CHAPTER-3
RESEARCH METHODOLOGY

3.1 Introduction:

Methodology decides the fate of the study and its outcome; as such, it is regarded as the heart of any research. Designing provides a picture for the whole study. It is therefore desirable to have a methodologically designed research plan. In this chapter, the methodology followed in the present study has been discussed in the greatest possible details. Research method of the study, population and sample, data gathering tools, quantification of variables, data collection and techniques for data analysis had been discussed vigorously in this chapter.

3.2 Method of the Study:

The present research was quantitative research. Survey method of descriptive type research has been employed for the study. It covered phenomena of the elementary education in Mehsana district of Gujarat state. Survey covers 25 variables related to elementary school. Checklist, observation technique, photographs, field diary have employed for the present study. Observation was carried out in two phase. Quantification of terms is also one of major task in the present study.

3.3 Population and Sample:

3.3.1 Population: Elementary Schools:

Mehsana district of Gujarat state was the geographical area of present study. In the Mehsana district, there are 1250 elementary schools. In the present study, research design demands the following criteria of the school for the selection of sample.

- Having higher class 7 or 8
- Having medium of instruction is Gujarati
- Run by local body

Considering the above criteria of the elementary school, the target population were 712 elementary schools. The following table describes Block wise population, target population for present study.

Table-3.1 Block Wise Population, Target Population

Block	Population No. of School	Target Population No. of School
Bacharaji	81	53
Kadi	198	123
Kheralu	110	69
Mehsana	266	132
Satlasana	91	57
Unjha	83	57
Vadanagar	107	62
Vijapur	172	85
Visnagar	142	74
Total	1250	712

All the students of std-7 and all the teachers of the school were the population of present study.

3.3.2 Sample: Elementary Schools:

Systematic random sampling was employed in the present study. Target population of the present study were 712 elementary school. 10% elementary schools were selected in sample. For selection of sample, schools were arranged according to their Block. In first 10 elementary school, researcher used lottery method. Among first 10 school, by lottery method, 8^{th} number school was selected in sample. Thereafter, researcher has selected 18^{th} , 28^{th}, 38^{th},....., 698^{th}, 708^{th} number of school in the sample. By this method, Sample was comprised of 71 elementary schools. The school no. 168^{th} i.e. Pandharpur primary school and 198^{th} i.e. Hanumannagar (d) pri school did not have any students in standard-7 so the school was changed randomly from same Custer. The new school name is Visatpura Primary school at 168^{th} place and Mahiyal primary school at 198^{th} place. (List of school in the sample is appended in Annexure - 7)

3.3.3 Sample: Students and Teachers:

The sample comprised of 71 elementary schools. In these elementary schools, all students studying in std-7 were the sample of present study and all teachers were the sample of present study. The following table describes number of students and teachers selected in sample.

Table-3.2 Sample: Students and Teachers

Sr. No.	Block	Name of the school	Total number of students in Std-7	Number of students given exam in Std-7	Total number of teachers	Number of teachers filled TJSS
1	Becharaji	Ruppura primary school	60	47	12	9
2	Becharaji	Finchadi primary school	62	33	14	14
3	Becharaji	Sujanpura primary school	14	14	6	6
4	Becharaji	Delpura (khant) primary school	27	21	8	6
5	Becharaji	Suduthala primary school	34	29	9	9
6	Kadi	Daran morva primary school	70	45	10	10
7	Kadi	Pirojpur primary school	22	16	7	7
8	Kadi	Balasar primary school	37	24	10	10
9	Kadi	Narsihnpura primary school	23	17	7	7
10	Kadi	Vaghroda primary school	35	26	6	6
11	Kadi	Lunasan primary school	27	19	12	13
12	Kadi	Fuletra primary school	57	48	16	10
13	Kadi	Kaiyal primary school	76	48	13	13
14	Kadi	Aalampur primary school	18	9	7	7
15	Kadi	Suraj pay center school	21	15	9	8
16	Kadi	Zaloda primary school	70	61	17	17
17	Kadi	Visatpura primary school	20	9	3	3
18	Kheralu	Chada primary school	39	35	11	11
19	Kheralu	Jorapura primary school	16	16	6	6
20	Kheralu	Mahiyal pri school	40	32	8	8
21	Kheralu	Kheralu pri kumar sch – 3	40	30	9	8
22	Kheralu	Mandropur primary school	40	29	8	9

Sr. No.	Block	Name of the school	Total number of students in Std-7	Number of students given exam in Std-7	Total number of teachers	Number of teachers filled TJSS
23	Kheralu	Nortol primary school – 1	52	45	11	11
24	Kheralu	Thangna primary school	36	32	11	11
25	Mahesana	Chaluva primary school	78	67	18	18
26	Mahesana	Ratangadh (linch) pri school	63	52	12	12
27	Mahesana	Haripura (tu) pri school	21	11	8	8
28	Mahesana	Hebuva primary school	34	25	8	8
29	Mahesana	Katosan pay center school	75	50	14	11
30	Mahesana	Kadvasan primary school	27	25	8	8
31	Mahesana	Lakhwad primary school	42	42	12	12
32	Mahesana	Fatehpura primary school	35	32	13	13
33	Mahesana	Mehsana pri school – 4	50	50	12	16
34	Mahesana	Gozaria primary school - 2	13	13	7	7
35	Mahesana	Rampura (mulsan) pri school	18	15	6	6
36	Mahesana	Davada primary school	55	47	12	12
37	Mahesana	Mohanpura (n) primary school	21	16	5	5
38	Satalasana	Bhalusana pay center sch	60	45	10	10
39	Satalasana	Dharoi project colony – 2	7	5	4	2
40	Satalasana	Kanedia primary school	40	33	8	6
41	Satalasana	Sartanpur primary school	38	26	8	7
42	Satalasana	Nava sudasana pri school	18	15	4	4
43	Satalasana	Bhimpura primary school	60	50	11	9
44	Unzha	Valamiyapura (a) pri school	22	22	7	7
45	Unzha	Varvada pri school	62	54	13	13

Sr. No.	Block	Name of the school	Total number of students in Std-7	Number of students given exam in Std-7	Total number of teachers	Number of teachers filled TJSS
46	Unzha	Maherwada primary school	50	28	10	10
46	Unzha	Amudh primary school	38	33	7	7
48	Unzha	Pali primary school	30	26	8	8
49	Unzha	Mun. Pri sch - 6 (bharatnagar)	53	51	13	13
50	Vadanagar	Molipur primary school	65	50	17	16
51	Vadanagar	Ramgadh primary school	8	8	4	4
52	Vadanagar	Punjapura (ja) pri school	39	25	9	9
53	Vadanagar	Shekhpur (vad) pri school	30	21	7	7
54	Vadanagar	Rajpura (vad) pri school	28	25	8	7
55	Vadanagar	Karabatia (pi) pri school	102	83	17	18
56	Vijapur	Kolavada primary school	55	47	13	10
57	Vijapur	Falu primary school	68	48	14	14
58	Vijapur	Kharod pay center school	45	22	11	11
59	Vijapur	Ubkhal primary school	32	28	13	13
60	Vijapur	Juna rampura pri school	20	15	6	6
61	Vijapur	Kelisana primary school	24	22	8	7
62	Vijapur	Chandranagar (da) pri school	24	24	7	7
63	Vijapur	Manipura (bha) pri school	21	12	7	7
64	Vijapur	Vijapur primary school – 4	40	35	9	9
65	Visanagar	Khadalpur primary school	23	21	8	8
66	Visanagar	Rampura (la) primary school	16	14	6	6
67	Visanagar	Kansa primary school – 1	73	61	14	14
68	Visanagar	Magroda primary school	52	44	11	11

Sr. No.	Block	Name of the school	Total number of students in Std-7	Number of students given exam in Std-7	Total number of teachers	Number of teachers filled TJSS
69	Visanagar	Megha aliyasana pri school	24	20	8	8
70	Visanagar	Valam para pri school	26	23	7	7
71	Visanagar	Kansa n.a. Area pri school	24	24	8	8
		Total	**2785**	**2205**	**680**	**658**

The following table describes block wise sample size for the study.

