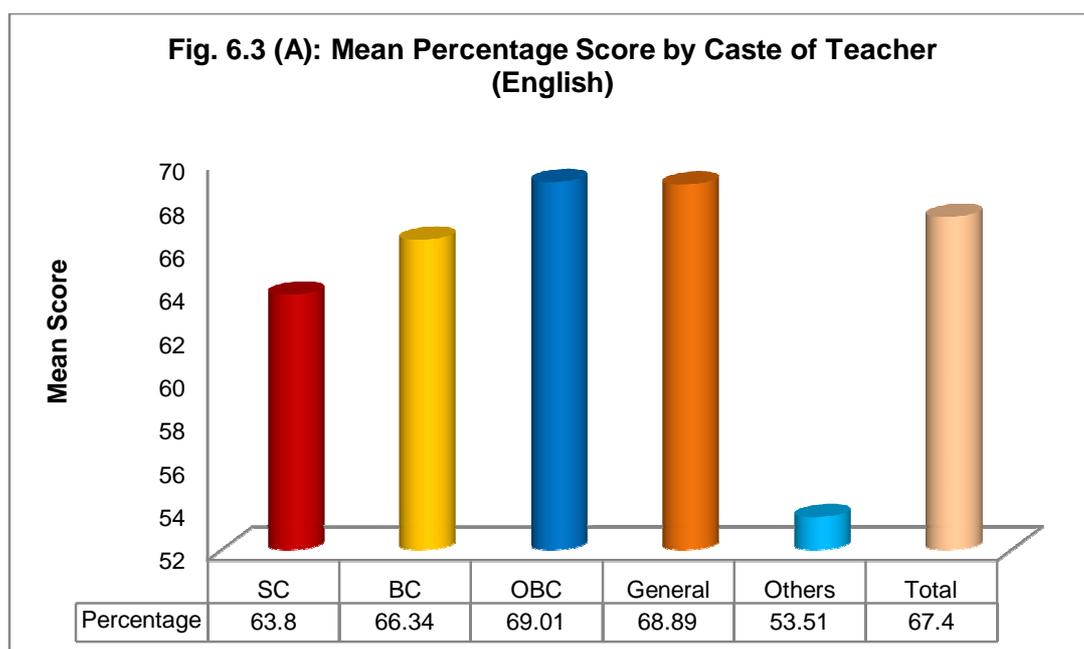


Fig. 6.3 (B): Mean Percentage Score by Caste of Teacher (Punjabi)

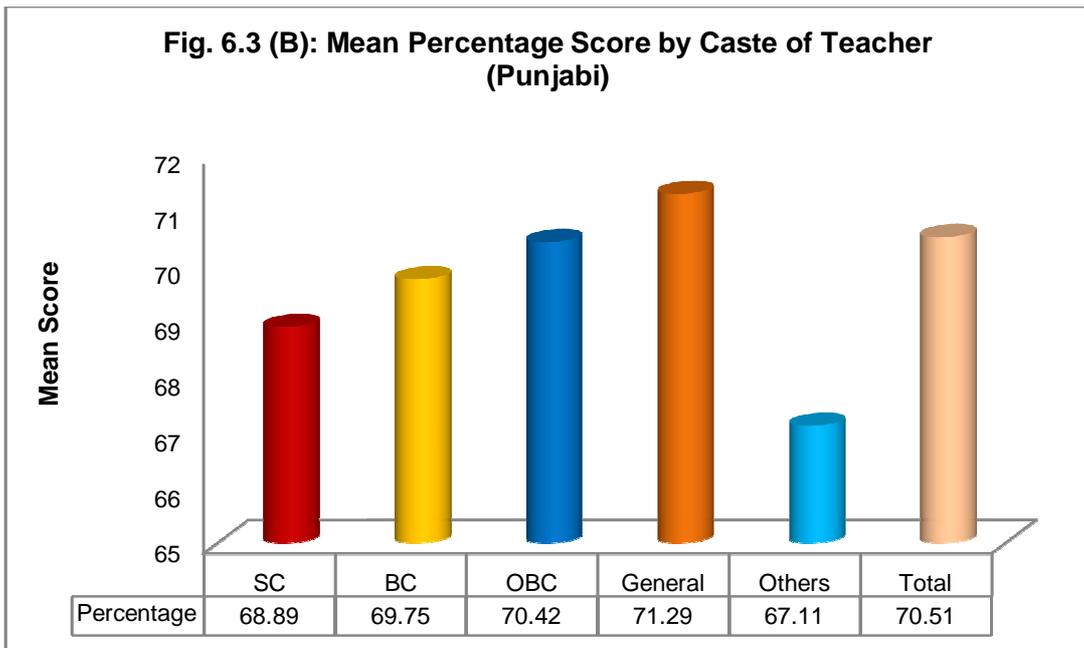
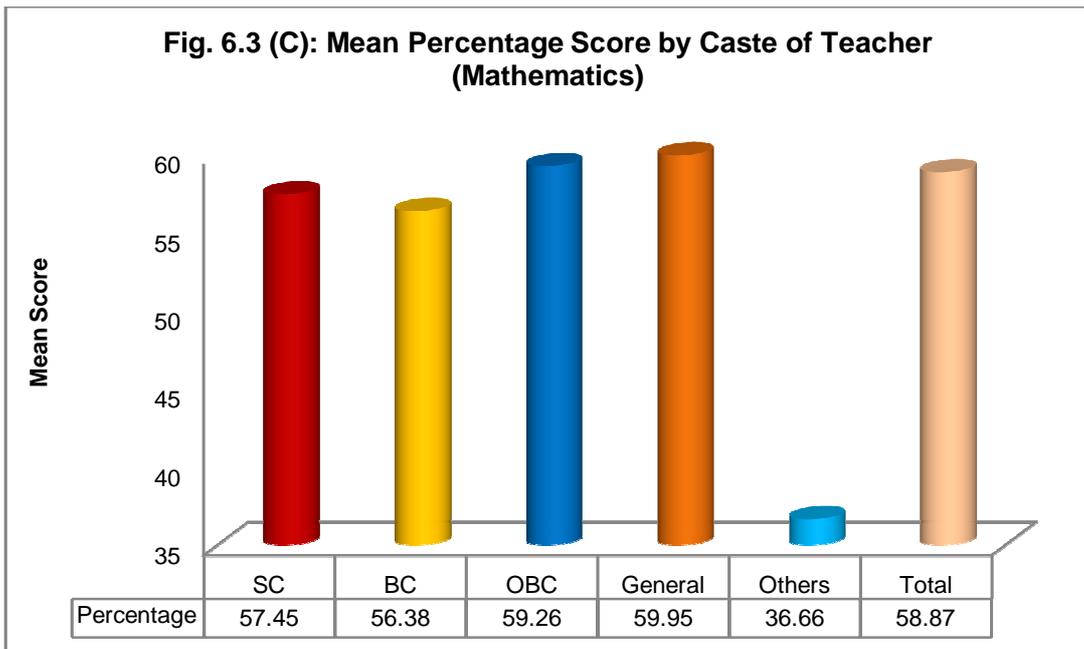


Fig. 6.3 (C): Mean Percentage Score by Caste of Teacher (Mathematics)



Three things emerge clearly from the table.

1. More than sixty per cent (60.76 per cent) teachers are from the general category. SC teachers constitute 22.55 per cent and BC category 12.10 per cent and OBC category account for 4.34 per cent. It is interesting to know that while 68.02 per cent students studying in these schools are from SC/BC categories (Table 3.9), more than 60 per cent teachers teaching them are from the general category.
2. A look at the mean percentage column shows that amongst the four caste categories, the minimum marks are obtained by students taught by SC category teachers in all the three subjects. The second lowest percentage is recorded by students taught by BC teachers. The highest marks in English are recorded by students taught by OBC teachers and in Punjabi and Mathematics, the honour goes to students of general category teachers. Thus, the differential quality of teachers issue continues to persist and it gets reflected in the marks obtained by students taught by teachers belonging to different caste categories.
3. The gap in the mean marks scored by the highest and the lowest category is 15.36 percentage points in English, 4.18 percentage points in Punjabi and 13.29 percentage points in Mathematics. The gap in the highest and lowest score category is quite large, particularly in English and Mathematics, but we still cannot say with certainty whether the difference in mean scores is statistically significant or not. To know that, we have applied one-way ANOVA test. The results of which are reported below. We will be testing the following hypothesis.

H_0 : There is no difference in the mean percentage score of students taught by teachers belonging to different caste categories.

H_1 : There is difference in the mean percentage score of students taught by teachers belonging to different caste categories.

Table 6.3 (a) : One Way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	10753.603	4	2688.401	10.061	.000*
Punjabi	2276.696	4	569.174	2.519	.000**
Mathematics	6611.223	4	1652.806	5.619	.000*

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

* Significant at 5 per cent level of significance.

The calculated value of F in case of English and Mathematics is significant at 1 per cent level of significance and in case of Punjabi, it is significant at 5 per cent level of significance, which is within the acceptable confidence limits. Thus, the one-way ANOVA test does not support the null hypothesis. We, therefore, accept the alternative hypothesis that there is a significant difference between the mean percentage score of students and the caste of teachers teaching them.

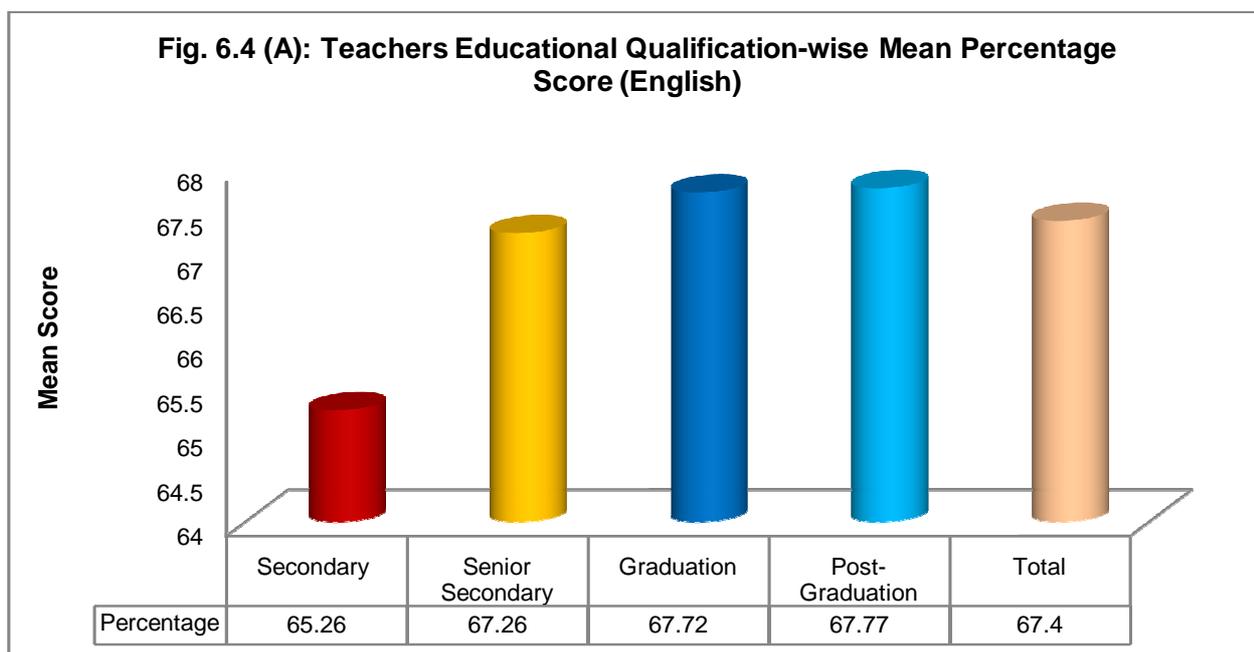
Impact of Teachers' Highest Educational Qualification on Academic Performance of Students

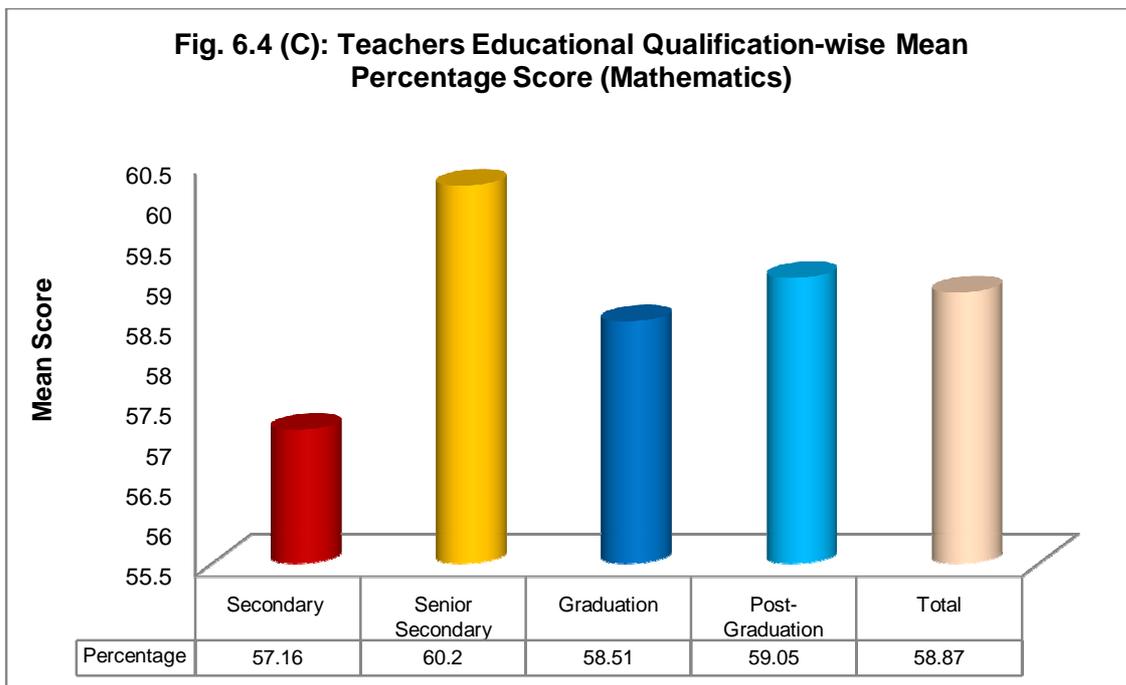
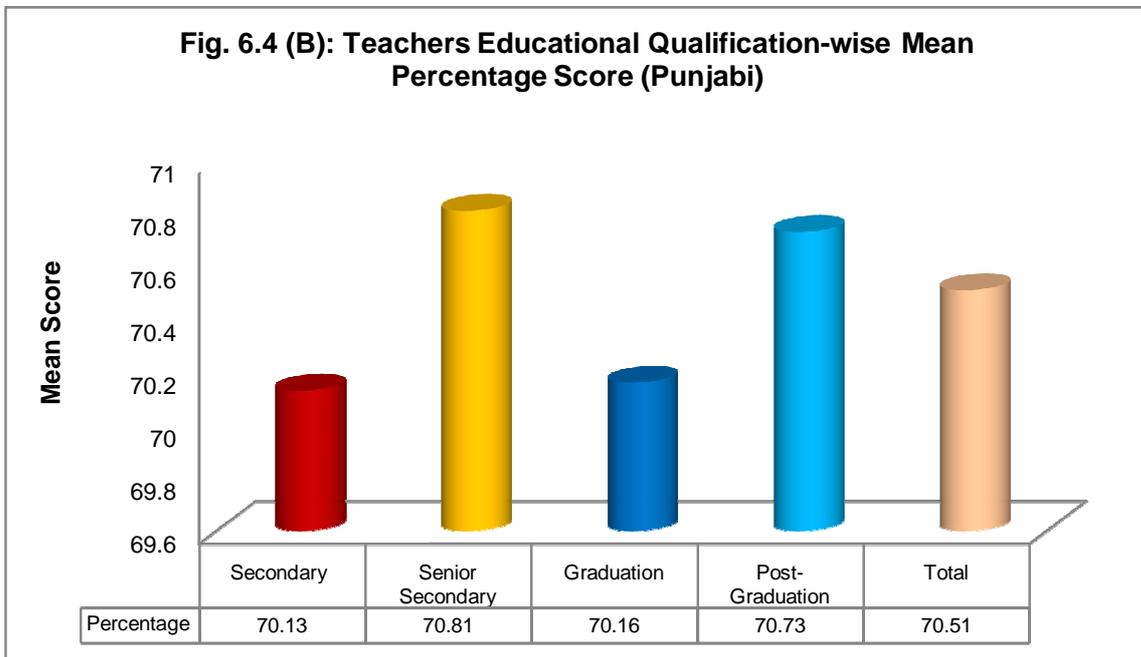
Generally, the teachers with higher educational qualifications and more secure jobs can be expected to be more motivated to perform. However, there is also evidence that they are more prone to be more absent from schools (Chaudhury *et. al.*, 2004). Here, we will try to find out the relationship, if any, between the educational qualification of teachers and academic performance of students.

Table 6.4 : Teachers Educational Qualification-wise Mean Percentage Score

Educational Qualification	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
Secondary	132	65.26	16.40	133	70.13	16.48	135	57.16	17.49
Senior Secondary	217	67.26	16.31	222	70.81	14.66	222	60.20	16.13
Graduation	713	67.72	16.48	707	70.16	15.02	713	58.51	17.31
Post-Graduation	1102	67.77	16.51	1102	70.73	14.82	1091	59.05	17.34
Total	2164	67.40	16.49	2164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.





It is heartening to know that nearly 51 per cent teachers are post-graduates. Another 32.94 per cent are graduate and only 16 per cent of them are having the highest qualification of secondary or senior secondary. Thus, teachers in our sample are well educated. Thus, three teachers out of every six teachers are post-graduates, two are graduates and one is below graduation.

In terms of mean percentage score of students, there is a very little difference across teacher's educational qualifications. For example, in English, the difference between the highest and the lowest means is only 2.51 percentage points. It is 3.04 percentage points in case of Mathematics. But in Punjabi, it is only 0.68 percentage points. Apparently, there is no significant difference in means across teacher's educational categories but to be sure, we will apply one-way ANOVA test for testing the significance of means. We will be testing the following hypothesis

H_0 : There is no difference in the mean percentage score of students taught by teachers with different educational qualifications.

H_1 : There is difference in the mean percentage score of students taught by teachers with different educational qualifications.

Table 6.4 (a) :One Way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	763.560	3	254.520	.937	.422
Punjabi	179.185	3	59.728	.263	.852
Mathematics	915.977	3	305.326	1.029	.379

Source: Compiled from SLAS-2013 data.

A look at the computed values of F shows that means are not statistically significantly different from each other within the acceptable confidence limits for all the three subjects. Therefore, we accept the null hypothesis and conclude that there is no difference between the mean percentage score of students taught by teachers with different educational qualifications.

Teacher's Professional Training and Academic Performance of Students

Teacher's professional training is another important parameter which is supposed to determine the quality of school education. We have three types of professionally trained teachers in our survey those with (a) primary/elementary teaching certificate or diploma (b) graduate training (i.e. B. Ed or equivalent qualification) and (c) post-graduate training (M. Ed teachers). Here, we will study whether professional qualification of teachers has any impact on academic performance of their students.

A look at the 'N' column of the table shows that nearly 59 per cent teachers are trained graduates i.e. have B. Ed or its equivalent degree. Another 38 per cent are having primary/elementary certificate or diploma. The remaining about 3 per cent teachers have done M.Ed. Another important thing which emerges from the table is that there is hardly any significant difference in the mean score of students taught by teachers with different professional qualifications. The highest score in all the three subjects is recorded by students taught by B. Ed teachers, followed by students taught by teachers with diploma or certificate as professional qualification.

Table 6.5 :Teacher's Professional Qualification-wise Mean Percentage Score

Educational Qualification	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
Primary/Elementary Certificate/Diploma	819	67.09	16.07	816	70.08	15.85	822	58.57	16.99
Graduate Training (B.Ed or equivalent)	1276	67.69	16.71	1283	70.84	14.55	1273	59.16	17.37
Post-Graduate Training (M.Ed or any other)	69	65.77	17.13	65	69.36	14.45	66	57.00	17.21
Total	2164	67.40	16.48	5164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.

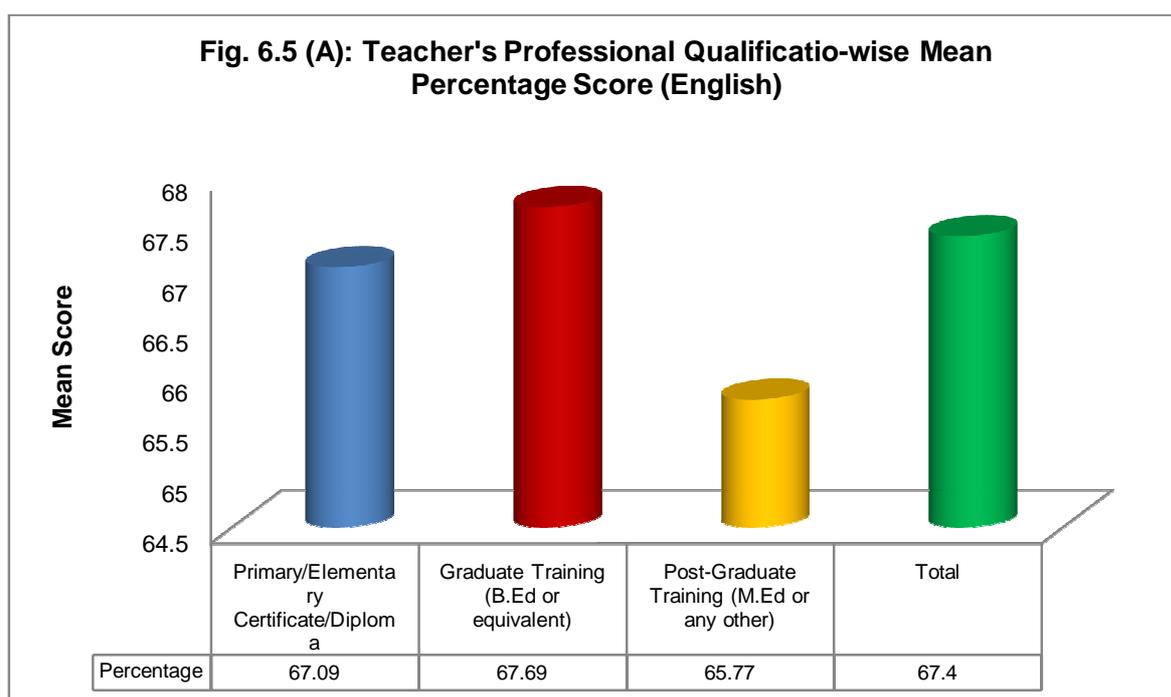


Fig. 6.5 (B): Teacher's Professional Qualificatio-wise Mean Percentage Score (Punjabi)

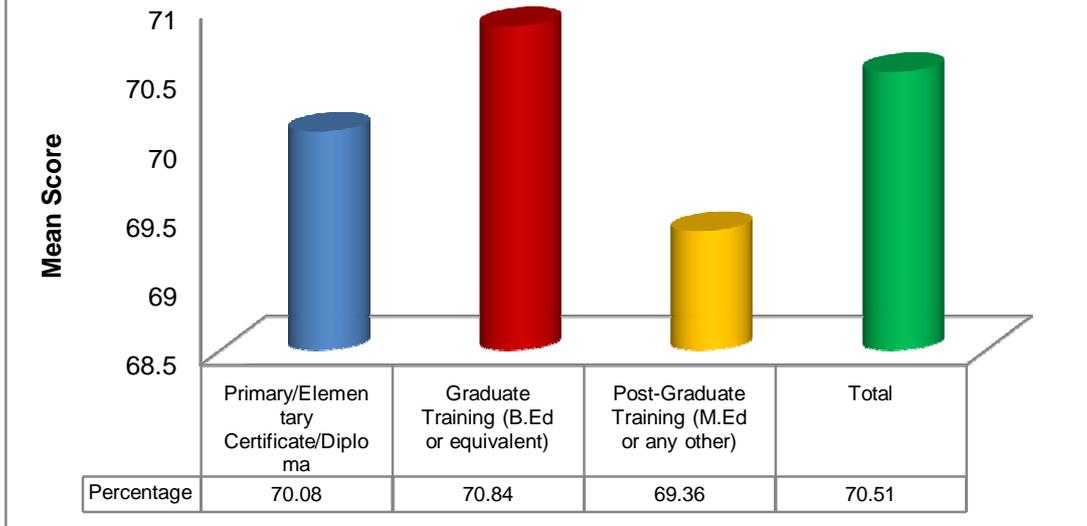
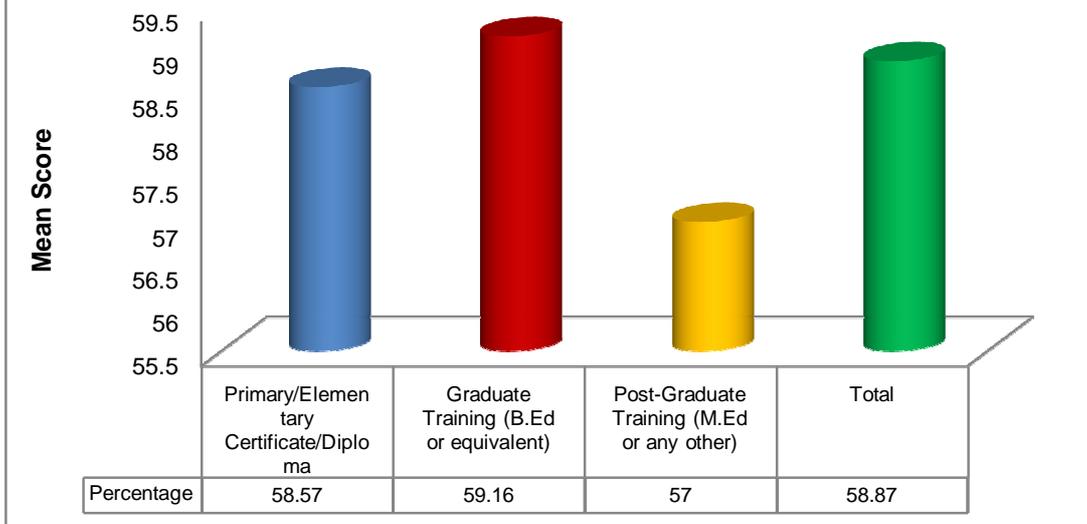


Fig. 6.5 (C): Teacher's Professional Qualificatio-wise Mean Percentage Score (Mathematics)



The lowest marks in all the three subjects are obtained by students taught by teachers with M. Ed professional qualification. Although, the difference in mean score between the highest and lowest category is only 1.92 percentage points in English, 1.48 percentage points in Punjabi and 2.16 percentage points in Mathematics, yet it is surprising to note that both the lower professional categories of teachers outperform M. Ed teachers in all subject. Perhaps, M.Ed. is too high a qualification to teach 3rd standard students and they feel misfit to teach small kids. However, we are still not sure whether these means are statistically significantly different from each other or not. For this, we have applied one-way ANOVA test to find the significance of means. We will be testing the following hypothesis.

H₀: There is no difference in the mean percentage score of students taught by teachers with different professional trainings.

H₁: There is difference in the mean percentage score of students taught by teachers with different professional trainings.

Table 6.5 (a) :One Way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	367.699	2	183.849	.676	.509
Punjabi	371.541	2	185.770	.820	.441
Mathematics	410.846	2	205.423	.692	.501

Source: Compiled from SLAS-2013 data.

Calculated F-values for all three subjects are not significant within the acceptable confidence limits. Therefore, we accept the null hypothesis. Thus, we may conclude that there is no difference between the mean percentage score of students taught by teachers with different professional qualifications and teachers' highest academic qualification is not a factor in determining the academic performance of students.

Impact of Teacher's Teaching Experience on Students Academic Performance

It is generally believed that teaching experience of teacher plays an important role in academic performance of students. A seasoned teacher knows better how to hand down knowledge to the students. He may also be having better communication skills. But there are several empirical studies which have found significant negative effect of the teaching experience of the teachers on the performance of students (Dohare *et.al.* 2011; Chand and Sharma, 2012). It is

just possible that senior teachers having longer teaching experience do not consider it essential to revise or update themselves with new trends in their subjects and may also be vested with additional responsibilities, thus affecting their teaching work adversely. Here, we will verify from our sample data thrown up by SLAS-2013 the impact of teacher's teaching experience on student's academic performance. For this purpose, we have divided the experience of teachers into five categories viz upto 5 years, 5-9.99 years, 10-19.99 years, 20-29.99 years and 30 years & above. The mean percentage score of students by experience of teachers is given below.

Table 6.6 : Mean Percentage Score by Length of Teacher's Teaching Experience

Teaching Experience (in years)	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
upto 5 Years	505	72.82	15.53	506	74.69	14.38	503	62.24	17.07
5-9.99	1021	64.96	16.66	1021	68.38	15.12	1021	57.37	17.42
10-19.99	463	68.54	15.70	460	71.48	14.16	460	59.49	16.68
20-29.99	128	64.03	15.43	130	68.79	15.17	130	56.43	16.70
30 & above	47	62.66	17.29	47	67.01	18.32	47	56.12	16.00
Total	2164	67.40	16.48	2164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.

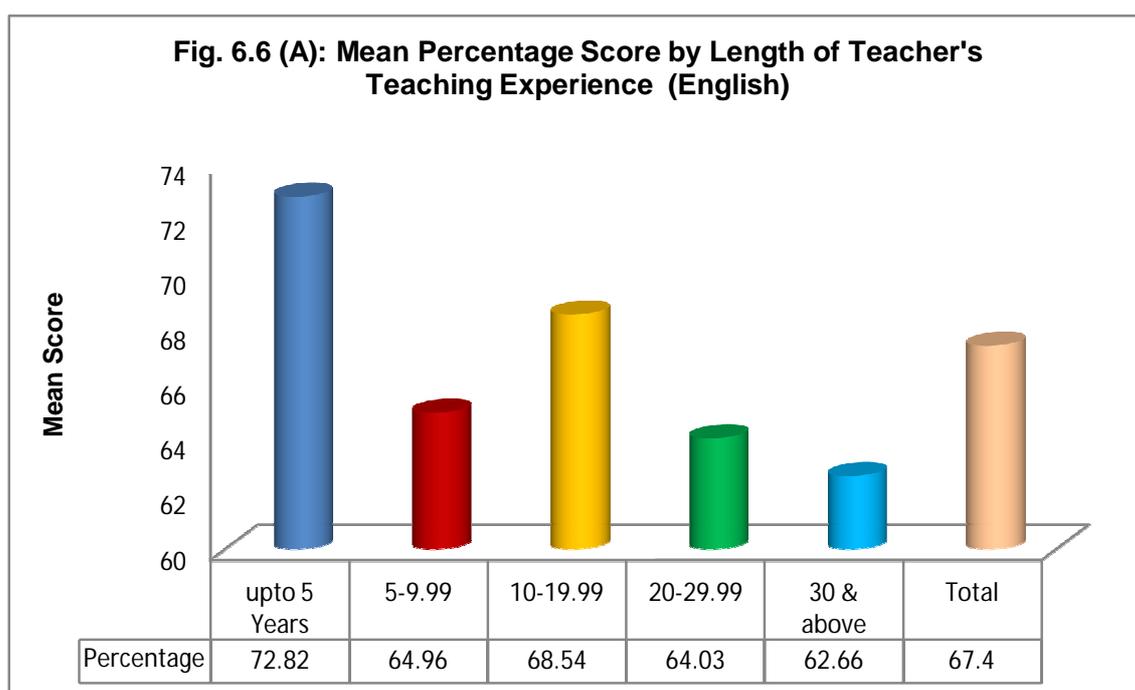


Fig. 6.6 (B): Mean Percentage Score by Length of Teacher's Teaching Experience (Punjabi)

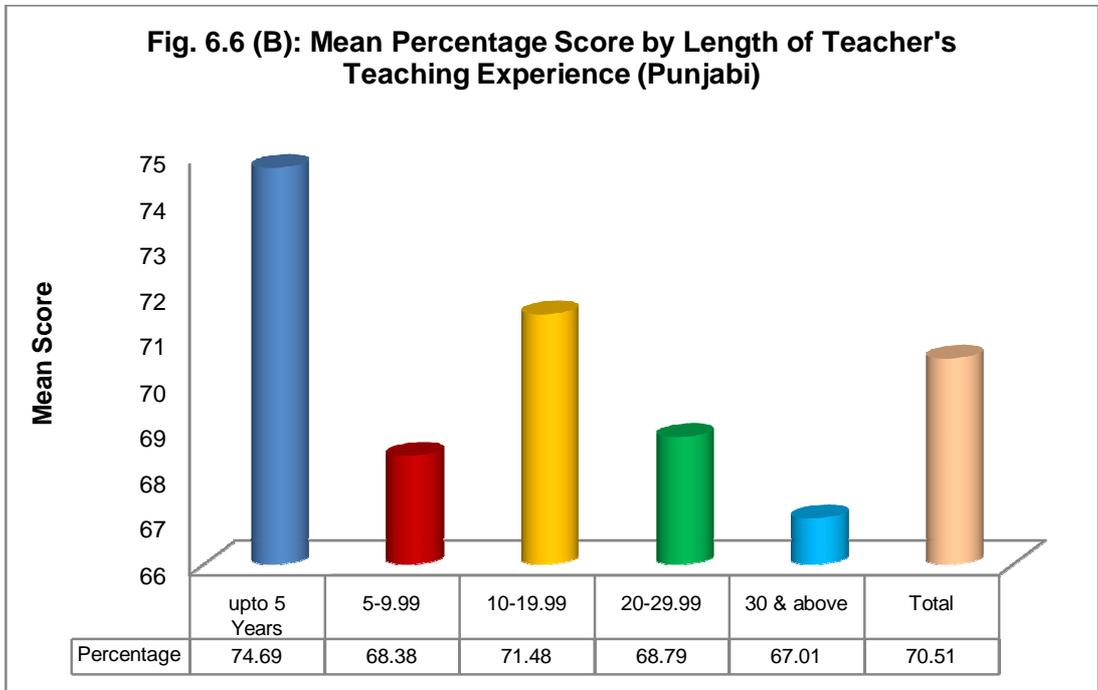
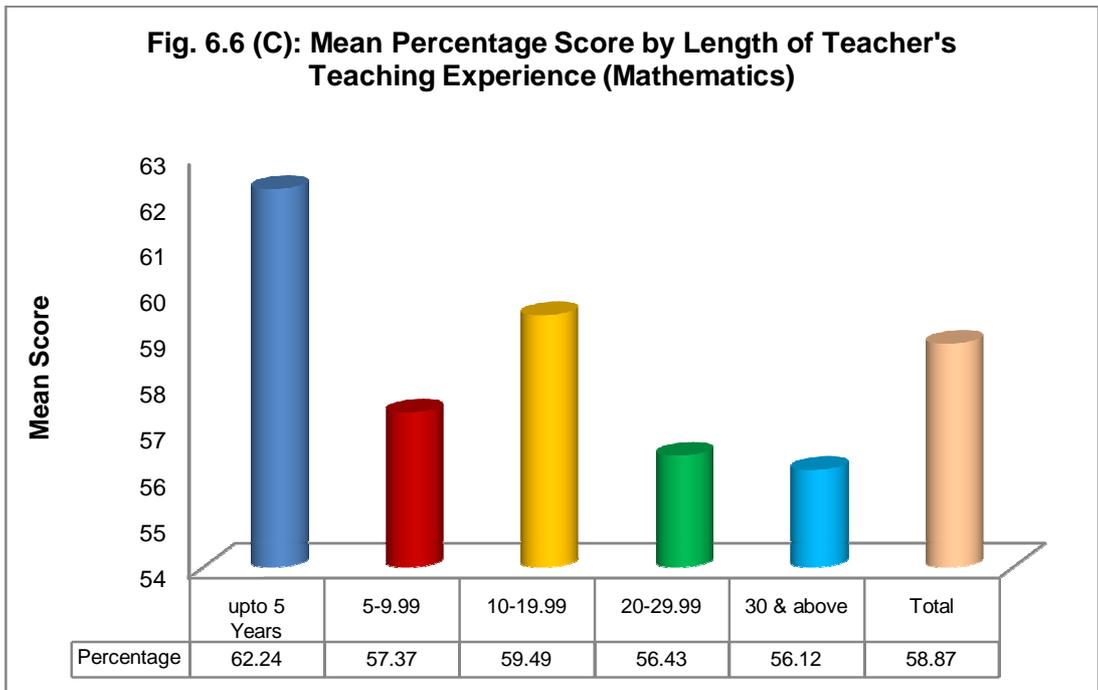


Fig. 6.6 (C): Mean Percentage Score by Length of Teacher's Teaching Experience (Mathematics)



Following points emerge from the above table.

- (i) The largest number of teachers (47.18 per cent) falls in the 5-10 years' experience bracket. Another 23.34 per cent in fact have less than 5 years of teaching experience. Thus, more than 70 per cent teachers in our sample have entered the profession during the last 10 years. Teachers between 10 and 20 years of experience constitute 23.34 per cent of the total those with more than 20 years of teaching experience are slightly above 8 per cent.
- (ii) The younger teachers with less than 5 years of experience outperform all other categories of their senior colleagues. The highest marks in all the three subjects are scored by students taught by these young and energetic enthusiasts. They are followed by teachers with 10-20 years of experience. The third place in English and Mathematics goes to teachers with 5-10 years of teaching experience. The older more experienced teachers are at the bottom in all the three subjects. Generally, there appears to be a negative relationship between the length of teachers teaching experience and academic performance of students. The gap in the mean score of the highest and the lowest category is more than 10 percentage points in English. It narrows down to 7.68 percentage points in Punjabi and 6.12 percentage points in Mathematics. To see whether these means difference are statistically significant or not we apply one-way ANOVA test. We will be testing the following hypothesis.

H_0 : There is no difference in the mean percentage score of students taught by teachers with different teaching experience.

H_1 : There is difference in the mean percentage score of students taught by teachers with different teaching experience.

Table 6.6 (a) :One Way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	24560.924	4	6140.231	23.542*	.000*
Punjabi	14874.129	4	3718.532	16.895*	.000**
Mathematics	9314.186	4	2328.547	7.950*	.000*

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

The computed values of F are significant at 1 per cent level of significance for all the three subjects. We, therefore, reject the null hypothesis and accept the alternative hypothesis i.e. there is a significant difference between the mean percentage score of students and length of teaching experience of teachers.