Table-3.3 Block Wise Sample Size

Sr. No.	Block	No. of School	Total number of students in Std-7	Number of students given exam in Std-7	Percentage of Students in Sample	Total number of teachers	Number of teachers filled TJSS	Percentage of Teachers in Sample
1	Becharaji	5	197	144	73.10%	49	44	89.80%
2	Kadi	12	476	337	70.80%	117	111	94.87%
3	Kheralu	7	263	219	83.27%	64	64	100.00%
4	Mahesana	13	532	445	83.65%	135	136	100.74%
5	Satalasana	6	223	174	78.03%	45	38	84.44%
6	Unzha	6	255	214	83.92%	58	58	100.00%
7	Vadanagar	6	272	212	77.94%	62	61	98.39%
8	Vijapur	9	329	253	76.90%	88	84	95.45%
9	Visanagar	7	238	207	86.97%	62	62	100.00%
	Total	**71**	**2785**	**2205**	**79.17%**	**680**	**658**	**96.76%**

The final sample comprised of 71 elementary schools having higher standard 7^{th} or 8^{th} and having Gujarati as a medium of instruction and managed by local body. There were total 2205 students and 658 teachers in the sample.

3.4 Tools

Preparing tools for the study with context of various situations is very innovative and novel job. The present study is quantitative in nature. Quantification is very difficult for

such variables, which do not have perfect parameter. For deciding the parameters, researcher has made all the tools very exhaustive and scientifically.

For the present study, the following tools were prepared.

1. School Information Schedule
2. School observation schedule
3. Teacher information schedule
4. Teacher's Job satisfaction scale
5. Achievement test
6. Field diary
7. Volunteer's Observation schedule
8. Photographs

For the present study, the following information was used.

9. DISE data

3.4.1 School Information Schedule: Construction and Validation:

School information schedule was developed to know the information of elementary school on various dimensions for the academic year 2011-12 and 2012-13. Researcher prepared school information schedule with consultation of his guide. He reviewed the tools for deep understanding.

- A Toolkit for 'Towards Quality in Primary School' prepared by UNICEF
- DISE form
- DISE form for 5% Sample check Prepared by Dept. of Education, MSU, Vadodara
- Gunotshav form of Gujarat state
- School information form for eighth All India school Education Survey
- Information schedule for KGBP Prepared by Dept. of Education, MSU, Vadodara
- Information schedule for VEC Prepared by R.C. Patel, Dept. of Education, MSU, Vadodara

Researcher visited elementary schools and made discussion with head teacher and teachers. Researcher also made consultancy with CRCC, BRCC, and DIET lecturer for making outline of school information schedule. In light of objectives of the study, school information schedule contains the following information of elementary school.

- Enrolment, retention, dropout and number of repeater student

- Information on teachers: Educational qualification, number of period taken in each subject
- Incentives: free books and assignments, other writing materials, scholarship, mid day meal
- Participation in sports activity
- Participation in science maths exhibition
- Various school competitions and programme
- Information on school management committee
- Community contribution

After making preliminary information schedule, researcher presented the tool to the experts of education field. Researcher asked them to give their opinions about the degree of association between the questions and the dimensions, clarity of language, clarity of meaning in the questions and finally to put any further comments which they see suitable. In the light of their opinions, some questions were deleted, others were added, and some questions were modified. After deleting questions and adding new ones, according to the experts' comments, the tool was ready for pilot study. (List of experts and their suggestions are appended in Annexure - 8). In the pilot study, the information was collected from three elementary school. During pilot study, researcher has identified irrelevant items, options, tables, sequence and modified according to them. Then, the tool was ready for data collection. The tool is in the Gujarati language and data was collected with same tool. For getting suggestions from experts of other state, the tool was also translated in English language. (Appended in Annexure - 1)

3.4.2 School Observation Schedule: Construction and Validation:

School observation schedule was developed to evaluate the major facilities, records, school environment and safety. Researcher developed school observation schedule with consultation of his guide. He reviewed tools which are mentioned in 3.4.1 for deep understanding.

Researcher visited elementary schools and made discussion with head teacher and teachers. Researcher also made consultancy with CRCC, BRCC, and DIET lecturer for making outline of school observation schedule. In light of objectives of the study, school observation schedule contains the following information of elementary school.

- Details to be noted immediately after reaching school

- Compound wall of the school
- School entrance gate
- School building
- Different display boards in school
- Water Arrangement
- Sanitation facilities
- Sports facility
- Availability of rooms in school
- T.L.M.
- Facility of school library
- Facility of laboratory in school
- Facility of e - learning in the school
- Computer education facility
- Mead day meal Scheme

After making preliminary observation schedule, researcher presented the tool to the experts of education field. Researcher asked them to give their opinions about the degree of correspondence between the questions and the dimensions, clarity of language, clarity of meaning in the questions and finally to put any further comments which they see suitable. In the light of their opinions, some questions were deleted, others were added, and some questions were modified. After deleting questions and adding new ones, according to the experts' comments, the tool was ready for pilot study. (List of experts and their suggestions are appended in Annexure - 8). In the pilot study, the observation was made from three elementary school. During pilot study, researcher has identified irrelevant items, options, tables, sequence and modified according to them. Then, the tool was ready for data collection. The tool is in the Gujarati language and data was collected in same tool. For getting suggestions from experts of other state, the tool was translated in English language. (Appended in Annexure - 2)

3.4.3 Teacher Information Schedule: Construction and Validation:

Teacher information schedule was developed to know teacher's educational qualification, professional qualification, teacher aptitude test cleared, knowledge of computer, till which standard English language learned, render services as expert in training session, any publication work, members in NGO, organization, club etc. After making

preliminary teacher information schedule, researcher presented the tool to the experts of education field. Researcher asked them to give their opinions about the degree of correspondence between the questions and the dimensions, clarity of language, clarity of meaning in the questions and finally to put any further comments which they see suitable. In the light of their opinions, some questions were deleted, others were added, and some questions were modified. After deleting questions and adding new ones, according to the experts' comments, the tool was ready for pilot study. (List of experts and their suggestions are appended in Annexure - 8). In the pilot study, the observation was made from three elementary school. During pilot study, researcher has identified irrelevant items, options, tables, sequence and modified according to them. Then, the tool was ready for data collection. The tool is in the Gujarati language and data was collected in same tool. For getting suggestions from experts of other state, the tool was translated in English language. (Appended in Annexure - 3)

3.4.4 Teacher's Job Satisfaction Scale:

Glimer in his book 'Industrial Psychology' has defined Job Satisfaction or dissatisfaction as the result of various attitudes the person holds towards his job, towards his job, towards related factors, and towards life in general.

In the present study, teacher's job satisfaction scale was used which was developed by S. P. Gupta in Indian conditions. The scale has 80 items. Items of teacher's job satisfaction scale have different dimensions are as following. (Gupta, 2006)

Teacher's Job Satisfaction Scale developed by the Dr. S. P. Gupta for measuring job satisfaction of teachers, seeks information about twenty dimensions of teacher job satisfaction. These twenty dimensions cover almost all the aspects of teaching profession and other related fields as well as of teachers' personal and family life in general. The combined score of all the twenty dimensions of Teacher's Job Satisfaction Scale (TJSS) Constitute the concept of job satisfaction.