Impact of Teachers Employment Status on Students Academic Performance

In this section, we will discuss if there is any relationship between the employment status of the teacher and academic performance of students taught by them. By employment status, we mean whether the teacher is working on a regular basis or he/she is working on temporary or ad-hoc basis or he/she may be working against a leave vacancy or on some other basis. A teacher, who is not working on a regular basis, may always be looking for a regular job in the same school or elsewhere, because apart from job security, a regular teacher draws much higher salary than salary drawn by any other category of teacher with similar qualifications and experience. This, in turn, may affect their performance. On the other hand, a teacher who is working on a regular basis may become complacent and lethargic because being a regular one, there is no risk to his job security, while a temporary or adhoc teachers will have to prove his worth to continue in the job. Thus, a temporary or an adhoc teacher may be more concerned about the result of his subject than a regular teacher. To test which of those contrasting propositions is supported by facts, we give below a table showing mean percentage score of students by employment status of teachers. A look at the table shows that nearly 80 per cent teachers in our sample are working on regular basis. Temporary/adhoc teacher constitute 7.67 per cent of the total only. About 0.57 per cent teachers are working against leave vacancies. All other categories put together called 'others' account for 12.24 per cent of the total. When we look at the teacher's category wise mean percentage score of students, we find that in none of the three subjects the group getting highest marks are taught by regular teachers. In English and in Punjabi, the highest marks are obtained by students who are taught by teachers working against the leave vacancy. In Mathematics, temporary/adhoc teachers outperform other categories.

Table 6.7 : Mean Percentage Score by Employment Status of Teachers

Subject	Employment Status	N	Mean Score	Standard Deviation
English	Regular	1723	67.18	16.49
	Temporary/Adhoc	165	71.91	16.40
	Against Leave Vacancy	11	72.52	17.02
	Others	265	65.80	16.00
	Total	2164	67.40	16.48
Punjabi	Regular	1722	70.52	14.85
	Temporary/Adhoc	166	68.75	19.50
	Against Leave Vacancy	11	72.22	16.36
	Others	265	69.48	15.26
	Total	2164	70.51	15.05
Mathematics	Regular	1721	58.81	17.19
	Temporary/Adhoc	166	61.63	17.36
	Against Leave Vacancy	10	57.75	18.67
	Others	264	57.59	17.18
	Total	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.

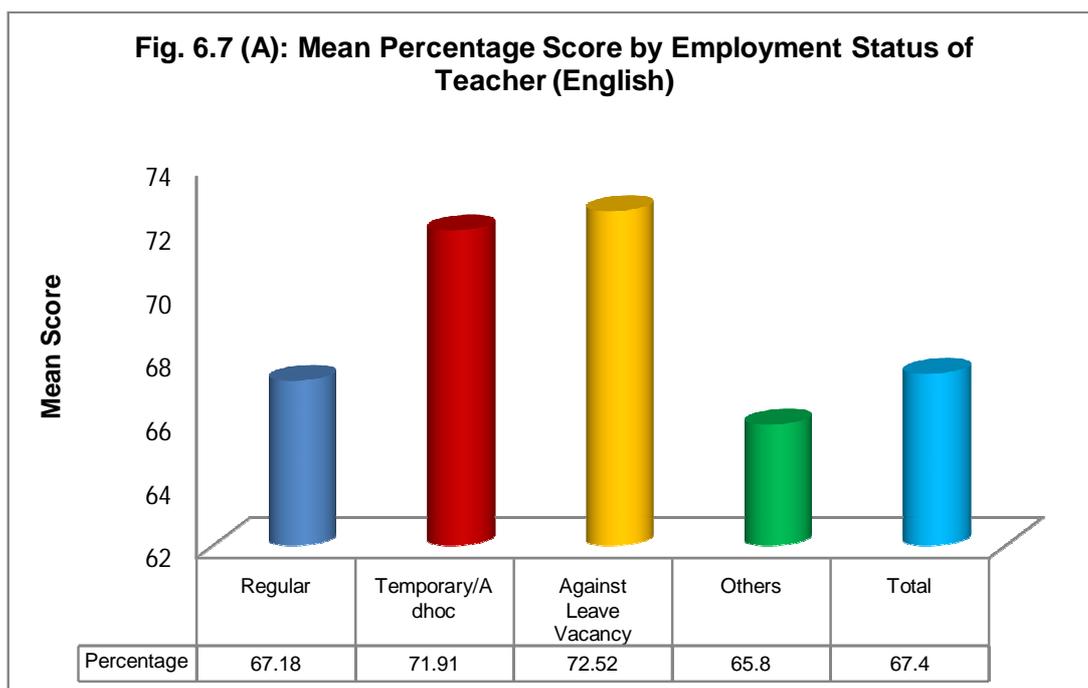


Fig. 6.7 (B): Mean Percentage Score by Employment Status of Teacher (Punjabi)

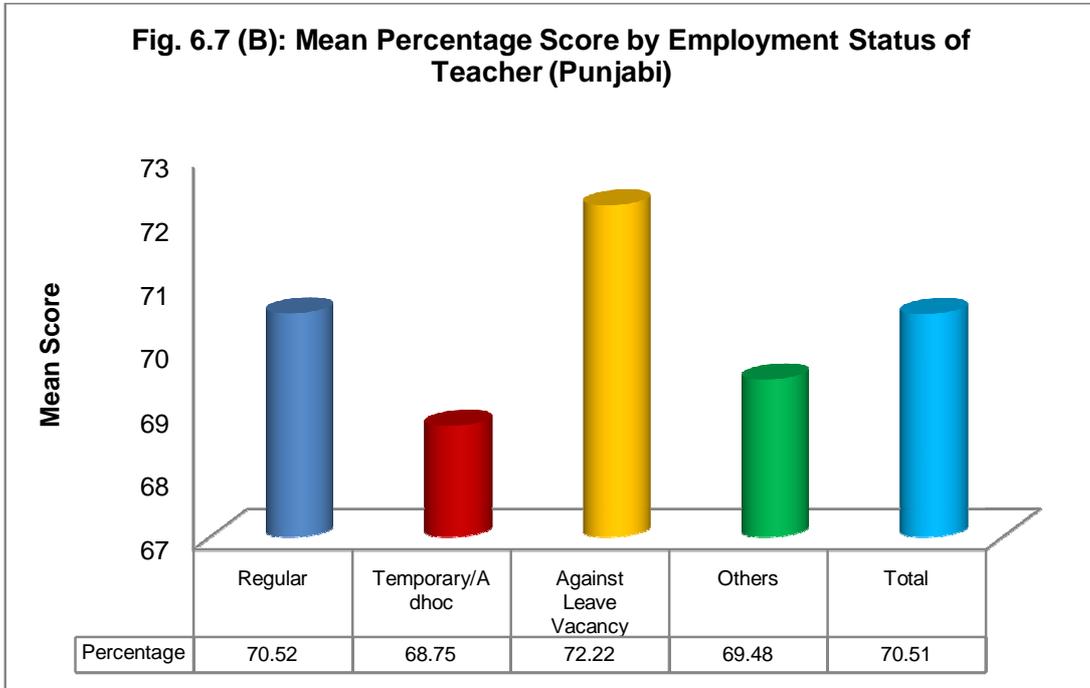
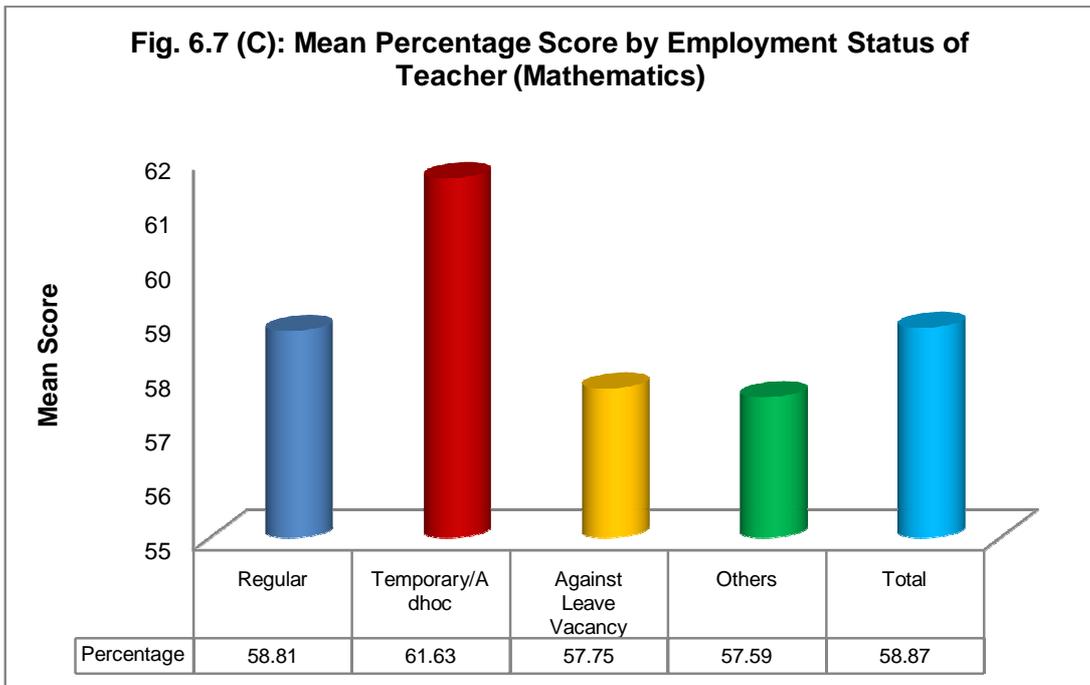


Fig. 6.7 (C): Mean Percentage Score by Employment Status of Teacher (Mathematics)



Even the second position goes to students of the regular teachers only in Mathematics while in English and Punjabi the second position is held by students taught by temporary/adhoc teachers and other teachers respectively. The difference between the highest and the lowest mean score is 6.72 percentage points in case of English. It narrows down to 3.47 percentage points in case of Punjabi and 4.04 percentage points in case of Mathematics. But we cannot say as it is whether these differences in mean scores are statistically significant or not. For that we have applied the one-way ANOVA to test the significance of means. We will be testing the following hypothesis.

H_0 : There is no difference in the mean percentage score of students taught by teachers having different employment status.

H_1 : There is difference in the mean percentage score of students taught by teachers having different employment status.

Table 6.7 (a) :One Way ANOVA Table to Test the Statistical Significance of Mean

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	4406.486	3	1468.829	5.439*	.001
Punjabi	806.522	3	268.841	1.187	.313
Mathematics	1722.061	3	570.687	1.926	.123

Source: Compiled from SLAS-2013 data.

* Significant at 1 per cent level of significance.

From the above table, we find that the calculated value of F is statistically significant at 1 per cent level of significance in case of English. However, it is not significant within the acceptable confidence limits in case of Punjabi and Mathematics. Therefore, we reject the null hypothesis in case of English and accept the alternative hypothesis that there is a significant difference between the mean percentage score of students and the employment status of teachers. In case of Punjabi and Mathematics, since F-values are not statistically significant within the acceptable confidence limits, we therefore, accept the null hypothesis and conclude that in case of these two subjects, there is no difference between the mean percentage score of students taught by teachers having different employment status.

Impact of Teacher Job Satisfaction on Academic Performance of Students

An ideal teacher has to play multiple roles. He/she plans lessons, teach specific subjects, evaluate students abilities, prepare students for standardized tests, communicate student's progress to parents, develop and enforce class rules, supervise children during extracurricular activities (lunch, playground etc) and conduct in class activities. He/she should be capable of making class room experience exciting and memorable for the students. He is expected to be a versatile and sensitive person, sensitive to the needs of others including students, parents, colleagues and the community. He/she should be curious, confident and involving. He/she should not be a stagnant, cynical low energy person who seems to be killing his time until retirement and watching the clock even more intently than his students. He/she should have the capacity to learn from new colleagues embrace new technologies and confidently move forward into the future. He/she should not only deliver curriculum but should be an inspiring leader that shows students how they should behave in all areas of life. This kind of picture of a teacher presumes that he is a fully satisfied man. He/she does not have any complaint about low salary, high workload and denial of timely promotion-the factors which contribute to low morale and dissatisfaction of a teacher. Only a teacher who is fully satisfied can exhibit all the qualities expected from an ideal teacher. The question about the job satisfaction was asked from teachers during the SLAS-2013. Teachers were asked to rate themselves on a five point scale in terms of job satisfaction as 'very low', 'low', 'medium', 'high' and 'very high'. It will be interesting to know if teacher level of job satisfaction has any significant impact on the academic performance of students.

The distribution of teachers in terms of the level of satisfaction shows that 47.78 per cent teachers reported having high degree of satisfaction. Another 31.56 per cent, in fact, reported 'very high' satisfaction. Thus, together those two categories of 'high' and 'very high' satisfaction constitute nearly 80 per cent of the total number of teachers. Another 17.47 per cent are 'medium' category satisfaction. Only 3.32 per cent teachers fall in the 'low' or 'very low' categories in term of their level of satisfaction. Thus, it is heartening to note that most of the teachers are a satisfied lot.

As far as mean percentage of marks obtained by students are concerned, we find that in general mean percentage marks go on increasing as we move from low degree of satisfied teachers upwards to ‘medium’, ‘high’ and ‘very high’ satisfied teachers. For example, in English, the mean varies between 58.31 per cent to as high as 68.61 per cent. The gap between the highest and the lowest mean is 10.30 percentage points.

Table 6.8 :Mean Percentage Score by Level of Teachers Job Satisfaction

Level of Job Satisfaction	English			Punjabi			Mathematics		
	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation	N	Mean Score	Standard Deviation
Very low	49	58.31	17.22	49	68.43	15.83	49	56.66	16.89
Low	23	66.26	15.69	23	69.64	13.86	23	53.47	17.16
Medium	378	67.24	16.59	379	69.23	14.78	375	57.42	16.91
High	1031	68.61	16.65	1028	70.35	15.21	1029	58.61	17.29
Very High	683	67.14	15.84	685	714.65	14.89	685	60.40	17.21
Total	2164	67.40	16.48	2164	70.51	15.05	2161	58.87	17.22

Source: Compiled from SLAS-2013 data.

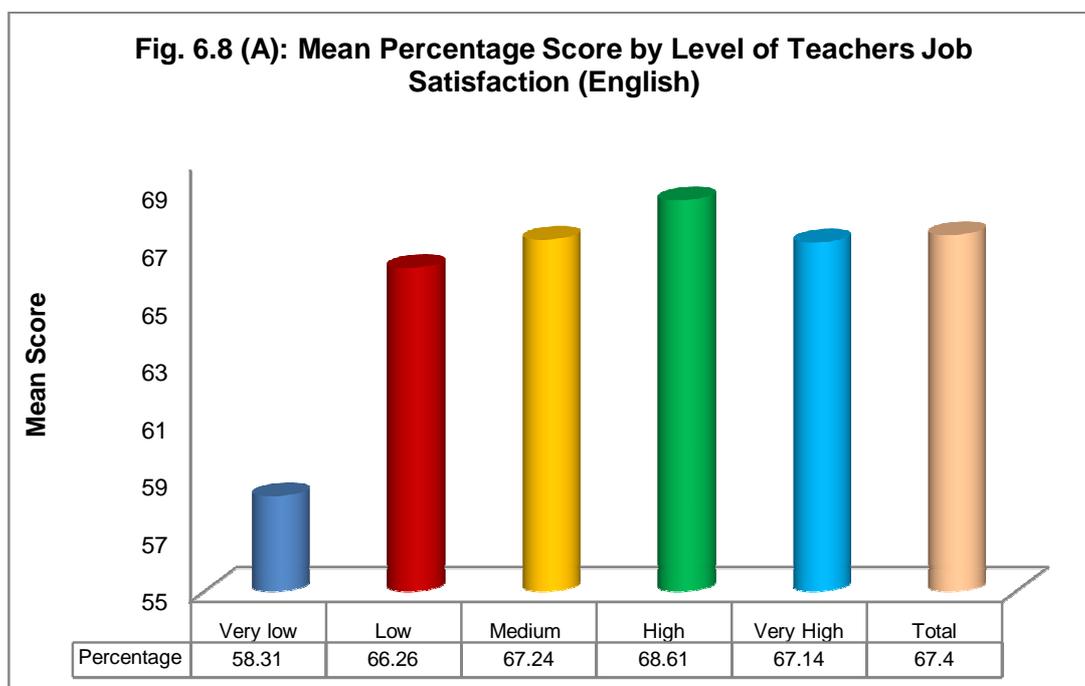


Fig. 6.8 (B): Mean Percentage Score by Level of Teachers Job Satisfaction (Punjabi)

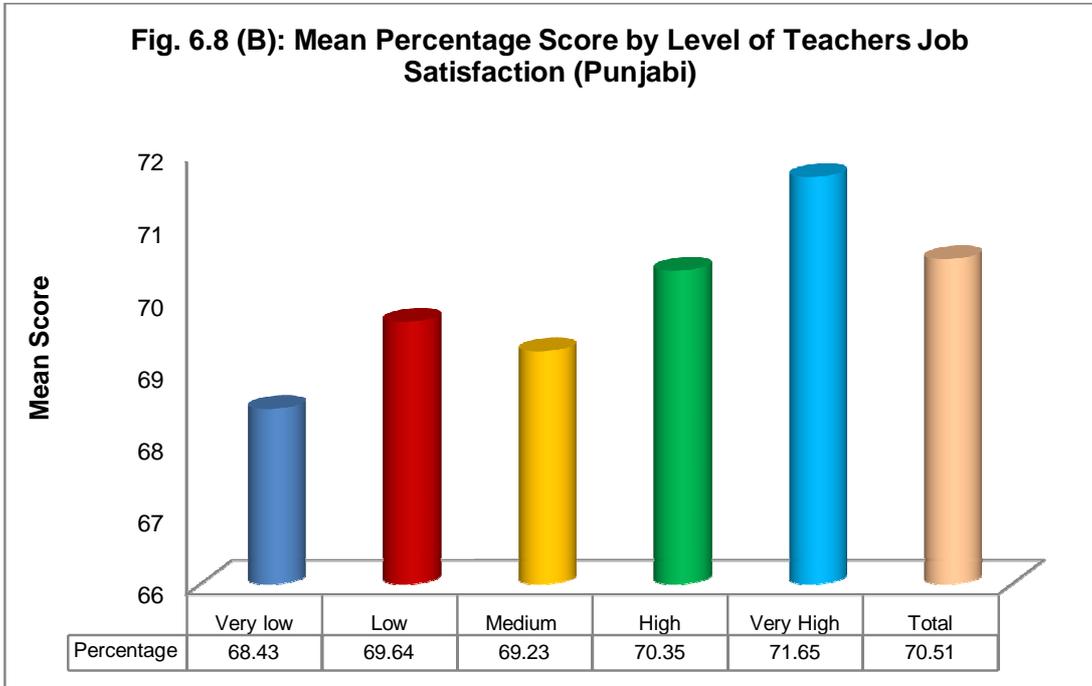
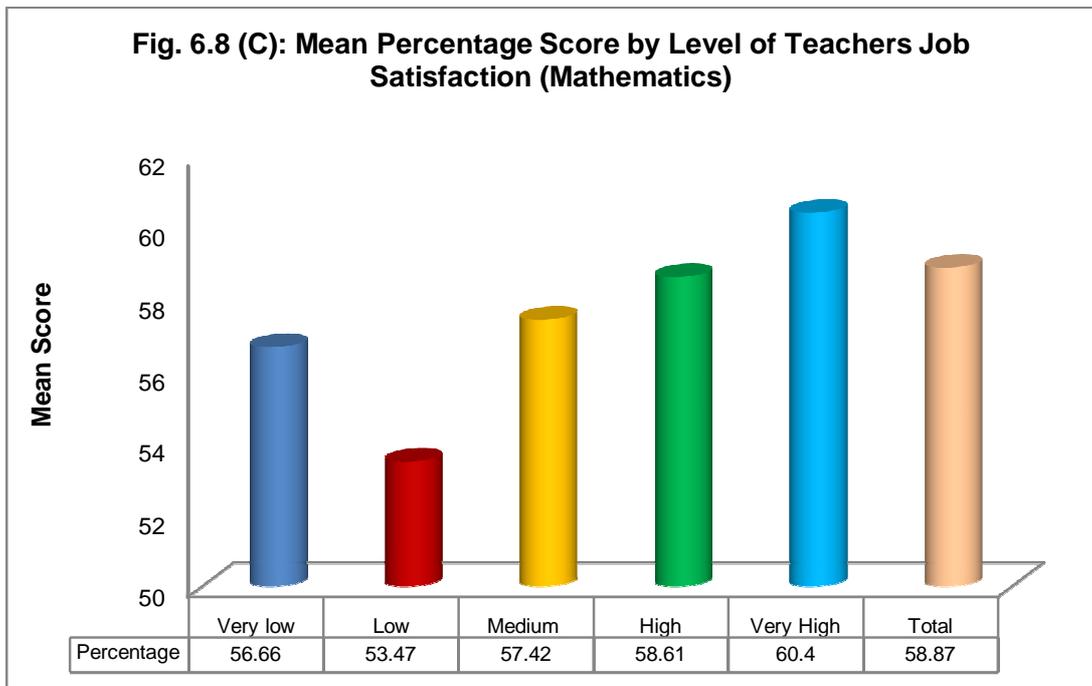


Fig. 6.8 (C): Mean Percentage Score by Level of Teachers Job Satisfaction (Mathematics)



The gap in Mathematics is 7.93 percentage points. It narrows down to 3.12 percentage points in Punjabi. Thus, there appears to be a positive association between mean percentage marks obtained by students and the level of job satisfaction of the teacher. However, we still can not say whether these mean differences are statistically significantly different or not. For that we will apply one-way ANOVA test to test the significance of means. We will be testing the following hypothesis.

H₀: There is no difference in the mean percentage score of students taught by teachers having different levels of job satisfaction.

H₁: There is difference in the mean percentage score of students taught by teachers having different levels of job satisfaction.

Table 6.8 (a) : One Way ANOVA Table to Test the Statistical Significance of Means

Subject	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
English	3408.354	4	852.089	3.149*	.014
Punjabi	1764.411	4	441.103	1.950	.100
Mathematics	3377.529	4	844.382	2.856*	.022

Source: Compiled from SLAS-2013 data.

* Significant at 5 per cent level of significance.

A look at the ANOVA table shows that the computed values of F are significant at 5 per cent level of significance in case of English and Mathematics. In case of Punjabi, though there is a positive relationship, but means are not statistically significant different from each other within the acceptable confidence limits. Thus, we reject the null hypothesis in case of English and Mathematics and accept the alternative hypothesis i.e. there is a significant difference between the mean percentage score of students and the level of jobsatisfaction of their teachers in case of English and Mathematics. In case of Punjabi however, we accept the null hypothesis that there is no difference between the mean percentage score of students and the level of job satisfaction of their teachers.

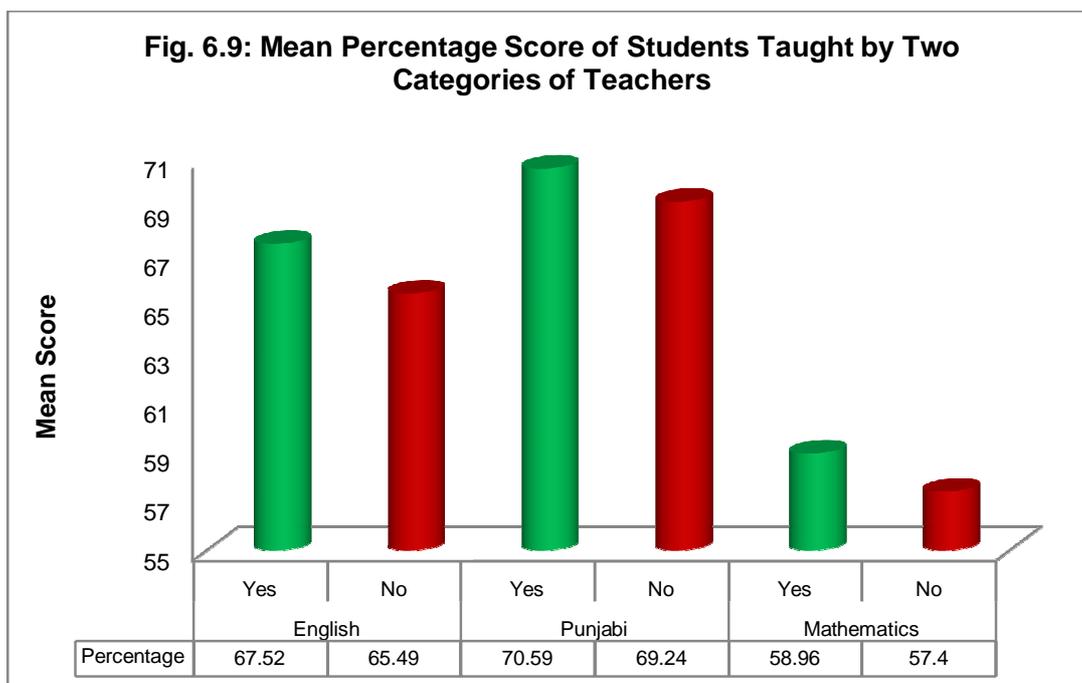
Maintaining Teacher's Diary

In the teacher's questionnaire, one of the questions asked from the teachers was whether he/she maintain teacher's diary. Teacher's diary is a record of every day activity of the teacher and what was taught on which particular day along with the lesson plan of that day. Nearly 94 per cent teachers answered in the affirmative but about 6 per cent teachers admitted that they do not maintain Teacher's diary. We calculated the average percentage score of students taught by both categories of teacher to see whether it affects the academic performance of students. The results are presented below.

Table 6.9 : Mean percentage Score of Students Taught by Two Categories of Teachers

Subject	Maintain Teacher's Diary	N	Mean Score	Std. Deviation	T-value	Degrees of Freedom	Sig.
English	Yes	2037	67.52	16.36	1.348	2162	.178
	No	127	65.49	18.17			
Punjabi	Yes	2037	70.59	15.03	.923	2162	.327
	No	127	69.24	15.37			
Mathematics	Yes	2034	58.96	17.13	.990	2159	.322
	No	127	57.40	18.56			

Source: Compiled from SLAS-2013 data.



A look at the table shows that in all the three subjects, percentage score of students taught by teachers, who maintain teacher's diary, is somewhat higher than the students taught by those,

who do not maintain teacher's diary. The difference in mean score is 2.03 percentage points in English, 1.35 percentage points in Punjabi and 1.56 percentage points in Mathematics. In all three subjects, not only the mean score of students of the 'Yes' category teachers is higher but standard deviation is also lower compared to the 'No' category. However, when we apply t-test to test, whether the means are statistically significantly different from each other or not, our results show that t-values are not significant within the acceptable confidence limits in case of all the three subjects. Thus, we may conclude that maintaining teacher's diary seems to have some positive impact on the mean percentage score of students but it does not affect their scores in any significant manner.

Conclusions

To sum up, in this chapter, we have seen the impact of nine teacher related variables on the academic performance of students. These are age of teacher, gender of teacher, caste of teacher, highest educational qualification of teacher, professional training, experience in terms of number of years, employment status, level of job satisfaction and whether they maintain teacher's diary or not. The main findings are given below:-

- Young teachers with less than 30 years of age outperform their older more experienced colleagues in all the three subjects. The performance of those above 50 years of age is the worst. The gap between the mean score of students taught by the youngest and the oldest category of teachers is more than 6 percentage points in English, 4.12 percentage points in Punjabi and 3.36 percentage points in Mathematics and all these gaps are statistically significant within the acceptable confidence limits.
- Female teachers outperform their male counterparts in English and Mathematics as students taught by female teachers have significantly higher marks in these subjects. However, gender of the teacher is not a significant factor as far as marks in Punjabi are concerned
- Students taught by General Category teachers score significantly higher marks compared to students taught by SC/BC/OBC teachers. This is true in case of all the three subjects.

- Highest academic qualification and professional training of teachers have no impact, what so ever, on the academic performance of students.
- Experience of teacher has negative impact on the academic performance of students. Young teachers, with less than 5 years of teaching experience, outperform their older and more experienced colleagues in all the three subjects. In fact, the gap between the mean score of those taught by teachers with less than 5 years of teaching experience and those taught by teacher with more than 30 years of experience is more than 10 percentage points in English, 7.68 percentage points in Punjabi and 6.12 percentage points in Mathematics. The differences in means are statistically significant within the acceptable confidence limits. It appears that either the senior teachers having long teaching experience are not updating themselves with new trends in their subjects or they are being burdened with additional responsibilities, thus, affecting their teaching work adversely.
- Our analysis of the impact of employment status of teachers on academic performance of students show that in English and in Punjabi, the highest marks are obtained by those students which are being taught by leave vacancy teachers and in Mathematics, students of adhoc/temporary teachers are topping the table. Students of regular teachers are at number two in case of Punjabi and Mathematics, and number three in English. In fact, in English, the mean percentage score of students taught by teachers working against leave vacancy is more than 5 percentage points higher than those taught by regular teachers and the difference is statistically significant at 1 per cent level of significance
- The level of job satisfaction of teachers has significant positive impact on the academic performance of their students in English and Mathematics. The higher the level of job satisfaction of teachers, the more the mean percentage score of students in these subjects. But there is no relationship of job satisfaction with marks in Punjabi
- Students taught by those teachers, who maintain teacher's diary, score higher marks compared to those taught by teachers who do not maintain teacher's diary. The mean scores, however, are not statistically significantly different from each other.

CHAPTER-7

FACTORS AFFECTING STUDENT'S ACADEMIC PERFORMANCE: A LOGISTIC REGRESSION MODEL ANALYSIS

In the preceding chapters, we discussed academic performance of students by using tabular analysis and tried to find the impact of various household level characteristics of students on their academic performance. We also discussed the impact of school level variables such as type of school, its location, teachers' gender, their educational qualification, experience, nature of their job and whether home work is checked or not, etc., on students' academic performance. Their academic performance is defined in terms of their scores in Punjabi (Mother tongue), English and mathematics. It was found that socio-economic factors of the households to which these children belonged played a significant role in student's overall growth and development. It is rightly said that a child's learning starts from home. Children's academic achievement differs from each other due to various factors such as parent's education, occupation, income, and home environment. Economically less privileged unemployed parents may not meet the needs of their children fully. Inadequate resources may create conflict in the family such a state of affairs may influence the parent child relationship and subsequently the academic achievements of the child.

The type of school, its location, the physical infrastructure available with the school, the kind of supervision school head exercises, the quality of teachers and their dedication to their duties all affect the academic performance of students. According to the study of Kingdon (1996) on Indian children, home background and school influence both were found important contributors to the student's achievement. Similarly, in a study of US children, Bauer (2004) pointed out that students' performance may be affected by a number of factors, including what is taught in school, a student's native intelligence and out of school learning opportunities that are heavily influenced by a students' home environment. In this chapter, we will try to systematically show the household level socio-economic variables such as fathers occupation, mother's education, family income, social strata of sibling and whether help in study at home is available or not as also the school level variables such as type of management of the school, its location and whether homework is regularly checked or not on academic achievement of students by using Binary Logistic Regression Model.

Binary Logistic Regression Model

A binary logistic regression is used in which the dependent variable is a dichotomous variable i.e. having two outcomes such as ‘yes’ or ‘no’ or it may be ‘success’ or ‘failure’. The predictors or explanatory variables may be categorical and / or measured to interval/ ratio scale.

Variables in the Model

(a) Dependent Variable

In India education system is predominately examination oriented where marks taken in examination are generally taken as bench mark for academic performance of students. We designated all those students, who scored more than 80 percent marks as ‘bright students’ and the rest as ‘ordinary students’ Thus, we assigned a value ‘0’ to all those who scored less than 80 percent marks and ‘1’ to those who scored 80 percent and above in three subjects covered by the State Level Achievement Survey i.e. Punjabi, Mathematics and English for 3rd standard students. The survey was conducted in 2013.

(b) Predictors

Socio-Economic Background

The socio-economic background of the household, to which the student belongs, is an important factor in determining the educational performance of students in school and consequently, the quality of education. The households, in terms of social caste, may belong to scheduled caste or general category households. Thus, in our analysis, we grouped the SC, BC and OBC households together and assigned them ‘0’ and assigned ‘1’ to general category households. Similarly the economic condition of the households determines the general environment available to a student at home. A child belonging to economically well off household is likely to have more facilities and more congenial atmosphere at home. In our data, we do not have information on income or assets of the household but we do know whether a household belongs to Below Poverty Line (BPL) or Above Poverty Line (APL) category which roughly tells us about the household’s economic condition. Thus in our binary regression analysis, we have assigned ‘0’ to BPL households and ‘1’ to Non-BPL households.

Mother Education

The mother of a child is generally the role model for the child. Her education may have direct bearing on child's development and his/her overall growth. If the mother is educated, it not only helps the child in getting mother's guidance in completing home work / assignment given by the school but it also creates home learning environment. Magnuson and McGroder (2000) found that in US, an increase in mother's education is significantly and positively associated with child's academic school readiness, and is negatively associated with his/her academic problems. Therefore, mother's education can be considered as one of the important factors in academic performance of the student.

Father Occupation

A number of researchers have found a positive association between father's occupation and child's educational achievement and attainments. If father is in a better occupation or in a white collar job such as a teacher, doctor, engineer, manager, IT professional or administrator, etc., then the child is likely to have better educational performance at school, If on the other hand, father is unemployed or is a farmer working in the field or a worker doing physical labour, his capacity to earn will be less and he is less likely to devote anytime for the child's education. Since a father is generally head of the family and the child intuitively imitates him, if father is in a highly paid occupation it gives the child pride. Thus, a child may acquire high achievement motivation from the father who has better job as compared to those children whose father is in blue collar occupation doing some manual work. Hence, we expect father's occupation to have important effect on student's academic performance.

Siblings

The number of siblings a child has, also affects his home environment and consequently his/her academic performance at school. If the student is the only child in the family, he/she gets all the attention of his /her parents. If he/she has one more siblings, that also gives him/her a congenial atmosphere at home. But if there are more than one sibling, to that extent the facilities and attention of parent gets divided. It gets reflected in the academic achievement of the child. Therefore, we have included number of siblings a child has, as an explanatory variable in our model.

Private Tuition or help in Study at home

A child needs some kind of help in completing his homework given by the school. If mother is educated and/or father is educated and is in a white collar job, the chances are that the child will get his parents help in completing his/her home-work. Alternatively, if family's economic condition is good, the child may be given help by a hired tutor or what we call private tuition. But if neither the parents are educated enough to help the child nor they can afford a private tuition, then the child may not be able to complete his home work properly. The lack of facilities at home get reflected in his/her performance in the school. Thus, in our study, we have included the availability or otherwise of private tuition and help in study at home as explanatory variables in our binary regression model.

Type of School

Academic performance of student's depends on type of school management. Generally the policies of the school management are responsible for quality of education. These policies, thus, make a difference through different type of management of schools. Studies have found association between type of management and educational performance of students. Our own results discussed in the previous chapter supported this contention. The superiority of one type of school management depends on the role of school processes and climate in shaping achievement in different types of schools. Most of the empirical evidence on this question support the contention that public school students scored lower on average than non-public school students. We, in the present exercise, have divided school management into two types i.e. private schools which include both private aided and private unaided schools and public schools which include schools run by Punjab Government/Department of Education or PSEB, plus schools run by Zila Prishad/Local Bodies/ Municipal Committees or Corporations.

Location of School

Location of the school is an important factor in determining the quality of education being provided. Generally speaking, urban area schools provide better education compared to rural area schools. The rural-urban gap may be the result of better infrastructural facilities in urban schools or because most teachers prefer to work only in urban area schools. Consequently, most of the teaching jobs are lying vacant are in rural area schools. Shortage of

teachers and lack of infrastructural facilities in rural schools ultimately get reflected in poor results and poor quality of education.

Home Work Checked

Whether home work is checked regularly or not, plays an important role in the academic performance of students. This is particularly important at the primary level. Since we are dealing with the performance of students of third standard, therefore, we have included home work checked as an explanatory variable in our binary logistic regression model.

The Model

The basic form of logistic function

$$P = \frac{1}{1+e^{-z}} \dots\dots\dots(1)$$

Where p is the performance of the student

z is a predictor variable

e is base of the natural logarithm which equal to 2.71828.

When equation (1) is estimated p is an estimated probability. A property of logistic function as specified in equation (1) is that when z becomes infinitely negative e-z becomes infinitely large, so that p approaches 0. When z becomes infinitely positive e-z becomes infinitely small so that p approaches unity when z=0, e-z =1, so that p= 0.5. Thus the logistic curve has its centre at (z,p) = (0, 0.5)

Our =n (1) is a bi-vitiate, if however z is a liner function of a set of predictor variable so that

$$Z = b_0 + b_1 x_1 + b_2 x_2 + \dots + b_n x_n$$

By substituting value of z in = n(2) in the formula for logistic function in = n(1)

We get a multivariate logistic function such as

$$P = \frac{1}{1 + e^{-b_0 + b_1 x_1 + b_2 x_2 + \dots + b_n x_n}}$$

A logistic regression calculates the probability of success over the probability of failure. The results of the analysis are in the form of odds ratio. The odds ratio is a measure of the size of effect describing the strength of association or non-independence between two binary values.

Binary logistic regression was performed with dependent variable of marks obtained in the State Level Achievement Survey of class-3rd students in Mathematics, English and Punjabi languages. The independent variables are gender, caste, economic status (BPL or Non-BPL) private tuition, mother's education, father's occupation, number of siblings, help in study at home, homework checked, type of school and location of school.

The software package namely Statistical Package for Social Sciences (SPSS) has been used to develop the logistic regression model. The sample size is very large 31674 students examined in mathematics, 31793 students examined in English and 31727 students examined in Punjabi language. The results are presented in table 7.1 to 7.3.

Creation of Dummy variables for Logistic Regression

Dependent variable

Students who scored less than 80 percent marks (Reference Category)

Students who scored more than 80 percent marks.

Predictors

(a) Gender of the students

Female -0 (Reference Category)

Male -1

(b) Social Category

SC/BC/OBC category -----0 (Reference Category)

General Category—1

(c)Economic Condition

Others-0 (Reference Category)

BPL Household----- 1

(d)Availability of Private Tuition

No ---0

Yes---1

(e)Mother's Education

Uneducated or Educated below 5th standard-0 (Reference Category)

Primary Pass and Above---1

(f)Father's Occupation

Manual Worker (farmer, Labourer, Unemployed) ---0 (Reference Category)

White Collar Jobs-----1

(g) Siblings

Single child or one sibling ----0 (Reference Category)

More than one sibling-----1

(h)Help in study at home

No help-----0 (Reference Category)

Get help in study at home-----1

(i)Home-work checked

No-----0 (Reference Category)

Yes----1

(j)Type of School

Public School-----0 (Reference Category)

(Include Govt. School and Schools run by Local Bodies/ Municipal Committees/
Municipal Corporation)

Private School-----1

(Both private aided and private unaided)

(k) Location of School

Rural ----0

Urban----1

Multivariate Analysis(Binary Logistic Model)English

Table 7.1 contains results of our Logistic Regression Analysis for English subject for the 3rd standard students covered by SLAS in 2013. Our results show that ten of the eleven predictor variables included in our regression analysis turned out to be highly significant at 1

Table 7.1 :Multivariate Analysis(Binary Logistic Model)English
Below 80%=0, N=22060 (69.38%), Above 80%=1, N=9733 (30.62%)

Predictor variables	B	SE	Wald	Sig	Exp(B) Effects (Odds ratio)
Gender	-0.197	0.026	57.739	0.000*	0.822
Social Category	0.350	0.030	137.125	0.000*	1.420
Economic Status	-0.083	0.029	7.966	0.005*	0.920
Availability of Tuition	-0.031	0.032	0.927	0.336	0.969
Mother's Education	0.286	0.027	109.033	0.000*	1.332
Father's Occupation	0.281	0.033	73.218	0.000*	1.324
Siblings	-0.279	0.029	93.942	0.000*	0.757
Study Help at Home	0.226	0.028	64.601	0.000*	1.253
Home Work Checked	0.388	0.077	25.599	0.000*	1.474
Type of School	0.798	0.034	562.671	0.000*	2.220
Location of School	0.393	0.033	143.555	0.000*	1.480
Constant	-1.623	0.084	375.071	0.000*	0.197

Source: Compiled from SLAS-2013 data.