The twenty aspects of teacher job satisfaction included in the Teacher's Job Satisfaction Scale (TJSS) have been operationally defined by Dr. S. P. Gupta are as follows.

1. Salary and Fringe Benefits: Satisfaction with total earning way of salary and from others sources.
2. Interpersonal relations among colleagues: Satisfaction with interaction and relationships with colleagues.

3. Teacher-principal relations: Satisfaction with interaction with school headmaster or principal.
4. Profession: Satisfaction with teaching job as a profession or a career.
5. Teacher students relations: Satisfaction with interaction and relationships with students.
6. Institution: Satisfaction with the one's educational institution as such.
7. Working conditions: Satisfaction with physical and other conditions of work and various facilities available for doing the work.
8. Work load: Satisfaction with the total amount of work to be done in the institution.
9. Ability utilization: Satisfaction with the use of one's abilities in doing job.
10. Achievement: Satisfaction with chances of successful completion of a job and seeing the results of work.
11. Activity: Satisfaction with actual doing of the task of teaching job as a source of good feeling about it.
12. Community aspect: Satisfaction with the chances to do different things for other people.
13. Supervision: Satisfaction with the supervisor's support and willingness.
14. Family Life: Satisfaction with opportunities to satisfy needs of the family.
15. Freedom: Satisfaction with chances to advance in skills and freedom to take part in public affairs.
16. Policies and practices: Satisfaction with the overall running style of the institution.
17. Possibility of growth and development: Satisfaction with the chances to rise in the institution or in profession.
18. Library policies and practices: Satisfaction with the system and functioning of the library.
19. Security: Satisfaction with chances of stability or permanency in the job.
20. Recognition and status: Satisfaction with acts of notice and praise and satisfaction from being given responsibility.

The following table describes different dimensions with the items no. in TJSS.

Table-3.4 Items of TJSS in different Dimensions

Sr. No.	Dimension	Item Nos.
1	Salary and fringe benefits	1, 21, 41, 61
2	Interpersonal relations among colleagues	2, 22, 42, 62

Sr. No.	Dimension	Item Nos.
3	Teacher-Principal relations	3, 23, 43, 63
4	Profession	4, 24, 44, 64
5	Teacher-Students relations	5, 25, 45, 65
6	Institution	6, 26, 46, 66
7	Working conditions	7, 27, 47, 67
8	Work load	8, 28, 48, 68
9	Ability utilization	9, 29, 49, 69
10	Achievement	10, 30, 50, 70
11	Activity	11, 31, 51, 71
12	Community aspects	12, 32, 52, 72
13	Supervision	13, 33, 53, 73
14	Family life	14, 34, 54, 74
15	Freedom	15, 35, 55, 75
16	Policies and practices	16, 36, 56, 76
17	Possibility of growth and development	17, 37, 57, 77
18	Library policies and practices	18, 38, 58, 78
19	Security	19, 39, 59, 79
20	Recognition and status	20, 40, 60, 80

Teacher's Job satisfaction Scale: Gujarati version

The TJSS was originally available in English language. The TJSS was translated in Gujarati language. The both the versions were shown to experts in field of education and language. In the light of their opinions, modifications were made. The Gujarati version of TJSS was given to 15 primary teachers to finding any ambiguity. They were asked about clarity of language, clarity of meaning in the questions. Finally, the translated version of TJSS was ready for data collection.

Administration:

The scale is a self-administering instrument. The subjects were requested to read the instructions carefully and to ask the administer, if there were any confusion or difficulty in understanding the instructions or any items. It is emphasized that no item should be

omitted and there was nothing ‘right’ or ‘wrong’ about this items. There was no time limit for the instrument. However, it takes about half an hour to complete it.

Response Mode and Scoring System:

The response mode and the scoring system is based on a five point Likert type scale designed as: Strongly disagree (1), Disagree (2), Undecided (3), Agree (4), Strongly agree (5). The score is assigned for positively worded items and negatively worded items are inversely. For the positively worded items, response of ‘Strongly Agree’ is given a value of 5, response of ‘Agree’ is given a value of 4, and so on. For negatively worded items, response of ‘Strongly Agree’ is given a value of 1, response of ‘Agree’ is given a value of 2, and so on. The sum of all the 80 item scores gives overall job satisfaction score for the respondent. The overall job satisfaction score may vary theoretically from 80 to 400, showing lowest satisfaction to highest satisfaction.

Reliability and Validity of TJSS: The scale is reliable and valid as the developer used two methods of reliability i.e. split half and test-retest reliability. He also established empirical evidence of validity and construct validity.

Table-3.5 Reliability and validity of TJSS

Sr. No.	Method	Coefficient of Correlation
1	Test-retest Reliability	0.75
2	Spilt-half Reliability	0.91
3	Empirical Validity (Using bi-serial correlation)	0.46
4	Construct Validity (Using ‘Job Satisfaction Blank’ of Brayfield and Rothe)	0.59

Teacher’s job satisfaction scale appended in Annexure – 3.

3.4.5 Achievement Test:

Construction:

Achievement test was developed to assess achievement of standard - 7 elementary school students. Achievement test comprises of six subject i.e. Gujarati, Hindi, English, Science and technology, Mathematics and Social Science. The items of achievement were objective type. It has multiple choice questions, answer in one word and answer in one line. Achievement test covers syllabus of first semester in std-7. For all the subjects of std-7, blue print was prepared. It was assured that items of achievement from all the area i.e. Knowledge, comprehension, understanding and skill. According to blue print, the

preliminary draft was prepared. Preliminary achievement test comprised of 150 items, having 25 items in each subject.

Table-3.6 No. of Items in each Subject for Preliminary Achievement Test

Sr. No.	Name of Subject	No. of Items
1	Gujarati	25
2	Hindi	25
3	English	25
4	Mathematics	25
5	Science	25
6	Social Science	25
	Total	**150**

Content validity and Experts' opinion:

Preliminary achievement test was presented to the experts of education field. Researcher asked them to give their opinions about clarity of language, clarity of meaning in the questions and finally to put any further comments which they see suitable. Majority suggestions were regarding to grammatical errors. Some suggestions were regarding to balance questions of all area i.e. Knowledge, comprehension, understanding and skill. The achievement test is highly content oriented so there were no suggestions for their suitability, context or appropriateness. In the light of their opinions, some questions were deleted, others were added, and some questions were modified. After deleting questions and adding new ones, according to the experts' comments, the tool was ready for pre-pilot study.

Pre-pilot Study:

In the pre-pilot study, the test was conducted on 25 students of std-7. They were asked about difficulties, ambiguity of items and its options. Researcher also noted the average time for complete the achievement test. After pre-pilot study, the tool was ready for pilot Study.

Pilot study:

The pilot study was carried out for finding difficulty value and discrimination index of items. The item difficulty value is one of the most useful, and most frequently reported, item analysis statistics. It is a measure of the proportion of examinees who answered the item correctly; for this reason it is frequently called the *p-value*. As the proportion of

examinees who got the item right, the p-value might more properly be called the item easiness value, rather than the item difficulty. It can range between 0.0 and 1.0, with a higher value indicating that a greater proportion of examinees responded to the item correctly, and it was thus an easier item.

The item discrimination index is a measure of how well an item is able to distinguish between examinees who are knowledgeable and those who are not, or between masters and non-masters. The possible range of the discrimination index is -1.0 to 1.0; however, if an item has a discrimination below 0.0, it suggests a problem. When an item is discriminating negatively, overall the most knowledgeable examinees are getting the item wrong and the least knowledgeable examinees are getting the item right. A negative discrimination index may indicate that the item is measuring something other than what the rest of the test is measuring. More often, it is a sign that the item has been mis-keyed. When interpreting the value of a discrimination it is important to be aware that there is a relationship between an item's difficulty index and its discrimination index. If an item has a very high (or very low) p-value, the potential value of the discrimination index will be much less than if the item has a mid-range p-value. In other words, if an item is either very easy or very hard, it is not likely to be very discriminating.

Based on Ebel's (1972) guidelines on classical test theory item analysis, items were categorized in their discrimination indices. The item with negative discrimination index (D) was considered to be discarded; D: 0.0 – 0.19 – poor item – to be revised; D: 0.2 – 0.29 – acceptable; D: 0.3 – 0.39 – good; D: >0.4 – excellent.

The pilot study was conducted on 219 students of std-7 in Mehsana taluka. The name of the schools is as follows.

Table-3.7 List of School for Item Analysis

Sr. No.	Name of School	No. of Students
1	Mahesana Primary School-1	63
2	Basana Primary School	59
3	Punasan Primary School	43
4	Dediyasan primary School	53
	Total	219

Discrimination index and difficulty value was calculated. The following table shows the discrimination index and difficulty value of items.

Table-3.8 Item Analysis: Difficulty Value and Discrimination Index

No.	Difficulty Value	Discrimination Index	Accepted/ Rejected	No.	Difficulty Value	Discrimination Index	Accepted/ Rejected
1	0.85	0.31	Accepted	39	0.28	0.56	Accepted
2	0.73	0.37	Accepted	40	0.13	0.25	Accepted
3	0.80	0.31	Accepted	41	0.46	0.71	Accepted
4	0.61	0.17	Rejected	42	0.26	0.15	Rejected
5	0.18	0.08	Rejected	43	0.11	0.19	Rejected
6	0.27	0.10	Rejected	44	0.28	0.32	Accepted
7	0.78	0.44	Accepted	45	0.07	0.14	Rejected
8	0.53	0.58	Accepted	46	0.53	0.75	Accepted
9	0.23	0.15	Rejected	47	0.20	0.41	Accepted
10	0.42	0.20	Accepted	48	0.28	0.56	Accepted
11	0.61	0.51	Accepted	49	0.50	0.66	Accepted
12	0.56	0.61	Accepted	50	0.46	0.71	Accepted
13	0.28	0.49	Accepted	51	0.75	0.44	Accepted
14	0.03	0.05	Rejected	52	0.40	0.36	Accepted
15	0.33	0.49	Accepted	53	0.26	0.15	Rejected
16	0.14	0.25	Accepted	54	0.43	0.46	Accepted
17	0.17	0.34	Accepted	55	0.30	0.29	Accepted
18	0.62	0.59	Accepted	56	0.46	0.41	Accepted
19	0.24	0.44	Accepted	57	0.53	0.49	Accepted
20	0.12	0.24	Accepted	58	0.39	0.24	Accepted
21	0.28	0.49	Accepted	59	0.27	0.41	Accepted
22	0.33	0.49	Accepted	60	0.39	0.41	Accepted
23	0.56	0.61	Accepted	61	0.52	0.42	Accepted
24	0.28	0.49	Accepted	62	0.45	0.36	Accepted
25	0.53	0.58	Accepted	63	0.07	0.14	Rejected
26	0.63	0.54	Accepted	64	0.09	0.19	Rejected
27	0.72	0.46	Accepted	65	0.15	0.31	Accepted
28	0.61	0.68	Accepted	66	0.37	0.71	Accepted
29	0.76	0.37	Accepted	67	0.42	0.80	Accepted
30	0.78	0.37	Accepted	68	0.26	0.49	Accepted
31	0.26	0.39	Accepted	69	0.18	0.36	Accepted
32	0.46	0.64	Accepted	70	0.16	0.32	Accepted
33	0.36	-0.12	Rejected	71	0.26	0.49	Accepted
34	0.51	0.61	Accepted	72	0.11	0.19	Rejected
35	0.42	0.63	Accepted	73	0.52	0.42	Accepted
36	0.11	-0.02	Rejected	74	0.36	-0.12	Rejected
37	0.50	0.66	Accepted	75	0.37	0.71	Accepted
38	0.37	0.68	Accepted	76	0.44	0.64	Accepted

No.	Difficulty Value	Discrimination Index	Accepted/ Rejected
77	0.52	0.46	Accepted
78	0.64	0.54	Accepted
79	0.25	0.32	Accepted
80	0.70	0.46	Accepted
81	0.29	0.17	Rejected
82	0.46	0.17	Rejected
83	0.41	0.44	Accepted
84	0.37	0.47	Accepted
85	0.63	0.37	Accepted
86	0.47	0.64	Accepted
87	0.42	0.69	Accepted
88	0.31	0.31	Accepted
89	0.31	0.56	Accepted
90	0.34	0.54	Accepted
91	0.11	0.22	Accepted
92	0.31	0.53	Accepted
93	0.38	0.59	Accepted
94	0.40	0.59	Accepted
95	0.45	0.66	Accepted
96	0.08	0.17	Rejected
97	0.34	0.54	Accepted
98	0.04	0.08	Rejected
99	0.04	0.08	Rejected
100	0.38	0.59	Accepted
101	0.72	0.32	Accepted
102	0.37	0.00	Rejected
103	0.33	0.12	Rejected
104	0.27	0.34	Accepted
105	0.47	0.56	Accepted
106	0.44	0.58	Accepted
107	0.42	0.64	Accepted
108	0.36	0.34	Accepted
109	0.51	0.64	Accepted
110	0.51	0.47	Accepted
111	0.47	0.39	Accepted
112	0.59	0.51	Accepted
113	0.14	0.25	Accepted
114	0.45	0.86	Accepted

No.	Difficulty Value	Discrimination Index	Accepted/ Rejected
115	0.19	0.39	Accepted
116	0.19	0.37	Accepted
117	0.27	0.54	Accepted
118	0.20	0.41	Accepted
119	0.16	0.32	Accepted
120	0.23	0.39	Accepted
121	0.23	0.15	Rejected
122	0.59	0.51	Accepted
123	0.28	0.19	Rejected
124	0.27	0.54	Accepted
125	0.12	0.10	Rejected
126	0.20	0.20	Accepted
127	0.29	0.44	Accepted
128	0.19	0.17	Rejected
129	0.12	0.10	Rejected
130	0.47	0.64	Accepted
131	0.20	0.34	Accepted
132	0.32	0.20	Accepted
133	0.44	0.41	Accepted
134	0.53	0.64	Accepted
135	0.24	0.31	Accepted
136	0.28	0.19	Rejected
137	0.60	0.29	Accepted
138	0.59	0.44	Accepted
139	0.28	0.53	Accepted
140	0.13	0.25	Accepted
141	0.08	0.17	Rejected
142	0.04	0.08	Rejected
143	0.19	0.34	Accepted
144	0.31	0.61	Accepted
145	0.36	0.69	Accepted
146	0.60	0.29	Accepted
147	0.47	0.39	Accepted
148	0.28	0.53	Accepted
149	0.14	0.25	Accepted
150	0.59	0.51	Accepted

Final Form of the Achievement Test:

The final achievement test comprised of 120 items, having 20 items in each subject. The following table shows name of subject with no. of items.