Result: Availability of tuition is not significant and the remaining predictor variables are highly significant at 1 per cent level of significance.

per cent level of significance. These are the gender of the student, social category to which he/she belongs, economic status of family mother's education, father's occupation, number of siblings he/she has, help in the study at home, regular checking of home work, type of school and location of school. Availability of private tuition is not statistically significant.

In terms of their importance, the most important impact on academic performance is that of type of school. Other things remaining the same, student studying in a private school is 2.22 times more likely to get more than 80 percent marks compared to a student studying in a public (Govt.) school. This is followed by location of school (odds ratio being 1.48) and checking of home work (odds ratio 1.474). This means that a student in an urban area school has 48 percent more probability of being part of the bright student category with more than 80 percent marks compared to a student in the rural area school. Regular checking of home work has nearly the same importance for student's academic performance as location of school. Thus, we find that all the three school level variables included in our regression analysis turn out to be highly significant factors in determining the academic performance of school children. These are type of school, location of school and checking of home work. Amongst the socio-economic factors, the most important turns out to be the social background of the family to which the child belongs. A child hailing from general category household has 42 percent more probability of being in the bright group compared to a child hailing from the household belongs to Scheduled Caste or Backward Class or Other Backward Class category. This is followed by mother's education and father's occupation in that order. Both these factors improve the chances of the ward by nearly 33 percent compared to the reference categories. Similarly, the help in study at home improves the chances of the child scoring more than 80 percent marks by nearly 25 percent. However, a male child has nearly 18 percent less chances of being in the bright group compared to a female child. Similarly having more than one sibling at home reduces the child's chances of getting more than 80 percent marks by at least 24 percent which means that in families where parents have more than two children, their wards are unlikely to perform as well as children from families having one or two children only.

Multivariate Analysis (Binary Logistic Model) Mathematics

Table 7.2 gives us result of logistic regression model for student's performance in Mathematics of the 3rd standard students covered by SLAS 2013. A look at the table shows that eight out of the eleven explanatory variables tried in our regression model turn out the highly significant. These are father's occupation, social category to which the parents of the child belong, help at home in completing homework, the size of the family (no of siblings), type of school, location of school, regular checking of homework and availability of private

Table 7.2 : Multivariate Analysis (Binary Logistic Model) Mathematics
Below 80%=0, N=25915 (81.82%), Above 80%=1, N=5759 (18.18%)

Predictor variables	B	SE	Wald	Sig	Exp(B) Effects (Odds ratio)
Gender	-0.018	0.030	0.373	0.541	0.982
Social Category	0.163	0.035	21.942	0.000	1.177
Economic Status	-0.031	0.034	0.832	0.362	0.970
Availability of Tuition	-0.106	0.037	8.009	0.005	0.900
Mother's Education	0.070	0.032	4.819	0.028	1.072
Father's Occupation	0.163	0.035	18.797	0.000	1.177
Siblings	-0.048	0.009	27.453	0.000	0.953
Study Help at Home	0.123	0.032	14.477	0.000	1.131
Home Work Checked	0.495	0.096	26.588	0.000	1.641
Type of School	0.393	0.039	100.624	0.000	1.481
Location of School	0.326	0.037	76.766	0.000	1.386
Constant	-2.220	0.103	466.746	0.000	0.109

Source: Compiled from SLAS-2013 data.

Result: Gender and economic status are not significant. Mother's education is significant at 5 per cent level of significance. All other variables are significant at 1 per cent level of significance

tuition. Three of these factors are related to school and the remaining five are related to the family background of the child. Mother's education is significant at 5 per cent level of significance. The sign of coefficient of private tuition, however, is negative and the value of the odds ratio shows that those getting private tuition are in fact 10 percent less likely to be amongst the above 80 percent score group compared to the reference category i.e. those who do not have access to private tuition. Economic status and gender of the child however, turn out to be statistically insignificant.

In terms of the magnitude of their impact on students' academic performance, once again, we find that the school related predictors in our model i.e. home-work regularly checked in the school, type of school and the location of school are the most important factors. Odds ratio column shows that those students whose home work is regularly checked are 64 percent more likely to score more than 80 percent marks compared to their counterparts whose home work is not checked. Similarly, our results show that other things remaining the same, a student in a private school has 48 percent higher probability of getting high score (80 percent and above) compared to those studying in the government schools. Again, a student studying in a school located in the urban areas is nearly 39 percent more likely to be in the bright category compared to the one studying in a rural school.

A child, whose father is doing a white collar job, is 17.7 percent more likely to get a high grade compared to the one, whose father is a manual labourer or agriculturalist. The same magnitude of impact is cast by the social background of the family .i.e. if a child hails from general category household, he/she has 17.7 per cent more chances of getting above 80 per cent marks compared to a child from the reference category (i.e. SC or BC or OBC family). Availability of help at home in doing homework improves his/her chances by 13 per cent. Mother's education improves the chances of the child getting more than 80 per cent marks by 7 per cent. Thus, once again, we find that school factors are the most important, followed by factors relating to the family background of the child. Large sized family (more than two children) reduces the chances of success of the child by nearly five percentage points.

Multivariate Analysis (Binary Logistic Model) Punjabi

Table 7.3 shows results relating to Punjabi language. Again, we find that the three school level variables are the most important predictors of a student's academic performance, the most important being regular checking of home work, followed by type of school and location of school. From the family side, once again its help instudy at home, mother's education, social background of the family and father's occupation in that order are highly significant factors which affect academic performance positively. Male children have significantly lower

Table 7.3 :Multivariate Analysis(Binary Logistic Model)Punjabi

Below 80%=0, N=19994 (63.02%), Above 80%=1, N=11733 (36.98%)

Predictor variables	B	SE	Wald	Sig	Exp(B) Effects (Odds ratio)
Gender	-0.280	0.024	135.796	0.000	0.756
Social Category	0.183	0.029	40.773	0.000	1.201
Economic Status	-0.147	0.027	29.578	0.000	0.864
Availability of Tuition	0.143	0.031	21.587	0.000	0.864
Mother's Education	0.224	0.025	77.732	0.000	1.251
Father's Occupation	0.153	0.032	23.463	0.000	1.166
Siblings	-0.235	0.027	74.636	0.000	0.790
Study Help at Home	0.237	0.026	84.420	0.000	1.268
Home Work Checked	0.458	0.071	42.100	0.000	1.581
Type of School	0.429	0.033	167.771	0.000	1.536
Location of School	0.240	0.032	57.430	0.000	1.272
Constant	-1.092	0.077	200.053	0.000	0.336

Source: Compiled from SLAS-2013 data.

Result: All the variables are highly significant at 1 per cent level of significant

Probability of scoring high marks in Punjabi language compared to female children (reference category). Availability of private tuition, once again, has a negative sign of the

coefficient. Similarly children from large family (having more than one sibling) are 21 percent less likely to score more than 80 percent compared to children who are from one child family or have only one sibling (reference category). Incidentally, all predictors variables tried in the Punjabi language logistic regression are, statistically speaking, highly significant.

Conclusions

To sum up, we can say that school level variables i.e. the type of school, location of school and regular checking of home work turn out to be the most significant factors in determining the academic performance of students of primary classes in Punjab. These are followed by social background of family to which the child belongs and his/her family related factors such as father's occupation , mother's education, help at home in completing home-work and size of family i.e. number of siblings a child has got. Incidentally, economic background of the family, to which a child belongs, turned only in English and Punjabi but in Mathematics out to be a significant factor perhaps because dividing families on the basis of Below Poverty Line did not adequately capture the essence of economic back ground. To capture it in real sense, we should have had information about the income and assets of the family. We would like this aspect to be taken care of in the future surveys. As far as the children's gender as a factor determining his/her academic performance is concerned, girls have significantly higher probability of getting high marks, in both the language i.e. Punjabi and English, but this difference vanishes when it comes to Mathematics. Another thing, which comes out very clearly from our results is that availability of private tuition does not improve the academic performance of students at all. Infact, in all the three regressions, the sign of its coefficient is negative. In case of English it is not a significant factor. In case of Punjabi and Mathematics, its impact is significant but negative. Thus giving private tuition to a third standard student may help the child in getting good marks but it does not help the child take a part of the above 80 per cent category.

CHAPTER-8

FINDINGS OF FOCUS GROUP DISCUSSIONS

To incorporate the opinion of various stake holders, who are actually involved in teaching and handling the students at the primary level on day to day basis, discussions have been made with four groups. The first group consisted of regular school teachers. The second group consisted of teachers working on contract or temporary basis. The third group included school heads and cluster heads. The fourth group included teacher union leaders, representing various shades of opinion. We have sought their opinion on almost all the issues, which we had analysed in our report on the basis of data made available to us by SSA authority i.e. the data collected by SLAS 2013 for class III students. The main findings from Focus Group Discussions are reported below.

Impact of Gender of the Pupil on Academic Performance

Regular Teachers, on the question of whether gender of the pupil has any impact on academic performance, have been of the opinion that as it is, the gender is not a factor, but since girls are generally more disciplined and are more serious about their studies, therefore, they normally perform better than boys.

Contract Teachers have also agreed with the view and feel girls are more attentive than boys, whereas boys are more naughty and less attentive in the class. As a result, girls generally perform better than boys.

School/Cluster Heads are of the opinion that boys have unlimited freedom at home. Therefore, they get spoiled. An informant from this group has also pointed out that there is some bias in favour of boys. For example, if parents can afford to send one child to private school, chances are they will send the boy to the private school and put the girl into the government school. Thus, too much pampering of boys by their parents spoils them. Even otherwise, girls are more serious about their studies.

Teacher Union Leaders have also argued on similar lines and have said that girls perform better than boys because girls are more serious, more disciplined and more attentive in the class. Therefore, they perform better than boys.

Ideal Age for Class 3 and Reasons for so many Under-aged and Over-aged Students in Class III

Regular Teacher Group has been of the view that the ideal age for class III is 8-9 years. Most of the under-aged and over-aged children belong to migrant labour families. Under-aged children are there in the school because parents want to leave them in school so that they are able to go to work. For them, school is a substitute of baby-sitting centre. Over-aged children are there in the school because their parents bring them to school for admission when they are 8 or 9 years old. Although, admission is not refused but because they do not know Punjabi so they are admitted in 1st standard only.

Contract Teachers have also argued on similar lines. They say most of the over aged children belong to migrant families. These children go back home with their parents and sometimes come back after a long gap. By that time, they forget everything they have learnt. They are not denied admission but are admitted in a lower class, depending upon their level of knowledge.

Cluster/School Heads think that children of migrant labour families come for admission when they are quite old. Even if they have been studying at their native place, they are admitted in the 1st standard because they do not know Punjabi which is compulsory. Also, some of them leave in-between and come back after quite a large gap and are readmitted them in the same class where they had left. In this process, they become over-aged.

Teacher Union Leaders say that the under-aged children are admitted because schools want to increase the number of students and their parents want the children to be engaged somewhere so that they can go for work. Over-aged children are there because they are from migrant labour families, who some time discontinue study and come back after a long gap. When they come back, they again have to be admitted in a lower class, depending on their knowledge of Punjabi language which is compulsory. All this explains a large number of under-aged and over-aged children in Punjab's government schools.

Impact of Social Background on Academic Performance

Regular & Contract Teachers are of the opinion that caste, as it is, is not important. But both groups agree that the students from SC/BC background generally have poor performance because they have to help their poor parents to supplement their meager family earnings. Therefore, they get less time for study at home.

Cluster/School Heads have pointed out that parents, poor and generally illiterate or with very little education, cannot help their children in completing their homework as parents being so thoroughly involved in earning their living that they cannot devote time to their children's education. This lack of support from parents gets reflected in their relatively poor academic performance.

Teacher Union Leaders, while agreeing with the above arguments, have also pointed out that these children from socially deprived sections of society also suffer economic disadvantages such as lack of facilities, non-conducive home environment, shortage of space etc. All these factors together have impact on their academic performance and consequently, they generally lag behind students from general category background. They suggested that some remedial measures such as getting their homework completed in the school itself can go a long way in bringing them at par with general category students.

Impact of Economic Background of Students family on Academic Performance

Regular Teachers are of the opinion that family's economic background is important because if the family is well-off the chances are that parents will be better educated also and that will have positive impact on their children's academic performance.

Contract Teachers have pointed out that students hailing from poor families have to look after their siblings after school time. Also, they have to put in some labour to help their parents in whatever they do. Since parents of poor children are generally involved in manual labour, they can't give much support to their children in studies. All these factors lead to poor academic performance of students hailing from poor families compared to those belong to relatively rich economic background. The same arguments have been reiterated by groups consisting of **School Heads** and **Teacher Union Leaders**.

Impact of Location of School on Academic Performance of Students

Regular Teachers feel that urban students are generally better in mathematics and English but rural students generally do better in Punjabi language. **Contract Teachers** argue that urban students perform better because their parents are better educated who pay more attention to their children's education. Contrary to this, parents of rural students are relatively less aware about education and they pay less attention to the education of their wards. **School Heads** have pointed out that better infrastructural facilities and better availability of teachers in urban area schools put the students of urban areas in a relatively advantageous situation. Hence, urban area students perform better than rural area students in almost all the subjects. Group consisting of **Union Leaders** have also stressed the availability of better infrastructural facilities and more teachers in urban area schools but also argued that more urban area students have access to private tuition. All these factors put together give urban students a relative advantage which also gets reflected in their better academic performance compared to rural area students.

Importance of Parental Support in Academic Performance of Students

First group consisting of **Regular Teachers**, while stressing the importance of parental support, say that only more educated parents, generally from economically better off families, give adequate support to their children in their studies. The second group consisting of **Contract Teachers** also echoed the same views. Similar views have been expressed by **Head Teachers Group** as also **Teacher Union Leaders**. Thus, all the groups agree on the importance of parental support but also feel those parents, who are somewhat educated and have time and resources, can give adequate support to their children, while children of coming from labour class families do not have this privilege.

Role of Private Tuition in Improving Academic Performance of Students

Regular Teacher Group feels that the students of class III do not need private tuition. What is required is that somebody in the family should help these children to complete their home work. However, if parents cannot help the child in completing his/her home work for whatever reasons, then private tuition can be helpful in completing home work. So, private tuition plays role only in this situation.

Contract Teachers Group, while reiterating similar views, have pointed out that those parents, who can afford private tuition, send their children for tuition just to engage them and keep the children busy for some time in the process students learn something. Only in that sense private tuition is helpful. **School Heads** also feel that small children are sent to private tuition just to keep them busy and for completing home work properly. **Teacher Union Leaders** argue that in the absence of parents own involvement private tuition does play a positive role in getting homework completed as also creating more awareness among children. However, a child who has private of tution at home, is generally not very serious and attentive in the class room. In fact, he disturbs two-three other students also, thus disturbing the seriousness of class

Impact of Family Size on academic Achievement

Impact of being single child or having only one sibling does affect the academic performance of a child as compared to that of those have more than one sibling.

Regular Teachers also feel it is true and the main reason for this is that parents are able to give better attention if there is only one or two children compared to those families which have more than two children.

Contract Teachers pointed out that while generally it is true, but then there are quite a few exceptions also sometimes children from large families also perform very well.

Head Teachers also feel that generally more children in the family have negative impact on their academic performance. Partly, at least, it is attributable to the fact that some of the time of older children is wasted in taking care of younger siblings.

Union Leaders have pointed out that single child or children with only one sibling perform better because they get better parental care and have more facilities. On the other hand, if a family has 3-4 children and only one out of these is a male child then the entire attention of parents remain focused on the male child only and girls get ignored. Thus, while number of children is the family does matter but it is also true that male child gets better attention than female children, particularly in rural areas. Therefore, along with number, the gender composition is also important.

Impact of Physical Disability on Student's Academic Performance

Regular Teachers Group, in response to this question, argues that disability does affect performance of students negatively. But, then it also depends upon the type of disability. If it is a serious mental, visual or hearing disability, then it has serious consequences. If, however, it is a minor disability it may not matter much. **Contract Teachers Group** also feels that disability does affect student's performance negatively but the impact depends upon the seriousness of disability. Students with minor disability generally perform as well as normal students. **School Cluster Heads Group** also express similar views but they have also pointed out that students with serious disability also have problem with attending classes regularly. This ultimately affects their academic performance. **Teacher Union Leaders** say that only serious disability affects academic performance, particularly, if it happens to be a mental, visual, or hearing or speaking disability. Otherwise, minor physical disability does not affect academic performance.

Importance of Home Work being given and Checked Regularly

Regular Teachers Group feels that regular checking of home work has positive impact on student's academic performance. When a teacher has multiple classes to teach sometimes checking home work becomes difficult. Sometimes, teachers fail to check home work because of too many extra duties and extra work given by the department.

Contract Teachers Group has been of the opinion that they give home work regularly. However, sometimes students do not complete their home work at home. Then, next day, they get it completed in the school. However, if there is a shortage of teachers, home work is not properly checked. If home work is not checked for 2-3 days, students forget everything. Thus, it is important that home work is given and checked regularly.

School/Cluster Heads Group is of the view that the large size of the class sometimes create problem in checking home work regularly. But it is important that it is checked regularly because it does affect students' academic performance.

Teachers Union Leaders feel that overloaded teachers are unable to check home work correctly and carefully. Even otherwise teachers having 2/3 classes cannot check home work regularly. Non-teaching/non-academic duties given to teachers also interfere with their routine work. Each

class should have a separate teacher. Then, home work can be given and checked regularly. It will improve learning outcomes.

Effect of Parents' Education (Particularly Mother's Education) on Academic Performance of Students

Regular Teachers are of the opinion that more than education of the parents, the awareness of the parents about the importance of education for their children is of utmost importance. Teachers should create awareness among parents through regular parents – teacher meets so that parents keep an eye on the activities of their wards.

Contract Teachers have reiterated the same views and stressed the point that parents' involvement is necessary for child's academic progress.

Cluster/Head Teachers have also stressed the point that mother's education plays an important role in child's academic progress. Ninety percent of the parent meets are attended by mothers. Interaction through parents-teacher meets makes mothers aware of the necessity of involvement with their children's education and why it is important to keep a watch on their wards.

Teachers Union Leaders argue that children perform better if mothers are educated. They are of the opinion that while all children gain from mother's educational background but girls gain more than boys as mothers are generally more involved with their daughters. Mothers are also more sincere in following up the child's educational progress than father. Therefore, making mothers more aware about the importance of their children's education is the key to success.

On the question of what should be done to improve the performance of those children whose parents are either less educated or uneducated, there are some suggestions also. An informant from the contract teachers group has suggested that government should make arrangements for one hour extra stay for such children in schools after the regular school hours. Teachers should be made extra payment for this time and they should ensure that such children complete their home work in the school itself. Another suggestion from another informant was that efforts should be made to persuade village panchayat to engage a person with 10+2 and above qualification to get the home work of such children completed in the evening. Such persons are available in villages at nominal rates. Panchayats can pay to such para-teachers from their own funds or alternatively, village panchayat can collect funds from the parents of such

children who want to use this common facility. This will go a long way in improving the educational standard of those children whose parents are not educated, and therefore, are not able to give any academic support to the kids.