Table-3.9 No. of Items in each Subject for Final Achievement Test

Sr. No.	Name of Subject	No. of Items
1	Gujarati	20
2	Hindi	20
3	English	20
4	Mathematics	20
5	Science	20
6	Social Science	20
	Total	**120**

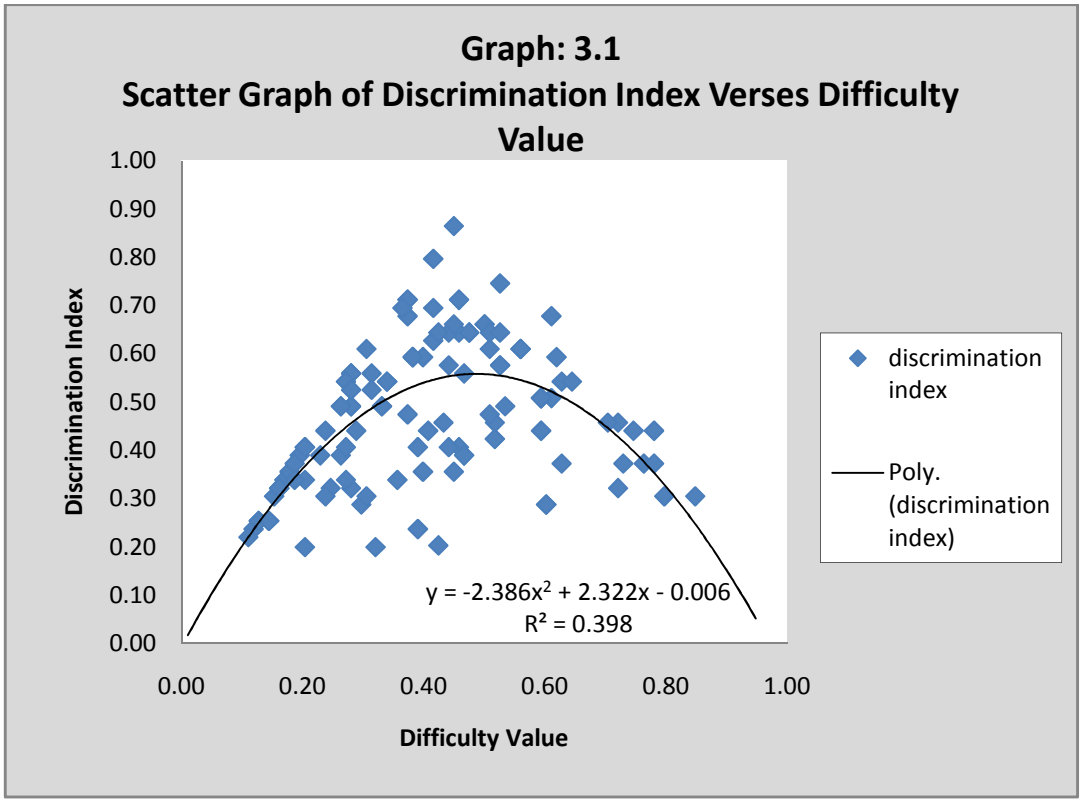
The final Achievement test with blueprint has appended in annexure. (Appended in Annexure - 4)

The frequency of items respect to their difficulty value and discrimination value for final achievement test is as follows.

Table-3.10 Frequency of Items Respect to Difficulty Value and Discrimination Index for Final Achievement Test

Difficulty Value (Interval)	Frequency		Discrimination Index (Interval)	Frequency
0.00 - 0.10	0		0.00 - 0.19	0
0.11 - 0.20	19		0.20 - 0.29	2
0.21 - 0.30	23		0.30 - 0.39	12
0.31 - 0.40	20		0.40 – 0.49	28
0.41 - 0.50	26		0.50 – 0.59	28
0.51 - 0.60	16		0.60 – 0.69	24
0.61 - 0.70	7		0.70 – 0.79	19
0.71 - 0.80	8		0.80 – 0.89	6
0.81 to 0.90	1		0.9 – 0.1	1
0.91 to 1.00	0			
Total	**120**		**Total**	**120**

Scatter graph of discrimination index verses difficulty value for final achievement test are as follows.



The graph 4.1 shows that the relation between discrimination index and difficulty value is polynomial. When difficulty value is between 0.40 and 0.60, the discrimination index is higher and shows more differentiation between high achievers and low achievers.

The equation for estimating discrimination index on basis of difficulty value is as follows.

$y = -2.386x^2 + 2.322x - 0.006$

$R^2 = 0.398$, the squared R is significant at 0.01 level.

Administration: The respondents are requested to read the instructions carefully and to ask the administrator, if there is any confusion or difficulty. The duration for attempting question paper is two hours and thirty minutes.

Scoring System: For the right answer, one mark is given and for the wrong answer, zero marks is given. The sum of all the 120 item scores gives overall achievement score for the respondent.

Concurrent Validity - Comparison with existing test

Concurrent validity means looking at the performance of your participants on one or more other methods of assessing what your test is assessing. For that researcher has taken the marks of first semester exam from elementary school. The correlation between marks on achievement test and marks of first semester exam was calculated. The following table shows the coefficient of correlation using concurrent validity.

Table-3.11 Concurrent Validity: Coefficient of Correlation

Sr. No.	Name of School	No. of Students	Coefficient of Correlation
1	Palavasana Pri. School	48	0.62

3.4.6 Field Diary

Researcher noted the important observation in his field diary during data collection. He noted the approach of head teacher, many other things that were not included in any tool.

3.4.7 Volunteer's Observation Schedule

M.Ed. and M.S.W. students helped in data collection as volunteers. Volunteers' Observation schedule was developed to know school prayer activity, present student in prayer and approach of head teacher. (Appended in Annexure – 6)

3.4.8 Photographs

Photographs were taken during data collection. Photographs helped during data analysis.

3.4.9 DISE Data for the Academic Year 2011-12 and Year 2012-13

DISE Data helped to select the sample of the study. It was also helped to crosscheck the data gathered from other tools.

3.5 Quantification Mechanism of Variables under Study

Quantification is the major and most judgemental task in the present research. The researcher has gone through available literature to decide the quantification of variables. The quantification of variables are as follows.

Table-3.12 List of Variables under Study

Sr. No.	Name of Variables	Types of Variables
1	Compound wall of the school	Physical facility
2	School entrance gate	Physical facility
3	Compound of the school	Physical facility
4	Building of the school	Physical facility
5	Infrastructure facility in Standard-7 classroom	Physical facility
6	Water arrangement	Physical facility
7	Sanitation facility	Physical facility
8	Student-classroom ratio	Physical facility
9	T.L.M. in std-7 classroom	Academic facility
10	Different display boards in school	Academic facility
11	Library in School	Academic facility
12	Science laboratory in school	Academic facility
13	Learning facility through ICT in school (BISEG and other Means)	Academic facility
14	Computer education facility in school	Academic facility
15	Average of teacher indicators	Human resources
16	Average of job satisfaction of teachers	Human resources
17	Pupil-teacher ratio	Human resources
18	Mid day meal scheme in school	Support system
19	Visit of school by CRCC, BRCC and other officials	Support system
20	Community contribution	Support system
21	School management committee (SMC)	Support system
22	Average achievement of standard-7 students	Output variables
23	Participation in sports	Output variables
24	Participation in science- mathematics exhibition	Output variables
25	Percentage of present students by head count	Output variables

Physical Facility:

1. Compound Wall of the School:

The following table shows quantification mechanism for compound wall of the school.

Table-3.13 Quantification Mechanism for Compound Wall of the School

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Compound wall	Completely Surrounded	2	
		Intermittently Broken	1	
		No wall	0	
Criteria-2	Compound wall	Concrete wall	3	
		Barbed wire fencing	2	
		Cactus Hedge	1	
Criteria-3	Height of compound wall	Appropriate (More than 6 feet)	3	
		Average (4 to 6 feet)	2	
		Not Appropriate (less than 4 feet)	1	
Criteria-4	External look (Colour, Design)	Attractive	3	
		Average	2	
		Unattractive	1	
Criteria-5	Strengthen of the compound wall (Using parameter given by SSA)	Good	3	
		Average	2	
		Poor	1	
Criteria-6	Safety of the school due to compound wall	Safe	3	
		Average	2	
		Unsafe	1	
Total Obtain Scores				
Maximum Scores = 18				

Total scores = (Obtain scores from criteria -1 * obtain scores from criteria -2) + (obtain scores from criteria -3) + (obtain scores from criteria -4) + (obtain scores from criteria -5)+(obtain scores from criteria -6)

Note: if there is no compound wall, then scores will be zero.