Impact of Parents' (Particularly of Father's) Profession on Child's Academic Performance

Regular Teacher Group argues that father's profession is important because it also determines his earnings and therefore, the economic condition of the family, which, in turn, affects child's academic performance. Children of those parents, who are doing manual labour and therefore earn small income, fair poorly, both because of economic deprivation as well as non-involvement of the parents in their wards studies.

Contract Teaches Group feels that if father is in a white collar job, the chances are that he will also get some time to teach his child, whereas a father, who is a manual labourer or is doing some other menial job, cannot help his child in academic work. He, in fact, cannot inspire his child to be an achiever in life.

Head Teachers, however, feel that father's profession does not matter as much as the attention given by the parents especially father, to the child. They argue that the involvement of parents is the most important factor which determines child's academic performance.

Union Leaders also agree with most of the points raised by the first three groups such as (a) fathers profession does make a difference (b) father's profession also determines families economic condition (c) fathers involvement is more important than the profession or economic condition and (d) that whether parents are able to inspire their child to achieve something in life is the most important.

Impact of Type of School Management on Students Academic Performance and its Reasons

Regular Teachers feel that privately managed schools have edge over government schools because (a) private schools have better infrastructure and other facilities (b) their intake is from creamy layer of the society (c) parents of their students are generally better educated and therefore, their students have better parental support. Government schools lag behind private

schools in all these respects performance of Zila Prishad run schools are poor because there is no checking on them.

Contract Teachers also argue that privately managed schools give better results because students coming to private schools have already done pre-schooling and therefore, children are better prepared for schooling. Also, the parents of the children admitted in private schools have better educational and economic background.

Cluster/SchoolsHeads also echo similar sentiments. Private schools perform better because their intake is better and children have already done pre-nursery classes for 2 to 3 years. Government schools do not have this advantage. Thus there is a gap of nearly 3 years of education in the private schools and government schools.

Union Leader group feel that private schools are performing better because:

- (i) In private schools, there is one teacher for each class.
- (ii) Their teachers are not given any other non-academic duties.
- (iii) Intake of private schools is much better than the intake of government schools.
- (iv) Insecurity of job in private schools forces their teachers to perform better.
- (v) Private schools have effective supervision.

Compared to this, government schools have insufficient number of teachers. The teachers in government schools are burdened with many non-academic duties. Zila Prishad schools have performed particularly badly because these school had no regular checking mechanism. BDPO's, who were supposed to supervise these schools, failed to exercise effective supervision. All these factors, put together, give definite advantage to private schools vis-à-vis government schools or Zila Prishad run schools. Therefore, private schools show better results compared to government schools.

Reasons of Poor Performance of Rural Schools Compared to Urban Schools

Regular Teachers group enumerate the following reasons:

- (i) Insufficient number of teachers
- (ii) Poor infrastructure

- (iii) Less awareness among parents about the importance of education.
- (iv) Unlike in urban areas, parents of children in rural schools do not follow up their ward's progress seriously.

Contract Teachers Group also argues on similar lines and pointed out that:

- (i) Schools in rural areas have poor infrastructure compared to urban area schools;
- (ii) Rural schools do not have sufficient number of teachers; and
- (iii) Parents of rural school students are less aware

Cluster/School Heads blame the poor performance of rural area schools on

- (i) Shortages of teachers as several vacancies are lying vacant.
- (ii) Poor infrastructure
- (iii) Poor intake in rural area schools, particularly government schools; and
- (iv) Lack of checking and supervision.

Teacher Union Leaders reiterate all the points mentioned by other groups also such as:

- (i) Shortage of teachers;
- (ii) Poor infrastructure in government schools;
- (iii) Too many non-teaching duties being given to teachers which in any case are already overburdened because of posts lying vacant; and
- (iv) Not very rational posting and transfer policy etc.

This group feels strongly that apart from the above mentioned problems, which need immediate attention of the government, the government must also start pre-nursery classes in government schools. In urban areas, schools admit students most of whom have already attended pre-nursery classes for two to three years. This step will reduce the gap between the intake of rural schools and urban area schools and will definitely improve the academic performance of rural schools.

Role of Availability of Infrastructural and Other Facilities in Improving the Academic Performance of Students

Regular Teachers emphasize the importance of having basic infrastructural facilities which presently most government schools lack. On the contrary, private schools have positive impact

on their academic performance. Almost the same arguments are advanced by the group consisting of **Contract Teachers** and also the group consisting of **School Heads**. The group consisting of **Teacher Union Leaders**, while agreeing with the above mentioned suggestions, has also made two of their own suggestions. One, there must be one teacher for each class. The group argued that everything else can wait, but having one teacher for each class is the most essential requirement if results are to be improved. Secondly, each class must have a separate class room.

Impact of Lower Pupil-Teacher Ratio on Students Academic Performance

Regular Teachers are of the opinion that size of class should neither be too big nor too small. The **Contract Teachers** feel that the academic performance of students is better if the size of class is small. In small sized classes, teacher can interact with every student. However, the problem arises if a teacher is handling more than one class, then the academic performance is seriously affected negatively. **School Heads**, on the other hand, argue that if the size of the class is very small as is usually the case in rural schools, then the ambience or environment of class room is not very conducive for teaching. In such situation, teachers generally do not get properly involved with the class. As a result, the academic performance suffers. Thus, the size of class should not be smaller than a certain number, say twenty students. **Teachers Union Leaders** are also of the opinion that size of class should be neither too big nor too small. It should be around 25. However, the key informants from this group have also argued that class size does not really matter if proper infrastructure is there, teacher is good and students are receptive. Another suggestion put forward by this group is that the age of admission in government and private schools should be the same which is not the case at present. The presence of a large number of under-aged and over-aged students in a class in government schools make the class heterogeneous. Teaching in this situation becomes less effective, thereby affecting the academic performance.

Impact of Instructional Material of Pupil's Academic Performance

On the question of impact of instructional material on student's academic performance, all groups have been of the opinion that since not much of instructional material is available in primary schools, therefore not much can be said very authoritatively about its impact. However, all the discussion groups complained about the poor quality of text books being recommended

for various classes in government schools. On the other hand, private schools are using much better books and other reading material. Thus, they have strongly recommended upgrading the quality of reading material and text books for government schools.

Role of Principal's Supervision in Improving Academic Achievement of Students

On this issue, all the groups have stressed the point that principal's or head master's effective supervision improves the general environment of the school. This, in turn, leads to better discipline and ultimately, academic achievement of students improves. Therefore, the common recommendation has been that all vacant post of Principals/Head Masters should be filled at the earliest to improve academic environment in government schools.

Effect of Punctuality/Regularity of Students on their Academic Achievements

Regular teachers are of the opinion that those, who attend classes regularly and come on time, are likely to perform better than others. But some students do come late almost daily because of financial or other family problems.

Contract Teachers also argue on similar lines that punctuality does improve students' academic performance. This group also pointed out that late comers are generally from labour class families. Then, there are exceptions too-for example, some late comers also perform very well in studies.

Head Teachers, while agreeing with the proposition that punctuality does matter in improving academic standards, have also pointed out that those students who do not come to school regularly are generally from migrant labour families. These students accompany their families when they go back to their native places and are sometimes missing from school for months together. In the process, they forget almost everything which has been taught to them. This severely affects their academic outcomes.

Teacher Union Leaders argue that while punctuality is important but late arrival is quite usual in government schools particularly in rural areas. They have also pointed out that most of those, who do not attend classes regularly, belong to poor migrant labour families. These students stop coming to school during busy seasons such as wheat harvesting, paddy transportation, cotton

picking, etc., when they help their parents in the fields or look after other siblings when their parent are busy in the field work. They are also absent from school for long periods, when they accompany their families to go back to their native places. Long absence from school makes them almost blank and sometimes in the next session, they have to be again admitted in the same class. That also explains why there are so many over-aged children in class III in government schools of Punjab. All this seriously affects negatively the academic outcome of government schools.

Impact of Gender of Teacher on Students Academic Performance and Reasons thereof

Regular teachers group opine that gender of the teacher, as it is, is not important. It all depends upon teacher's dedication and not on his/her gender. But two female informants from this group have argued that since female teachers give extra care to the weak students, therefore, generally the results of female teachers are better than male teachers.

Contract Teachers group feel female teachers deal their students politely and with tender care. Psychologically, small kids feel more secure with lady teachers and generally, they get attached to female teachers. As a result, lady teachers are able to put across their views more effectively which ultimately gets reflected in better academic performance of students. That is why results of lady teachers are generally better than their male counterparts.

School Heads have pointed out that the number of female teachers in primary schools is much larger than male teachers. Secondly, they argue that female teachers handle small kids better than male teachers. In fact, female teachers deal their students with motherly affection. As a result, female teachers are more effective in putting across whatever they want to convey. This gets reflected in the academic achievements of students. That is why female teachers at the primary level outperform their male counterparts.

Teacher Union Leaders also agree that female teachers are more suitable for handling small kids. They know how they handle small kids at home (son/daughter/nephew/niece etc.). That experience comes in handy for them in the school. In any case, female teachers can teach languages in a better manner than their male counterparts. That is why female teachers generally outperform their male counterparts in languages.

Thus, all the four groups agree that female teachers are better equipped to handle small kids. They handle small children with love and care. They can teach languages to small children more effectively than their male colleagues. Therefore, their results are generally better than their male counterparts.

Impact of Age and Experience of Teacher on Academic Performance of Students and Reasons for that

Regular Teachers feel that young teachers show more interest in teaching. They are also more interested in learning new things and attending seminars etc. On the other hand, old more experienced teachers do not show much interest in teaching. They generally do not upgrade themselves and sometimes even resist to learn new technology. They have very low adaptability to new methods. All these things put together make younger teachers more effective compared to their older more experienced counterparts. This gets reflected in the academic performance of their students.

Contract Teachers are of the view that the children of relatively young teachers are of the same age as that of students they teach in the class room. Even otherwise, young teachers get feedback from their own children about activities in their schools, which they try to implement in their teaching and in schools where they teach. Older more experienced teachers, on the other hand, do not have this advantage. Overtime, they become stagnant. They are generally not very receptive to any change. All this leads to young teachers being more effective in teaching than their older more experienced counterparts. Therefore, young teachers return better results.

School Heads opine that young teachers are more energetic and more enthusiastic about their teaching. Older teachers, on the other hand, lose interest in the job. They also have some kind of technological obsolescence. It is also true that old, more experienced teachers are given more non-academic duties. Therefore, they cannot devote their full time to teaching. All this leads to a situation where students of younger teachers normally show better academic performance.

Teacher Union Leaders argue that firstly young teachers have more enthusiasm and are more dedicated. Secondly, old and more experienced teachers do not update themselves. Thirdly, older teachers are also burdened with more non academic duties and therefore do not get sufficient time to teach. When asked whether and why all old teachers are given extension beyond 58 years

of age if they do not show even average results, the **Teacher Union Leaders** have said they have never demanded extension in service beyond 58 years of age.

Relation of Caste of the Teacher with the Academic Score of Students

Regular Teachers feel that teachers belonging to the general category normally have better results compared to their counterparts from SC/BC category. It is basically the quality differential at the entry level, which persists over time. Their suggestion is that at the time of recruitment candidates belonging to SC/BC categories should be given relaxation in age but not in academic standards.

Contract Teachers argue that teachers from the SC/BC category are basically resource poor. They come from poor socio-economic background, which gets reflected in their teaching performance. However there are exceptions also where a teacher from SC/BC background performs exceptionally well.

School Heads feel that there are quality differences at the entry level. Poor merit of teachers from reserve categories get reflected in their teaching performance later on. Their suggestion is that all poor performers, irrespective of the caste, should be made to attend reorientation/refresher courses.

Teacher Union Leaders, while agreeing that there are differences in the performances of teachers coming from different social backgrounds, have refused to comment on it any further. Like school heads, they have also suggested that all those, who do not perform well or whose performance is below par, should be made to attend seminars/refresher courses.

Impact of Higher Educational/Professional Qualification of a Teacher on Students' Score

Regular Teachers Group has been of the opinion that qualifications matter only if the teacher is given the class for which that professional qualification is meant. If, however, a person with post graduation and M.Ed. is asked to teach primary classes, he/she may not perform well at all.

Contract Teachers group also argue on similar lines. For example, if over-qualified teachers are deployed to teach primary classes, they simply do not know how to do it.

School Heads have also given more or less similar arguments. In their view, qualification and more particularly the professional training of a teacher should be appropriate for the class he/she

is teaching. Otherwise, results are likely to be poor. For example, if a post-graduate teacher, who has done M.Ed., is deployed to teach primary classes, he/she is extremely unlikely to show good results. That teacher will, in fact, be a frustrated person because he/she will not have any job satisfaction.

Teacher Union Leaders have given better and more detailed response. They argue that training is different for different levels e.g. ETT for primary classes, BA/B.Sc., B.Ed. for middle or matric level, and M.Ed. for teaching higher classes including B.Ed. Any mismatch can create problems. They also add that teachers with post-graduation qualification should not be asked to teach primary classes.

Impact of Employment Status of the Teacher on Students Academic Performance

Regular Teachers Group feels that, normally, regular teachers should show better results. But there are problems with regular teachers as they are given too many non-academic duties. Thus, a lot of their time is wasted in non-academic duties. Therefore, they are left with less time for teaching work which some times affects their performance.

Contract Teachers argue that non-regular teachers, who are working on contract or adhoc basis, are likely to show better results because they always have the insecurity of losing their job if their performance is not good. So, they always work under some kind of pressure while regular teachers have no such pressure on them. For contract/adhoc teaches, it is a question of perform or perish. Therefore, these teachers generally have better results regular counterparts.

School/Cluster Heads are of the view that regular teachers are more involved in non-teaching duties while non-regular teachers do not have any such duty and are fully involved in teaching only. Therefore, sometimes, contract/temporary teachers, in fact, return better results. In any case, contract/temporary teachers will have to show their worth through good results only.

Teacher Union Leaders argue that most of the teachers working on contract/ temporary basis are relatively young. They are more energetic and also more conscious about showing their performance. On the other hand, most of the regular teachers are older in age. They are less enthusiastic about teaching. They also have more non-academic duties and responsibilities. All this gets reflected in their results also.

Effect of Job Satisfaction of a Teacher on Academic Performance of Students

Regular Teachers Group argues that job satisfaction of the teacher is necessary for producing good results. Only satisfied teacher can fully devote himself or herself to his/her duties. A disgruntled teacher, for whatever reasons, will not be able to produce good academic results.

Contract Teachers are of the opinion that job satisfaction is a necessary ingredient for a teacher to perform. At the moment, they do not have this luxury. They are paid poorly and do not have any job security. Therefore, they cannot say very authoritatively how for it will transform them once they have job satisfaction, proper pay and job security.

School/Cluster Heads feel that Job satisfaction is necessary for a teacher before he puts his best for the profession. Only a teacher, who has no grudges about his promotion, posting and other conditions of service etc. will fully devotes himself to his job. Therefore, the academic performance of students will, to a large extent, depend up the level of job satisfaction of the teacher.

Teachers Union Leaders also stress this point that only a satisfied teacher can fully devote himself to his profession and can produce good academic results. For a teacher to be satisfied, it is necessary that he/she has no complaints about his/her pay, place of posting and service conditions. For this to happen, transfer policy will have to be made more transparent. There should be institutional mechanism for redressing the grievances of teaches regarding their seniority, and promotion etc. Standard of education can be improved only if we have teachers who are satisfied and devoted to his profession.

To conclude, the main findings from the Focus Group Discussions can be summed up as follows:

1. Girls normally perform better than boys because they are more serious and attentive in the class.
2. There is a fairly large percentage of students in class 3 who are over-aged. Most of them belong to migrant labour families, who leave the school in between and come back after long gaps. They have to be readmitted in the same class.

3. Children from socially deprived sections of the society often lag behind general category students because they have to help their parents in work and also because they do not have much support from their parents. Hence, economic background of child's family has definite impact on his/her academic performance.
4. Urban schools have better infrastructure and more teachers compared to rural schools. Therefore, students studying in urban school have better performance compared to students studying in rural area schools.
5. Parental support and involvement is essential for better academic results.
6. Private tuition helps in the sense that students are able to complete their home work.
7. Children from smaller sized families normally perform better because they have more facilities and better attention of their parents.
8. Differently-abled children do have problem with their studies only if the disability is of a serious nature. Students with minor disability perform as well as the normal students.
9. Giving and checking home work regularly definitely improves student's academic performance.
10. Parents education (especially mother's) and profession (especially father's) is very important for child's academic performance.
11. Privately managed schools have better results because they have better infrastructure, more teachers and better supervision.
12. Rural schools fare poorly because of insufficient number of teachers and poor infrastructure in schools. The parents of rural children are also less aware.
13. Pupil – teacher ratio should not be either too large or too small. Ideally, it should be 1:25.
14. There is not much of instructional material available in primary schools. Therefore, nothing can be said authoritatively about its impact on academic performance.
15. Supervision by Principal/Head Teacher is important in maintaining discipline and creating congenial atmosphere. Therefore, every school should have a regular principal/head master.
16. Punctuality is important but not crucial for good academic results.
17. Female teachers handle small children with love and care. Therefore, their academic results are generally better than their male counterparts.
18. Old more experienced teachers generally do not update themselves. It is also true that they have too many non-academic duties, which effect their teaching and hence, results.

19. Caste of the teacher does make a difference largely because of the quality difference at the entry level which continues to persist over time.
20. Highly qualified teachers with post-graduation and M.Ed. degrees should not be deployed to teach primary classes, it frustrates them.
21. Regular teachers, sometimes, cannot deliver good academic results because they are given too many non-academic duties.
22. To achieve desired results, it is absolutely necessary that teachers are a satisfied lot. This requires fair and transparent promotion and transfer policy and grievances redressal mechanism.

CHAPTER-9

SUMMARY OF THE MAIN FINDINGS

Punjab state, in its present form, came into existence in 1966 when the erstwhile Punjab was reorganised on linguistic basis. During the last 50 years, the state has made phenomenal progress in various fields, including education. Literacy rate-an indicator of the level of education progress, has been rising continuously. It was 34.12 per cent in 1971 and rose to 76.68 per cent by 2011 i.e. an increase of 42.56 percentage points. Male-female literacy gap has come down from 17.58 per cent in 1971 to 10.20 per cent in 2011. Similarly, gap between rural-urban literacy has reduced considerably from 27.95 per cent in 1971 to 11.25 per cent in 2011.

The allocation of funds to general education remained below 3 per cent of the total outlay during the 6th five year plan to 9th five year plan. But it picked up in the 10th five year plan beginning in 2002, which coincided with the launching of SarvaShikshaAbhiyan- a flagship programme for universalisation of elementary education. The allocation of funds to general education in the state has considerably been above 6 per cent of the total outlay since then, in all the subsequent five year plans. Punjab's progress in achieving the physical infrastructural norms is one of the best in the country. Dropout rate has dropped drastically during the last 15 years since the launching of SSA. There has been sharp fall in the out of school children in Punjab over the period 2001-2015. Pupil-teacher ratio came down substantially and now stands at 29:1 for the lower primary level, 22:1 at the upper primary level and 17:1 at the secondary level.

Having attained a fair degree of success in fulfilling physical targets in the field of education, the state is now concentrating on improving the quality of education in the state. With this objective in mind, Punjab conducted its first State Learning Achievement Survey (SLAS) in 2013 for class III students.

- The survey covered all the 22 districts, 217 blocks, 2164 schools and 31793 students. More than 80 per cent of the schools covered are public schools, being funded and managed by Department of Education, Punjab/ZilaPrishad and/or Local Bodies 82.58 per cent of the total schools covered are in rural areas.

- More than 78 per cent of the students covered are studying in public schools, the rest in private schools. 52.49 per cent are males and the remaining 47.51 per cent are females. 69.63 per cent of the total students are from Scheduled Castes, Backwards Castes or Other Backward Castes. Nearly one-third of the students come from Below Poverty Line families. Nearly 7 per cent students are physical challenged. About one-fifth of them are availing private tuitions.
- Mothers of nearly one-third students are illiterate. More than 84 per cent of all the mothers in our survey are housewives. Another nearly 10 per cent are working as agricultural labour or domestic servant or in farming. Similarly, fathers of nearly 59 per cent students are doing agricultural labour/ daily wage work or are street vendors. Another nearly 14 per cent of them are farmers and 3 per cent are unemployed. Therefore, more than three-fourth students in our sample have been their fathers working as manual labour. Thus, a majority of the students in our sample hail from low social and economic status families with their parents belonging to the labour class or farming families.
- More than two-third teachers in our sample are females. Nearly 80 per cent teachers are young below 40 years of age. More than 83 per cent of them are graduates or post-graduates. Almost all of them have some professional training. But unlike 70 per cent of the students, who come from SC/BC/OBC background, more than 60 per cent teachers belong to general category or are from high castes. Thus, socio-economic background of the students and teachers does not match with each other and they belong to two different social strata of the society.
- The review of existing literature show that socio-economic status of the family has a strong positive influence on the academic performance of children. Children from low income families generally have low levels of literacy, numeracy and comprehension. They are likely to leave school early and less likely to go for higher education. They generally have more problematic school behaviours and have more difficulties with their studies.
- There is enough evidence in the existing literature, which shows that apart from family income, parent's education, father's occupation, parental aspirations, father's involvement and home environment have strong positive influence on the academic

achievement of children. There is some evidence to suggest that there is negative relationship between family size and academic achievement of children.

- Type of school emerges as an important factor in determining academic achievement of students. Most of the existing empirical studies point towards the fact that private schools often provide superior results at a fraction of the cost of public schools. The unit cost advantage of private schools is largely attributable to the fact that these schools pay much lower salaries to teachers compared to government schools, but they do have more teachers relative to number of pupils. The quality advantage of private schools is also because of their initial advantage in terms of better intake as more students from high socio-economic status families enter private schools compared to government schools. These schools also enjoy a degree of autonomy in their functioning, which results in better student's performance.
- Among the other school level variables, the studies find principal's experience and supervisory role, regular interaction between parents and teachers, strong accountability in the system, regular monitoring of students' learning and evaluation, high quality of in-service training and focus on pedagogy, all go a long way in improving the learning outcome of students.
- On the question of class size and student teacher ratio, most empirical studies suggest that small class size and low student teacher ratio have positive impact on academic performance. But most of the empirical evidence on this issue emanates from studies conducted in developed countries. However, studies carried out in developing countries and cross country studies do not always support this proposition.
- Some studies have also gone into the question of how to raise retention and reduce dropout rate. Their main suggestions include effective implementation of existing schemes like mid-day meals, free provision of text books and attendance allowance. Among the negative factors, which discourage retention, are listed unfriendly behaviour of teachers, use of abusive language, corporal punishment, school being too far-off from habitation, lack of sports and recreational facilities at the school level and burden of work at home such as domestic chores and sibling care for girls and framework and cattle grazing for boys, which keeps children out of school.

- Our results show that girls outperform boys in both the languages i.e. English and Punjabi, but in Mathematics score, gender has no significant impact.
- Urban area students outperform rural area students in all the three subjects. The mean score of urban area students is higher by 9.15 per cent in English, 5.32 per cent in Punjabi and 5.76 per cent in Mathematics. The difference in mean score is statistically significant in case of all the three subjects.
- Children from relatively better off non-BPL families have significantly higher score in all the three subjects compared to their counterparts from BPL families.
- All those students, who have availability of help in study at home, score higher marks than those who do not have such help. This is true in case of all the three subjects.
- Those students, who have the facility of private tuition at home, have scored higher marks compared to those who do not have this facility.
- Children, who do not have any sibling or have only one sibling, have scored significantly higher marks than those who have two or more than two sibling i.e. children from smaller families outperform children from large families.
- Children with physical disability have significantly lower marks in all the three subjects compared to normal children. Perhaps, they need special care and attention.
- Children, whose home work is checked regularly, score significantly higher marks than their counterparts whose home work is not checked. This is true in case of all the three subjects.
- General category children outperform children from all other social categories. In fact, OBC children outperform BC/SC children and BC children outperform SC children. So, there is a one to one correspondence between the social hierarchy in Punjabi society and educational performance.
- Mother's education has significant impact on the educational achievement of children. Percentage of marks in all the three subjects goes on increasing as we move from illiterate to graduate and above mothers. In English, there is a huge gap of nearly 22 percentage points in marks obtained by children whose mother's education is graduation above, and the children of illiterate mothers. In Punjabi and Mathematics, the gap is nearly 13 percentage points. Given the fact that more than

40 per cent mothers in our sample are either illiterate or literate but below primary, and are therefore, not able to help their wards in studies, it is a huge problem which needs immediate attention of the policy makers.

- As in the case of mother's education, similarly in case of mother's occupation also, there is a strong relationship between mother's occupation and academic performance of their children. Once again, there is a gap of around 21 per cent in English, 12 per cent in Punjabi and 10 per cent in Mathematics between the average score of those, whose mothers are in teaching profession and those whose mothers are either unemployed or doing some kind of manual labour. In fact, mother's education and mother's occupation represents roughly the same dimension and chances are that a cure which is effective in case of one malice will also be effective in case of the other.
- Our study also confirms the findings of several earlier studies that father's occupation has a strong positive relationship with the academic performance of the child. Father being in a good well-paid job, not only gives the child required facilities and necessary support but also motivates the child to achieve success.

We also examined the impact of seven school level factors on the academic performance of students as represented by their mean scores. The results can be summed up as follows:

- Type of school management turns out to be a highly significant factor in explaining academic outcomes of students. Students studying in private un-aided schools, private aided schools and LB/MC run schools scored significantly higher marks compared to students studying in Govt. Schools and Zila Prishad run schools. One-way ANOVA test shows F-values to be highly significant at one per cent level of significance for all the three subjects.
- Our results show that the availability of physical infrastructure and facilities in schools has significant positive impact on level of academic achievement of students in all the three subjects.
- Students from urban area schools score significantly higher marks in all the three subjects compared to the marks obtained by students from rural area schools.

- Observation by principal of the school is found to have a significant impact on marks obtained in English and Punjabi but not in Mathematics
- Score in Mathematics significantly improves with enrichment classes, which incidentally do not have any significant impact on performance of students in English.
- Pupil-teacher ratio and availability of instructional material were found to be of no consequence as both these factors did not have any significant impact on academic performance of students
- Thus, it the type of school and availability of physical infrastructure and other facilities which are the most important school level factors, followed by location which also has significant impact on academic performance of students. Principal's observations turn all out to be important in case of languages i.e. English and Punjabi and enrichment classes in case of Mathematics. Pupil-teacher ratio and instructional material have not been found to be of any significance.

We have analysed the impact of nine teacher related variables on the academic performance of students. These are age of teacher, gender of teacher, caste of teacher, highest educational qualification of teacher, their professional training, experience in terms of number of years, employment status, level of job satisfaction and whether they maintains teacher's diary or not. The main findings are as follows.

- Young teachers with less than 30 years of age outperform their older and more experienced colleagues in all the three subjects. The performance of those above 50 years of age is the worst. The gap between the mean score of students taught by the youngest and the oldest category of teachers is more than 6 percentage points in English, 4.12 percentage points in Punjabi and 3.36 percentage points in Mathematics and all these gaps are statistically significant within the acceptable confidence limits.
- Female teachers outperform their male counterparts in English and Mathematics as students taught by female teachers have significantly higher marks in these subjects. However, gender of the teacher is not a significant factor as far as marks in Punjabi are concerned.

- Students taught by general category teachers score significantly higher marks compared to students taught by SC/BC/OBC teachers. This is true in case of all the three subjects.
- Highest academic qualification and professional training of teachers have no impact, what so ever, on the academic performance of students.
- Experience of teacher has negative impact on the academic performance of students. Young teachers, with less than 5 years of teaching experience, outperform their older and more experienced colleagues in all the three subjects. In fact the gap between the mean score of those taught by teachers with less than 5 years of teaching experience and those 30 years of experience is more than 10 percentage points in English, 7.68 percentage points in Punjabi and 6.12 percentage points in Mathematics. The differences are statistically significant within the acceptable confidence limits. It appears that either the senior teachers, having long teaching experience, are not updating themselves with new trends in their subjects or they are being burdened with additional responsibilities, thus, affecting their teaching work adversely.
- Our analysis of the impact of employment status of teachers on academic performance of students shows that in English and in Punjabi, the highest marks are obtained by those students which are being taught by teachers working against leave vacancy and in Mathematics students of adhoc/temporary teachers are topping the table. Students of regular teachers are at number two in case of Punjabi and Mathematics, and number three in English. In fact, in English, the mean percentage score of students taught by teachers working against leave vacancy is more than 5 percentage points higher than those taught by regular teachers and the difference is statistically significant at 1 per cent level of significance
- The level of job satisfaction of teachers has significant positive impact on the academic performance of their students in English and Mathematics. The higher the level of job satisfaction of teachers, the more the mean percentage score of students in these subjects. But there is no relationship of job satisfaction with marks in Punjabi

- Students taught by those teachers who maintain teacher's diary score higher marks compared to those taught by teachers who do not maintain teacher's diary. The mean scores however are not statistically significantly different from each other.

Our regression results show that school level variables-type of school, location of school and regular checking of homework substantially improve the chances of a student to get into the brilliant (80 per cent and above marks) category. Other things remaining the same, a shift from a government to a private school improve a child chance of getting into the 80 per cent plus category by nearly 70 per cent. Regular checking of homework in relation to no checking, improves his/her probability by 46 per cent. Similarly, a shift from rural to urban school, other things remaining the same, will improve his/her chances of going to 80 plus category by nearly 38 per cent.

From amongst the family's factors, socio-economic background, mother's education and father's occupation turn out to be the most important factors. Other things remaining the same, a child from the general category background has, on an average, 26 per cent higher probability to be in the above 80 per cent category compared to a child from the SC/BC/OBC background. Mother being educated compared to illiterate or barely literate mothers, improves the chances of the child being in the top category by 22 per cent. Similarly, a child has 22 per cent more probability to be with 80 per cent plus category compared to a child whose father is a manual labourer.

If a child has more than one sibling his/her chances at getting more than 80 per cent marks go down by 17 percentage points compared to if he/she is the only child or has only one sibling. Again, a child from BPL family has 8 per cent less probability at getting into the 'brilliant' category compared to the one from the non-BPL family. A male student compared the female has 18 per cent less probability of being in the 80 per cent plus category in English and 24 per cent lower probability in Punjabi. However, in Mathematics, gender is not at all important. Thus, on the whole, the study finds that it is the socio-economic and family background at the child along with some school level factors which determines his/her chances of scoring more than 80 per cent marks.

MAIN FINDINGS FROM THE FOCUS GROUP DISCUSSIONS

1. Girls normally perform better than boys because they are more serious and attentive in the class.
2. There is a fairly large percentage of students in class 3 who are over-aged. Most of them belong to migrant labour families, who leave the school in between and come back after long gaps. They have to be readmitted in the same class.
3. Children from socially deprived sections of the society often lag behind general category students because they have to help their parents in work and also because they do not have much support from their parents. Hence, economic background of child's family has definite impact on his/her academic performance.
4. Urban schools have better infrastructure and more teachers compared to rural schools. Therefore, students studying in urban schools have better performance compared to students studying in rural area schools.
5. Parental support and involvement is essential for better academic results.
6. Private tuition helps in the sense that students are able to complete their home work.
7. Children from smaller sized families normally perform better because they have more facilities and better attention of their parents.
8. Differently-abled children do have problem with their studies only if the disability is of a serious nature. Students with minor disability perform as well as the normal students.
9. Giving and checking of homework regularly definitely improves student's academic performance.
10. Parents education (especially mother's) and profession (especially father's) is very important for child's academic performance.
11. Privately managed schools have better results because they have better infrastructure, more teachers and better supervision.
12. Rural schools fare poorly because of insufficient number of teachers and poor infrastructure in schools. The parents of rural children are also less aware.
13. Pupil – teacher ratio should not be either too large or too small. Ideally, it should be 25:1.
14. There is not much of instructional material available in primary schools. Therefore, nothing can be said authoritatively about its impact on academic performance.

15. Supervision by Principal/Head Teacher is important in maintaining discipline and creating congenial atmosphere. Therefore, every school should have a regular Principal/Head Taster.
16. Punctuality is important but not crucial for good academic results.
17. Female teachers handle small children with love and care. Therefore, their academic results are generally better than their male counterparts.
18. Old more experienced teachers generally do not update themselves. It is also true that they have too many non-academic duties, which affect their teaching and hence, results.
19. Caste of the teacher does make a difference largely because of the quality difference at the entry level, which continues to persist over time.
20. Highly qualified teachers with post-graduation and M.Ed. degrees should not be deployed to teach primary classes, it frustrates them.
21. Regular teachers, sometimes, cannot deliver good academic results because they are given too many non-academic duties.
22. To achieve desired results, it is absolutely necessary that teachers are a satisfied lot. This requires fair and transparent promotion and transfer policy and grievances redressal mechanism.

POLICY RECOMMENDATIONS

Following are the policy recommendations

1. **Remedial Classes**: Our study shows that urban students are performing significantly better than rural students. Also, students in private un-aided schools have performed much better than those of government schools. The students of general category have performed better than those from SC/BC categories. These findings are a serious challenge to the goal of equity in learning. Thus, children from historically disadvantaged and economically weaker sections exhibit significantly lower learning outcomes. In the light of these findings, it is recommended that Department of Education should start remedial classes for the students belonging to these disadvantaged sections of the society.
2. **Pre-School**: Most of the students, who join private schools, are not only from relatively better-off sections of the society, but most of them also have pre-school education for a couple of years. On the other hand, those who come to government schools, are either

from SC/BC background or they come from families belonging to the weaker sections of the society. Thus, private schools have an initial edge over the government schools at the level of intake, which persists over time and gets reflected in their learning outcomes also later on. To off-set this disadvantage of government schools, which generally cater to the students from weaker sections of the society, it is recommended that pre-nursery classes should be started in government schools and all the pre-school children between 4-5 years of age should be imparted learning and developmental readiness required for the smooth transition to primary education.

3. **Turning Anganwadis to Pre-Schools:** The task of creating Pre-Schools can also be achieved by upgrading the present Anganwadi system. At present, Anganwadi system has multifarious objectives and is totally detached from the formal schooling system. Anganwadi system should be brought this formal schooling system with regular Pre-School teacherstrained for this purpose. Government should create a separate cadre of pre-primary teachers with adequate provision for their career progression as regular teachers in future. Infact, in Punjab, we already have some nursery-trained teachers which can be helpful for the time being. In due course, all primary schools should have pre-primary education centres, preferably within the schools premises or as close to school as possible.
4. **An extra hour to complete homework:** A large number of children in government schools belong to the families who are socially and economically deprived. Most of them are not educated and are working as manual labourers. These parents cannot help their children in study, in general, and in completing their homework, in particular. If such children can be made to stay for one hour at school after regular school hours and teachers are assigned duties to get their homework completed before they leave for home, this can go a long way in improving their academic performance. The teacher involved in this exercise can be paid some extra remuneration for extra work done by them. Beside financial incentives, teachers should also be motivated to do this noble task for upliftment of the children of economically and socially deprived sections of the society.
5. **Provision of basic infrastructure and other facilities:** The large gap between the academic performance of urban vs rural schools and private vsgovernment schools is mainly attributable to the wide gap in the availability of physical infrastructural facilities in these two sets of schools. There is a gap of nearly 18 percentage points in the value of

composite index for infrastructure between government schools and private un-aided schools. Similarly, there is a large gap between the available infrastructural facilities in urban schools and rural schools. This gap needs to be minimized and the governmentschools, particularly in rural areas, need to be provided infrastructural facilities as per the norms laid down in the RTE Act. Of course, the infrastructural norms can be modified as per the local conditions and requirements, but narrowing the gap between the urban-rural schools and private-government schools in terms of infrastructural facilities is absolutely essential if the learning outcomes are to be improved in government schools (in both rural and urban areas) and these schools are to be brought at par with private schools.

6. **Providing one teacher for each class and fixing responsibilities:** In addition to the infrastructure norms specified in the RTE Act, norms for learning outcomes should also be fixed, both for private and government schools. Responsibility should also be fixed and those who fail to come up to that level, should be penalized with reprimand, with a negative entry in the ACR and even a punitive action such as stopping of increments. But, all that requires that a teacher is responsible for only one class. For that to happen, a sufficient number of teachers will have to be provided first. Thus, the government should fill all vacant posts of teachers in the schools and then make teachers liable for any shortcoming in learning outcomes.
7. **Provision of Clerk/Data Entry Operator:** During Focus Group Discussions with various stake holders, we have found that there is a complaint by all categories of teachers and school heads that a lot of their time is lost in responding to daily queries raised by the head office and in sending the information required by the Education Directorate. Therefore, they are unable to attend to their normal academic duties fully. After a lot of discussion, we feel that this problem can be solved if each school is provided with a clerk/data entry operator who can then handle this task of corresponding with the central office. To begin with, such a facility can be provided to a cluster of schools, which can later on be extended to all schools. This step can go a long way in sparing the teachers from the cumbersome official non-teaching work. The time so saved can be then utilized for improving the learning outcomes. Similarly, the teachers should also be spared from non-academic duties generally assigned to them by district administration from time to time.

8. **Regular Parent-Teacher meets:** During the course of our discussions with the stake holders, we also realised it is not only the ability of the parents to help the child in the studies which matters, but much more important is their awareness about the importance of education for their children. To make largely illiterate parents aware of the importance of education for their children and to motivate them to get involved with their children's education, it is essential that parent-teacher meetings are held regularly. Mostly, mothers come to attend the parent-teachers meetings. It is, therefore, also suggested that not only they should be made aware about the importance of education, but they should also be counselled about the importance of their involvement with their children's education. This step can go a long way in improving the academic performance of students hailing from poor families.
9. **Schools for disabled:** Nearly seven per cent students in our sample are found to be suffering from some kind of disability. These physically disabled students are found to have significant lower percentage of marks compared to normal children. The situation highlights the need to equip schools to address the challenging needs of students with disabilities. Presently, the Department of School Education is helping such students through their flagship programme like SarvaShikshaAbhiyan (SSA) and RashtriyaMadhmikShikshaAbhiyan (RMSA). The need is to have specialised schools with adequate number of trained teachers for such students at various levels. To start with, one specialised institution should be established at the district level. In due course of time, this chain of schools can be extended to block and tehsil levels, depending upon the number of students available in these categories.
10. **Review of re-employment policy:** The findings of our study show that the score of students taught by young teachers with lesser experience is much better than the score of students taught by more experienced and senior teachers, particularly above the age of fifty years. This negative relationship between the learning outcomes of students and the age as well as experience of the teacher is bit surprising. The gap between the average percentage score of students taught by young teachers with lesser experience and the score of students taught by more experienced and senior teachers, ranges from 10 per cent in English to 7 per cent in Punjabi and 6 per cent in Mathematics. It appears that either the senior teachers are not upgrading themselves with the new trends in their subjects or are being over-burdened with additional responsibilities (particularly the non-

academic ones), thus affecting their teaching work. In the light of these findings, there is a need to review the re-employment policy of teachers in government schools beyond 58 years of age. The re-employment/extension should be based on the performance of their last three years results and only those with above average results should be given extension of service. Otherwise, there is no point in employing somebody beyond the age of retirement at double the salary of a young teacher if he/she does not give even the average performance.