2. School Entrance Gate:

The following table shows quantification mechanism for school entrance gate.

Table-3.14 Quantification Mechanism for School Entrance Gate

Criteria no.	Criteria	Details	Weightage	Obtain scores
Criteria-1	If there is entrance gate	Can opened and closed (working mode)	4	
		Always open (Not working	2	
Criteria-2	Size of school entrance gate	Appropriate	3	
		Average	2	
		Not Appropriate	1	
Criteria-3	Attractiveness of School entrance gate (Design, Look etc)	Attractive	3	
		Average	2	
		Unattractive	1	
Criteria-4	Strengthen of School entrance gate (By External observation)	Good	3	
		Average	2	
		Poor	1	
Criteria-5	Safety of School due to entrance gate	Safe	3	
		Average	2	
		Unsafe	1	
Total Obtain Scores				
Maximum Scores = 16				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5)

Note: If there is no entrance gate, then scores will be zero.

3. Compound of the School:

The following table shows quantification mechanism for compound of the school.

Table-3.15 Quantification Mechanism for Compound of the School

Criteria no.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Arrangement of trees	Organised	3	
		Average	2	
		Unorganised	1	
Criteria-2	Scientific arrangement of building , water facility, sanitation, kitchen shed, etc. in school Compound (By External observation)	Appropriate	3	
		Average	2	
		Not Appropriate	1	
Criteria-3	Cleanliness of school Compound	Good	3	
		Average	2	
		Poor	1	
Criteria-4	Attractiveness of school Compound	Attractive	3	
		Average	2	
		Unattractive	1	

Criteria no.	Criteria	Details	Weightage	Obtain scores
Criteria-5	Safety of students in school Compound	Safe	3	
		Average	2	
		Unsafe	1	
Criteria-6	Garden	Suitable for children to play in	4	
		Only for Show	2	
		No garden	0	
Criteria-7	No. of trees	More than 40	5	
		Between 31 to 40	4	
		Between 21 to 30	3	
		Between 11 to 20	2	
		Less than 11	1	
Criteria-8	Availability of playground (By external Observation)	Adequate	3	
		Average	2	
		Inadequate	1	
		No play ground	0	
Total Obtain Scores				
Maximum Scores = 27				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6) + (obtain scores from criteria-7) + (obtain scores from criteria-8)

4. Building of the School:

The following table shows quantification mechanism for building of the school.

Table-3.16 Quantification Mechanism for Building of the School

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Colouring work of School building	Complete building	3	
		Incomplete	2	
		Without colouring work	1	
Criteria-2	Outlook of school building	Attractive	3	
		Average	2	
		Unattractive	1	
Criteria-3	Strength of construction of school building (By external observation)	Good	3	
		Average	2	
		Poor	1	

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-4	Safety of children in school building	Safe	3	
		Average	2	
		Unsafe	1	
Criteria-5	Maps and picture of the wall of building	Appropriate	3	
		Average	2	
		Inappropriate	1	
Criteria-6	Number of rooms with concrete ceiling	81% to100 %	5	
		61 % to 80%	4	
		41 % to 60%	3	
		21% to 40%	2	
		Less than 20%	1	
Criteria-7	Separate room for principal	Yes	2	
		No	0	
Criteria-8	Separate store room	Yes	2	
		No	0	
Total Obtain Scores				
Maximum Scores = 22				

Total scores = (Obtain scores from criteria-1)+(obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6) + (obtain scores from criteria-7) + (obtain scores from criteria-8)

5. Infrastructure Facility in Standard -7 Classroom

The following table shows quantification mechanism for infrastructure facility in standard – 7 classroom.

Table-3.17 Quantification Mechanism Infrastructure facility in for Std-7 Classroom

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Ventilation	Good	3	
		Average	2	
		Poor	1	
Criteria-2	Sunlight	Good	3	
		Average	2	
		Poor	1	
Criteria-3	Cleanliness	Good	3	
		Average	2	
		Poor	1	
Criteria-4	Comfortable seating arrangement	Good	3	
		Average	2	
		Poor	1	
Criteria-5	Condition of blackboard	Good	3	
		Average	2	
		Poor	1	

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-6	Condition of windows	Good	3	
		Average	2	
		Poor	1	
Criteria-7	Condition of electricity facility in room	Safe	3	
		Average	2	
		Unsafe	1	
Criteria-8	Condition of fans	Convenient	3	
		Average	2	
		Inconvenient	1	
Criteria-9	Condition of light	Good	3	
		Average	2	
		Poor	1	
Total Obtain Scores				
Maximum Scores = 27				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6) + (obtain scores from criteria-7) + (obtain scores from criteria-8) + (obtain scores from criteria-9)

6. Water Arrangement:

The following table shows quantification mechanism for water arrangement.

Table 3.18 Quantification Mechanism for Water Arrangement

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	No. of water taps	More than 10	6	
		9 and 10	5	
		7 and 8	4	
		5 and 6	3	
		3 and 4	2	
		1 and 2	1	
		0	0	
Criteria-2	Child friendly drinking water arrangement	Child friendly	3	
		Average	2	
		Not child friendly	1	
Criteria-3	Cleanliness around the water arrangement	Good	3	
		Average	2	
		Poor	1	
Criteria-4	Drainage arrangement	Good	3	
		Average	2	
		Poor	1	
Criteria-5	Water facility for cooking	Yes	2	
		No	0	

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-6	Cooler	Yes	3	
		No	0	
Total Obtain Scores				
Maximum Scores = 20				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain score from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6)

7. Sanitation Facility

The following table shows quantification mechanism for sanitation facility.

Table-3.19 Quantification Mechanism for Sanitation Facility

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Running water facility	Yes	2	
		No	0	
Criteria-2	Latrine is locked at the time of visit	Yes	2	
		No	0	
Criteria-3	Cleanliness in urinals and latrines	Good	3	
		Average	2	
		Poor	1	
Total Obtain Scores				
Maximum Scores = 7				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3)

8. Student-Classroom Ratio

The following table shows quantification mechanism for student-classroom ratio.

Table-3.20 Quantification Mechanism for Student- Classroom Ratio

Student-Classroom Ratio	Score	Student-Classroom Ratio	Score
Below 15	35	19	30
15	34	20	29
16	33	21	28
17	32	22	27
18	31	23	26

Student-Classroom Ratio	Score	Student-Classroom Ratio	Score
24	25	38	11
25	24	39	10
26	23	40	9
27	22	41	8
28	21	42	7
29	20	43	6
30	19	44	5
31	18	45	4
32	17	46	3
33	16	47	2
34	15	Above 47	1
35	14	Maximum Scores = 35	
36	13	Obtain score as per student-classroom ratio	
37	12		

Total scores = Obtain scores as per student-classroom ratio

(As the student-classroom ratio decreases, the score for student-classroom increases. Higher student-classroom acquires lower score and lower student-classroom acquires higher score.)

Academic Facility

9. T.L.M. in Std-7 Classroom

The following table shows quantification mechanism for T.L.M. in standard-7 classroom.

Table-3.21 Quantification Mechanism for T.L.M. in Std-7 Classroom

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	No. of T.L.M.	More than10	6	
		9 and 10	5	
		7 and 8	4	
		5 and 6	3	
		3 and 4	2	
		Less than 3	1	
Total Obtain Scores				
Maximum Scores = 6				

Total scores = (Obtain scores from criteria-1)

10. Different Display Boards in School:

The following table shows quantification mechanism for different display boards in school.

Table-3.22 Quantification Mechanism for Different Boards in School

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Staff details	Yes	3	
		No	0	
Criteria-2	List of members S.M.C.	Yes	3	
		No	0	
Criteria-3	News	Yes	3	
		No	0	
Criteria-4	*Aajnu Gulab*	Yes	3	
		No	0	
Criteria-5	*Aajno Dipak*	Yes	3	
		No	0	
Criteria-6	Good thoughts	Yes	3	
		No	0	
Total Obtain Scores				
Maximum Scores = 18				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6)

11. Library in School:

The following table shows quantification mechanism for library in school.

Table-3.23 Quantification Mechanism for Library in School

Criteria no.	Criteria	Details	Weightage	Obtain scores
Criteria-1	No. of books	More than 3001	7	
		2501 to 3000	6	
		2001 to 2500	5	
		1501 to 2000	4	
		1001 to 1500	3	
		501 to 1000	2	
		Less than 501	1	
Criteria-2	Register for issuing books	Yes	2	
		No	0	
Criteria-3	Books were regularly issued to the students	Regularly	2	
		Irregularly	1	
		Not at all	0	
Total Obtain Scores				
Maximum scores = 11				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3)

12. Science Laboratory in School:

The following table shows quantification mechanism for science laboratory in school.

Table-3.24 Quantification Mechanism for Science Laboratory in School

Criteria No.	Criteria	Details	waightage	Obtain scores
Criteria-1	Laboratory in separate room	Yes	3	
		No	0	
Criteria-2	Experiments carried out regularly	Regularly	3	
		Frequently	2	
		Not at all	1	
Total Obtain Scores				
Maximum Scores = 6				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2)

13. Learning Facility through ICT in School (BISEG and other Means):

The following table shows quantification mechanism for learning facility through ICT in school (BISEG and other means)

Table-3.25 Quantification Mechanism for Learning Facility through ICT in School (BISEG and other Means)

Criteria no.	Criteria	Details	Weightage	Obtain scores
Criteria-1	T.V. and disk antenna Availability for BISEG	Good working condition	3	
		Average	2	
		Not good working condition	1	
		Not available	0	
Criteria-2	C.D./ DVD player	Good working condition	3	
		Average	2	
		Not good working condition	1	
		Not available	0	
Criteria-3	No. of Educational CD and DVD	More than 30	7	
		26 to 30	6	
		21 to 25	5	
		16 to 20	4	

Criteria no.	Criteria	Details	Weightage	Obtain scores
		11 to 15	3	
		6 to 10	2	
		Less than 6	1	
Criteria-4	Students regularly observe the educational programme	Regularly	3	
		Frequently	2	
		Not at all	1	
Total Obtain Scores				
Maximum Scores = 16				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4)

14. Computer Education Facility in School:

The following table shows quantification mechanism for computer education facility in school.

Table-3.26 Quantification Mechanism for Computer Education Facility in School

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Total No. of computers	More then 10	6	
		9 and 10	5	
		7 and 8	4	
		5 and 6	3	
		3 and 4	2	
		1 and 2	1	
		Not at all	0	
Criteria-2	No. of computer in working condition	81% to100 %	5	
		61 % to 80%	4	
		41 % to 60%	3	
		21% to 40%	2	
		Less than 20%	1	
Criteria-3	Computer education for std - 7 students	Primary information about computer	3	
Criteria-4		Notepad	3	
Criteria-5		Paint	3	
Criteria-6		MS word	3	
Criteria-7		MS Excel	3	
Criteria-8		MS Power point	3	
Criteria-9		Internet	3	
Total Scores = 32				
Total Obtain Scores				
Maximum scores =				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6) + (Obtain scores from criteria-7) + (obtain scores from criteria-8) + (obtain scores from criteria-9)

Human Resources

15. Average of Teacher Indicators:

The following table shows quantification mechanism for teacher indicators.

Table-3.27 Quantification Mechanism for Teacher indicators

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	Educational qualification	Below SSC	1	
		SSC-old, new	2	
		HSC	3	
		Graduate	4	
		Post graduate	5	
		M.Phil./ Ph.D.	6	
Criteria-2	Professional qualification	ATD, music, tailoring, C.P.Ed.	1	
		PTC/D.P.Ed.	2	
		B.Ed./B.P.Ed.	3	
		M.Ed./M.P.Ed.	4	
		M.Phil./Ph.D.	5	
Criteria-3	TAT/TET/H-TAT exam cleared	Yes	2	
		No	0	
Criteria-4	Till which std English learned	Till std-9	1	
		Till std-10	2	
		Till std-12	3	
Criteria-5	Computer exam	CCC/CIC	1	
		PGDCA	2	
		BCA	3	
		No Computer Education	0	
Criteria-6	Would you know computer typing and to make print out	Compatible	2	
		Little bit	1	
		No	0	
Criteria-7	Render services as expert in training session	Yes	2	
		No	0	
Criteria-8	Any publication work	Yes	2	
		No	0	
Criteria-9	Members in NGO, organization, club	Yes	2	
		No	0	
	Total Obtain Scores			
Maximum scores = 27				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6) + (Obtain scores from criteria-7) + (obtain scores from criteria-8) + (obtain scores from criteria-9)

Average of teacher indicators were counted for each school.

16. Average of Job Satisfaction of Teachers:

Scoring mechanism is described in 3.4.4, and average of job satisfaction of teachers was counted for each school.

Average of job satisfaction = (sum of score of TJSS of teachers / no. of teachers)

17. Pupil -teacher Ratio:

The following table shows quantification mechanism for pupil-teacher ratio.

Table-3.28 Quantification Mechanism for Pupil – Teacher Ratio

Pupil -Teacher Ratio	Scores
Below 20	27
21	26
22	25
23	24
24	23
25	22
26	21
27	20
28	19
29	18
30	17
31	16
32	15
33	14
34	13

Pupil -Teacher Ratio	Scores
35	12
36	11
37	10
38	9
39	8
40	7
41	6
42	5
43	4
44	3
45	2
Above 45	1
Maximum Scores = 27	
Obtain score as per Pupil-Teacher ratio	

Total scores = Obtain scores as per Pupil - Teacher ratio

(As the pupil-teacher ratio decreases, the score for pupil-teacher increases. Higher pupil-teacher ratio acquires lower score and lower pupil-teacher ratio acquires higher score.)

Support System

18. Mid Day Meal Scheme in School:

The following table shows quantification mechanism for midday meal scheme in school.

Table-3.29 Quantification Mechanism for Mid Day Meal Scheme in School

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1.1	Kitchen shed	From poor construction to good construction	1 to 5	
Criteria-1.2	Kitchen shed	From useful to useless	1 to 5	
Criteria-2	*Thali – Vataki* Available in school	Yes	3	
		No	0	
Criteria-3	No. of students take Mid day meal (Std-3)	More than 75%	4	
		50% to 74 %	3	
		30% to 49%	2	
		Less than 30 %	1	
		Not at all	0	
Criteria-4	No. of students take Mid day meal (Std-7)	More than 75%	4	
		50% to 74 %	3	
		30% to 49%	2	
		Less than 30 %	1	
		Not at all	0	
Criteria-5	The number of death centenary food provided in the last year	More than 10	3	
		6 to 9	2	
		1 to 5	1	
		Not at all	0	
Total Obtain Scores				
Maximum scores = 24				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5)

The following table shows the frequency and percentage of sample for mid day meal scheme in school.

19. Visit of School by CRCC, BRCC and other Officials:

The following table shows quantification mechanism for visit of school by CRCC, BRCC and other Officials.