11. Updating books and practice books, particularly of Mathematics and English:

Private schools subscribe much better reading material to students. Government schools should also have comparable books and reading material. Introduction of good practice books for students is essential.

12. Teaching of English as Language: At primary level, English should be taught as a language and not as a subject, as is presently being done.

SUGGESTIONS FOR FUTURE RESEARCH

While carrying out this study and during focus group discussions held with school teachers, school/circle heads and teachers union leaders, we realised that some of the areas need in-depth analysis. We have identified the following areas which we feel, should get priority in future research:

Regional Variations

At present, while identifying the factors affecting academic performance of students, the entire state of Punjab has been treated as a single unit. However, it is a common knowledge that infrastructural facilities in schools, the availability of teachers and hence, the academic outcomes are not uniform throughout the state. There are areas, such as border areas and kandi areas, which are not at par with rest of the state in terms of facilities. These areas may have their own specific problems. Even otherwise, there are sharp regional variations in the state, not only in terms of the quality of infrastructure in schools and the availability of teachers, but also in terms of home environment of students, because levels of economic development vary across different regions of the state. This ultimately leads to different levels of learning outcomes. If problems are area specific, then the solutions will also have to be area and problem specific. Therefore, it is suggested that in all future studies on academic outcomes, the regional aspect should be kept

in mind so that area specific policies can be framed rather than having the same prescription for the entire state treating it as an omnibus category.

Low Score in Mathematics

Our study brings out clearly that students' score in mathematics at the elementary level is relatively low, for both boys and girls in rural as well as urban areas, compared to other subjects. This is true for all management type of schools, whether government or private and within private, whether private aided or private unaided. This is an issue of serious concern because traditionally, we Indians have been having a comparative advantage in mathematics, even globally. Students, which are now in elementary classes and which are not doing very well in mathematics, when they grow up, they may not have the same advantage in the for more globalised job market. It is, therefore, suggested that Punjab SCERT must look seriously into the reasons for poor performance in mathematics at the elementary level and take necessary steps to improve the situation. The Department of School Education, Punjab should commission a comprehensive study, which should go into all aspects of the problem and suggest remedial measures.

Inspection Mechanism

Regular inspection of schools and proper supervision at the local level both are important for proper functioning of schools. Our results show a clear positive impact of supervision by the school principal/head master on student's academic performance. Most participants in the focus group discussions have also stressed this point. A comprehensive study needs to be conducted regarding inspection practices being followed by different states so as to improve our own inspection mechanism in government schools. Similarly, a thorough study of the supervisory practices being followed by well known chain of private schools should also be done so as to identify areas in which principals/head masters of our government schools can be trained to strengthen the supervisory mechanism at the school level. This step can go a long way in improving the general academic environment and quality of education in government schools of the state.

Quality of Books/Reading Material

It has emerged very clearly from the focus group discussions that the kind of books and reading material being recommended for use in Punjab's government schools at the elementary level, in both English and Mathematics, is not up to the mark in content as well as in presentation. On the other hand, the reading material being used by private schools in the state for the same class is much better in content as well as in quality. This has been identified by the teachers who have participated in the Focus Group Discussions as one of the main reasons for relatively poor performance of government school students compared to private school students in the state. How far it is true and what needs to be done to make the reading material more interesting, can be brought out only by a thorough and comprehensive study of inter-state comparison of the syllabus and content of books for different elementary classes on the one hand, and a study of the material being used by private schools of the state on the other. SCERT, Punjab should commission a study to go into the whole gamete of issues relating to the course content, quality of books and other reading material and the style of presentation, so that our government schools do not lag behind private schools in the state on account of poor quality of books/reading material.

Impact of In-Service Training of Teachers

Another area which requires immediate attention in future research is the impact of in-service teachers training on teachers class room transactions and whether students find any change in teacher's teaching methodology or teacher's behavior after the training. Such a probe should also go into the question of how far such trained teachers are able to use the inputs they received during training in their class room transactions, and what are the constraints and problems if they are not able to fully utilize those inputs. Ultimate test of the usefulness of teacher's in-service training lies in the improvement in the quality of teaching, which should ultimately get reflected in the academic performance of their students. Thus, the follow up studies to track the impact of teacher's in-service teaching and improvement of the academic performance of students should be the focus area for future research.

Evaluation of Mid-Day Meal Scheme

Evaluation of Mid-Day Meal (MDM) scheme and its impact on teacher's time on task on account of MDM activities is another area which suggests itself for future research. It would be interesting to know whether:

- (a) the MDM is being implemented in the state the way it was intended to be implemented;
- (b) the menu and best practices are being followed which are culturally appropriate in the context of geographical conditions and dietary habits of the population; and
- (c) how far the involvement of stakeholders in the MDM is being ensured?

There also persists a widely held belief that provisions of cooked meals disrupts class room processes, and that teachers spend too much time in making necessary arrangement and supervising the cooking operations to the detriment of academic timetable. Various states have devised different mechanisms to overcome this problem so as to minimize the teacher's responsibilities which impede or interfere with teaching learning process, while at the same time, ensuring that teachers do ensure that wholesome food is served to children and the eating is undertaken in spirit of togetherness, under hygienic conditions and in an orderly manner. The study should go into the best practices of being followed by other states, which can be tailored and adopted in the context of our own local conditions so that the implementation of the MDM scheme is improved and at the same time, the wastage of teacher's time on account of MDM activities is minimised.

REFERENCES

- Aggarwal, Yash (2000), "Primary Education in Delhi: How Much Do The Children Learn?" NIEPA, New Delhi
- Ahmeduzzaman M. (1992), Socio demographic factors, functioning style, social support and fathers involvement with preschoolers in African American families, *J. Marr. Fam.*, Vol. 54 pp 699-707.
- Alderman H., Orazem P. and Paterno E. (2001), School Quality, School Cost, and the Public/Private School Choices of Low-Income Households in Pakistan, *Journal of Human Resources*, Vol. 36, pp. 304-326.
- Amato, P. (1987), *Children in Australian Families: The Growth of Competence*, Prentice Hall, Sydney.
- Aturupane H. Glewwe P. Wisniewski S. (2013), The Impact of School Quality, Socio-Economic Factors and Child Health on Students' Academic Performance: Evidence from Sri Lankan Primary Schools, *Education Economics*, Vol. 1, Issue 1, pp. 2-37.
- Bandyopadhyay M. and Govinda R. (2008), Access to Elementary Education in India: Country Analytical review, Consortium for Research, Education Access Transition and Equity (CREATE) pp 8- 90.
- Banerjee A, Cole S., Duflo E. and Linden L. (2003). Improving the Quality of Education in India: Evidence from Three Randomized Experiments; Preliminary project report in collaboration with ICICI corporation, the World Bank, and MacArthur Foundation Network, pp 1-34.
- Barnard, W.M. (2004), Parent Involvement in Elementary School and Educational Attainment, *Children and Youth Services Review*, Vol. 26 pp. 39-62.
- Bauer, S. C. (2004), Should Achievement Tests be Used to Judge School quality? University of New Orleans, Retrieved on February 12, 2010 from [http:// www.asu.edu/apaa.html](http://www.asu.edu/apaa.html)
- Bhatnagar, J. K. and Sharma, M. (1992), A Study of the Relationship Between Parental Education and Academic Achievement in a Semi-rural Setting, *Psychological Studies*, Vol. 37, Issue 2, pp. 126-129.

- Bonesrønning H. (2003), Class Size Effects on Student Achievement in Norway: patterns and Explanations, *Southern Economic Journal* Vol. 69 (4), pp. 952-965. *Contemporary Education*, Vol. 69, Issue 2, pp 86-92.
- Buckingham, J. (2000), The truth about private schools in Australia, *Issue Analysis*, No. 13, Centre for Independent Studies, Sydney.
- Chand, Piar and Himanshu Sharma (2012), Factors Affecting Academic Performance of Senior Secondary Science Students: An Exploratory Study in Himachal Pradesh, *Online International Interdisciplinary Research Journal*, Vol. 2, Issue 6, pp. 211-220.
- Chapman D. and Adams D. (2002), The Quality of Education: Dimensions and Strategies, Volume 5 in the Education in Developing Asia Series, Manila: Asia Development Bank and Hong Kong: University of Hong Kong, Comparative Education Research Centre, ISBN 971-561-407-8.
- Chaudhury, N., Jeff, H., Kremer, M., Karthik, M., and Halsey, F (2004), Teacher Absence in India', Washington D.C: The World Bank.
- Cherian V.I. (1990), 'Family size and academic achievement of children', *Journal of Family Welfare*, Vol. 36, Issue 4, pp. 56-60.
- Cooper, R. (1998), Socio-Cultural and Within-School Factors That Affect the Quality of Implementation of School-Wide Programs, Report No. 28.
- Dahar M. A., Dahar R. A. and Dahar R. T. (2009), Mis-allocation of student teacher ratio, class size and per student expenditure leads to the wastage of school resource inputs and lower academic achievement: an issue of resource management, MPRA Paper 27835, University Library of Munich, Germany.
- Devi, S. and Mayuri, K., (2003), The effects of family and school on the academic achievement of residential school children, *J. Commu. Guid. Res.*, Vol. 20, Issue 2, pp. 139-148.
- Dreze, Jean and Geeta G. Kingdon (2001), Schooling Participation in Rural India', *Review of Development Studies*, Vol. 5, Issue 1, pp. 1-24.
- Empirical Study of Private Schools in the United Kingdom. Discussion Paper Series. Oxford: Department of Economics, University of Oxford.

- Fantuzzo, J., & Tighe, E. (2000). A family involvement questionnaire. *Journal of Educational Psychology*, Vol. 92, Issue 2, pp. 367-376.
- Figlio D. N. and Stone J. A. (1997), *School Choice and Student Performance: Are Private Schools Really Better?*, Discussion Paper no. 1141-97, Institute for Research on Poverty, Department of Economics, University of Oregon, pp. 1-47.
- Filmer, D., King, E. and Lant, P (1997), *Gender Disparity in South Asia: Comparison Between and Within States*, Washington D.C: The World Bank.
- Gerwal A. (1995), An international study of cognitive and socio economic correlations of school achievement. *J. Psychol. Res.*, Vol. 29, Issue 1, pp. 41-45.
- Gill J. K. and Sidhu H. S., (1988), Intelligence and academic achievement in the children belonging to different socioeconomic groups in rural Punjab, *Indian Psychol. Rev.*, Vol. 33, Issue, 4, pp. 50-54.
- Govinda R. and Vergees N.V. (1993), *Quality of primary schooling in India: A case study of Madhya Pradesh*, Publisher IIEP (International Institute for Educational Planning), Paris, pp. 1-308.
- Govinda, R., Bandyopadhyay, M. (2011), *Access to elementary education in India: Analytical Overview*, In Govinda, R., Ed. *Who goes to school? Exploring Exclusion in Indian Education*. Oxford University Press.
- Graddy K. and Stevens M. (2003), *The Impact of School Inputs on student Performance: An*
- Graetz, B. (1995), *Socio-economic Status in Education Research and Policy*, in John Ainley et al., *Socio-economic Status and School Education* DEET/ACER Canberra.
- Grover S. and Singh N. H. (2002), *The Quality of Primary Education: A case study of Madurai and Villupuram District in Tamil Nadu, India*, Publisher Harvard Graduate School of Education, pp 1-77.
- Henderson, A. T. (1988). *The evidence continues to grow: Parent involvement improves student achievement*. (Report No. ISBN-0-934460-28-0). Columbia, MD: National Committee for Citizens in Education. (ERIC Document Reproduction Service No. ED 315 199).

- Heyneman, S.P. and Loxley; W (1982) Influences on Academic Achievement across High and Low Income Countries: A Re-analysis of IEA Data, *Sociology of Education*, Vol. 55, pp. 13-21.
- Indian Institute of Education (2002), A Status and Evaluation Study of the Upper Primary Section of the Elementary Education System, report, pp 1-114.
- Jonathan Eng (2012), The Relationship Between Childhood Family Income, Educational Attainment and Adult Outcomes, Northwestern University.
- Joshua D. Angrist and Victor Lavy (1999), Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement, *The Quarterly Journal of Economics*, Vol. 114, Issue 2, pp. 533-575.
- Khan and Jemberu (2002), Influence of Family and Socio-economic Status on Educational and Occupational Aspirations of High and Low Achieving Adolescents, *Journal of Human Ecology*, Vol. 12, Issue 3, pp. 103-106.
- Khuluse M. D. (2004), The role of school management teams in facilitating quality of education in schools, Thesis - Department of Education Planning and Administration, University of Zululand, pp. 1-68.
- Kigdon, G (1999), ' How Much do Schools Matter to Pupil Achievement in India', *Journal of Educational Planning and Administration*, Vol. 12, Issue 1, pp. 5-25.
- Kingdon G. (1996), The Quality and Efficiency of Private and Public Education: A Case-Study of Urban India, *Oxford Bulletin of Economics and Statistics*, Vol. 58, Issue 1, pp. 57-82.
- Kingdon G. (2007), The progress of school education in India , *Oxford Review of Economic Policy*, Vol. 23, Issue 2, pp. 168-195.
- Krueger A. (1999), Experimental estimates of education production functions, *The Quarterly Journal of Economics*, Vol. 114, Issue 2, pp. 497-532.
- Krueger A. B. (2003), Economic Considerations and Class Size, *The Economic Journal* Vol. 113, Issue 485, pp. 34-63.
- Lang, Kevin and Paul A. Ruud (1986), Returns to Schooling, Implicit Discount Rates and Black White Wage Differentials, *The Review of Economics and Statistics*, Vol. 68, pp. 41-47.

- Levacic R. et al (2005). Estimating the Relationship between School Resources and Pupil Attainment at Key Stage 3: Report to Dfes University of London, Institute of Education.
- Lindahl M. (2005), Home versus school learning: a new approach to estimating the effect of class size on achievement, *Scandinavian Journal of Economics*, Vol. 107, Issue 2, pp. 375–394.
- Lubienski, Christopher, Corinna C. Crane, and Sarah T. Lubienski (2006), What Do We Know about School Effectiveness? Academic Gains in Public and Private Schools, *Phi Delta Kappan*, Vol. 89, Issue 9, pp. 689–95.
- Magnuson, Katherine A. and Sharon M. McGroder (2000), ' The Effect of Increasing Welfare Mothers' Education on their Young Children's Academic Problems and School Readiness', Northwestern University.
- Mahmood S. and Khatoon T. (2011), Influence of School and Students Factors on Mathematics Achievement , *Indian Educational Review*, Vol. 49, Issue 2 , pp. 80- 98.
- Maier P., Molnar A., Percy S., Smith P. and Zahorik, J. (1997), First-year results of the Student Achievement Guarantee in Education program, Publisher: Centre for Urban Initiatives and Research, University of Wisconsin-Milwaukee, pp. 1-32
- Michaelowa K. (2001), Primary education quality in francophone sub-Saharan Africa: Determinants of learning achievement and efficiency considerations, *World Development*, Vol. 10, pp. 1699-1716.
- Molnar A., Smith P., & Zahorik J. (1998), Evaluation Results of the SAGE Program, Milwaukee, WI: University of Wisconsin-Milwaukee.
- Mosteller F. (1995), The Tennessee study of class size in the early school grades, *The future of children*, Vol. 5, Issue 2), pp. 113-127.
- Mukherjee, D. (1995), 'The relationship between socio-economic background and participation in education', *ACEE Research Monograph No.1*, Darlinghurst.
- Muralidharan K and Kremer M (2007), Public and Private Schools in Rural India www.economics.harvard.edu/.../ retrieved on November 27, 2012.

- Narain, P., Sharma, S. D., Rai, S. C., & Bhatia, V. K. (2000), Regional disparities in socio-economic development in Tamil Nadu, *Journal Indian Society of Agricultural Statistics*, Vol. 53, pp. 35-46.
- Narain, P., Sharma, S. D., Rai, S. C., & Bhatia, V. K. (2002), Dimensions of regional disparities in socio-economic development in Madhya Pradesh, *Journal Indian Society of Agricultural Statistics*, Vol. 55, pp. 88-107.
- Narain, P., Sharma, S. D., Rai, S. C., & Bhatia, V. K. (2003), Evaluation of economic development at micro level in Karnataka, *Journal Indian Society of Agricultural Statistics*, Vol. 56, pp. 52-63.
- Narain, P., Sharma, S. D., Rai, S. C., & Bhatia, V. K. (2004), Estimation of socio-economic development in Hilly states, *Journal Indian Society of Agricultural Statistics*, Vol. 58, pp. 126-135.
- OECD (2005), School factors related to quality and Equity- results from Programme for International Student Assessment (PISA) 2000, pp. 1-158.
- OECD (2009), Education at a Glance, Paris. pp. 1-96. Parker K., Hannah E. and Topping K. J. (2006), Collective teacher efficacy, pupil attainment and socio-economic status in primary school, *Improving Schools*, Vol. 9, Issue 2, pp. 111-129.
- Pamela E Davis and Kean (2005), The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment, *Journal of Family Psychology*, Vol. 19, Issue 2, 294-304.
- Panda, M. and Jena, A.K. (2000), Effects of Some Paternal Characteristic on Class Ninth Students Achievement Motivation, *Indian Psychological Review*, Vol. 54, Issue 3, pp. 129-133.
- Pandey S. (2008), Path to Poverty Alleviation: Marriage or Postsecondary Education?, *Journal of Family and Economic Issues*, Vol. 29, Issue 1, pp. 166–184.
- Parker, Hannah and Topping (2006), Collective Teacher Efficacy, Pupil Attainment and Socio-Economic Status in Primary School', *Improving Schools*, Vol. 9 Issue 2, pp. 111-129.

- PEO (2010), Evaluation Report on Sarv Shiksha Abhiyan, Programme Evaluation Organisation (PEO), Planning Commission, Government of India, New Delhi. PEO report no. 203, pp. 1-136.
- Plan India, (2009), Why are children out of school? : a summary report of the study 'Participatory approach to identify reasons for exclusion among out of school children' conducted in 4 states of India. pp. 1-20.
- Planning Commission (2008), Government of India - Eleven Five Year Plan, 2007-12, Volume ISBN -13:978-0-19-569650-9, p. 5.
- Ruge, J. (1998), Raising expectations: achieving quality education for all, DSP Discussion Paper, NSW Department of Education and Training, Sydney.
- Sparkes, J. (1999), Schools, Education and Social Exclusion, CASE Paper 29, Centre for Analysis of Social Exclusion, London School of Economics, London.
- Trusty (1999) Effects of eighth grade parental involvement on late adolescents' educational expectations, Journal of research and development, Vol. 32, Issue 4, pp. 224-233.
- Williams, N. Penelope, R.W. Connell and V.M. White (1991), 'Australian research on poverty and education, 1979-1987', in R.W. Connell, V.M. White and K.M. Johnston, eds, *.Running Twice as Hard.: The Disadvantaged Schools Program in Australia*, Deakin University Press, Geelong.
- Williams, T., M. Long, P. Carpenter and M. Hayden (1993), *'Year 12 in the 1980s*, AGPS, Canberra.