Table-3.30 Quantification Mechanism for Visit of School

Criteria No.	Criteria	No. of visit in 2011-12	No. of visit in 2012-13	Weightage	Obtain scores
Criteria-1	CRC Coordinator			1 scores per visit	
Criteria-2	BRC Coordinator			1 scores per visit	
Criteria-3	Tehsil Educational Inspector			1 scores per visit	
Criteria-4	Others			1 scores per visit	
More than 10 visit, the scores will be 10					
Total Obtain Scores					
Maximum Scores = 40					

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4)

20. Community Contribution:

The following table shows quantification mechanism for community contribution.

Table-3.31 Quantification Mechanism for Community Contribution

Criteria No.	Criteria	In 2011-12 Amount	Weightage	Obtain scores
Criteria-1	Article/ thing/object/cash	More than 20000	30	
		10001 to 20000	25	
		5001 to 10000	20	
		3001 to 5000	15	
		1001 to 3000	10	
		Less than 1000	5	
Total Obtain Scores				
Maximum scores = 30				

Total scores = (Obtain scores from criteria-1)

21. School Management Committee (SMC):

The following table shows quantification mechanism for school management committee.

Table-3.32 Quantification Mechanism for SMC

Criteria No.	Criteria	Details	Weightage	Obtain scores
Criteria-1	No. meeting	1 scores per meeting	1 scores per meeting	
Criteria-2	No. female members	Less than 40 %	1	
		40 % to 50%	2	
		More than 50 %	3	
Criteria-3	No. parents members	Less than 50 %	1	
		50 % to 70%	2	
		More than 70 %	3	
More than 12 meeting, the scores will be 12				
Total Obtain Scores				
Maximum Scores = 18				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3)

Output Variables

22. Average Achievement Scores of Standard-7 Students:

In the present study, achievement refers to scholastic dimension of std-7 students. Achievement test covers six subjects i.e. Gujarati, Hindi, English, Science and technology, Mathematics and social science. The combined score of all these six subjects refer to achievement score. Average achievement was counted for each school.

23. Participation in Sports:

The following table shows quantification mechanism for participation in sports.

Table-3.33 Quantification Mechanism for Participation in Sports

Criteria No.	Level	Details	Weightage	Obtain scores
Criteria-1	CRC Level	Participation	3	
		No. students participate	1 scores per students	
Criteria-2	Zone level	Participation	5	
		No. students participate	1 scores per students	
Criteria-3	Taheshil Level	Participation	7	
		No. students participate	1 scores per students	

Criteria No.	Level	Details	Weightage	Obtain scores
Criteria-4	District level	Participation	9	
		No. students participate	1 scores per students	
Criteria-5	State zone level	Participation	11	
		No. students participate	1 scores per students	
Criteria-6	State level	Participation	13	
		No. students participate	1 scores per students	
Total Obtain Scores				
Maximum scores = Depends on number of students				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5) + (obtain scores from criteria-6)

24. Participation in Science Mathematics Exhibition:

The following table shows quantification mechanism for participation in science mathematics exhibition.

Table-3.34 Quantification Mechanism for Participation in Science mathematics Exhibition

Criteria No.	Level	Details	Weightage	Obtain scores
Criteria-1	CRC Level	Participation	5 scores per items	
Criteria-2	Taheshil Level	Participation	7 scores per items	
Criteria-3	District level	Participation	9 scores per items	
Criteria-4	State zone level	Participation	11 scores per items	
Criteria-5	State level	Participation	13 scores per items	
Total Obtain Scores				
Maximum scores = 45				

Total scores = (Obtain scores from criteria-1) + (obtain scores from criteria-2) + (obtain scores from criteria-3) + (obtain scores from criteria-4) + (obtain scores from criteria-5)

The following table shows the frequency and percentage of sample for science mathematics exhibition.

25. Percentage of Present Students by Head Count: It is percentage of present students by head count on day of visit in school.

3.6 Data Collection:

Data collection was done in three phases spread over six months from October 2012 to March 2013. The phase wise fieldwork has been mentioned below.

Phase: 1 Administration of Achievement Test and Job Satisfaction Inventory:

In the first phase was carried out on 25th October, 2012. On that day, administration of achievement test was carried out in 71 elementary school. Teachers' job satisfaction inventory also employed. 120 volunteers (M.Ed. and M.S.W. Students) helped in first phase. Three DIET lecturers also helped in planning and administration of first phase of data collection.

Permission of DPEO: Before administration of achievement test, researcher has taken the permission of District Primary Education Officer (DPEO) of Mehsana District.

Head teachers are informed about administration of achievement test: On 10th to 13th October, 2013, all the head teachers of elementary school were contacted and informed them about administration of achievement test in std-7. They have asked about the number of student in std -7. So, according to number of students, researcher arranged number of copies of achievement test. Researcher also requested to head teacher that maximum students were to be present in std-7. Copies of total instructions about the procedure of data collection were sent by post to head teachers. It was also taken care that copies of instruction reached before 18th October, 2012.

Workshop for volunteers: For the administration of achievement, researcher had taken help of M.Ed. and M.S.W. students as volunteer. One-day workshop also arranged for volunteers on 23rd October 2012. Instructions for administration of achievement were given to volunteers. They have instructed to reach elementary school before school timing. After formal talk with head teacher, they show the permission letter from DPEO. They must attend prayer activity and fill the observation schedule.

Volunteer's task on 25th October, 2012:

As the instruction given at workshop, the volunteer has following major task on 25th October, 2012,

- **Attending prayer activity:** After make repo with head teacher, he must attend the prayer activity. No. of students attending the prayer activity should be calculated by head count and note down.

- **Administration of achievement test:** After prayer activity, volunteer should reach the STD-7 classroom for administration of achievement. He must give necessary instructions to the students.
- **Employing teacher's job satisfaction scale:** TJSS was given to teachers. The volunteer should give necessary instructions to the teachers. Teacher fill up the scale without asking anybody and attend the all the items of the scale. The volunteer brings back the scale on same day.
- **Filling of volunteers' observation schedule:** The volunteer must fill up the observation schedule which given to them.
- After completing, all works regarding achievement test and Teacher's job satisfaction scale; the volunteer was seated with head teacher, and give him necessary instructions for school information schedule. He hands over the School Information Schedule (Return cover with postal stamp) to head teachers of elementary schools.

Phase: 2 Collection of School Information Schedule: Phase-2 was carried out in month of November and January. Almost 50% school are responded quickly and send school information schedule within 15 days. Schools did not send school information schedule, researcher contacted them on telephone. Afterward more 25% schools send the school information schedule. 15% schools send the school information schedule after three-four reminders. For remaining 10% schools, researcher visited the school and got the school information schedule.

Phase: 3 Employing School observation Schedule:

Phase-3 was carried out in month of January, February and March, 2013. For the observation of elementary school, researcher has made team of three members for complete the different task during observation. Person-1 assigned for taking photograph, counting unit of sanitary. Person-2 assigned for counting number of room, counting number of present student. Person-3 (Researcher himself) assigned for delivering with head teachers and other teachers, use of library and laboratory, use of computers, delivering students.

3.7 Data Analysis:

Good data are important, but what is done with them is equally so. In the present study, the investigator has used the most appropriate statistical technique available in the treatment and analysis of data. Descriptive analysis, principal component analysis and

correlation analysis has been used for the treatment and analysis of data in the present study.

In the descriptive analysis; the mean, median, mode, standard deviation, skewness, kurtosis and percentiles are analysed. Correlation and principal component analysis has been used for understanding relation among variables. Descriptive, correlation and principal component analysis were done by using SPSS 21.0

Efficiency analysis is done by using computer programme FRONTIER 4.1 (Version 4.1c) by Team Coelli, Centre for Efficiency and Productivity Analysis, University of England, Australia.