Chapter-3

Review of Related Literature

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Chapter-3
Review of Related Literature

3.1.0 Introduction

This chapter deals with review of past researches carried out in the field of MLL programme and also researches connected with CRT. A review of related literature is an initial step of any research work. Through the review of literature, the investigator demonstrates that she had a comprehensive grasp of the field and get aware of important recent substantive and methodological development in the field. The detail importance of the review work is discusses in following paragraph.

3.2.0 Importance of Review of Related Studies

For any research work, comprehensive study of the related literature is an essential and indispensable pre-requisite. A review of related literature gives the investigator insight into the explored and unexplored areas of the problem, helps the investigator to benefit from past experiences, utilize previous findings and some times even improve upon previous researches or adopt them to present situations.

In the words of Good (1954),

“In order to be truly creative and original, one must read extensively and critically as a stimulus to thinking.”1

An extensive reading gives direction to thinking and develops insight which helps the investigator to do significant improvements in her research design.

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According to Kulbirsingh Siddhu (1984)

“A review of related literature helps the investigator to get the frontier in the field of his/her research and develop a research project which will contribute something to the knowledge already existing in the field.”

Review of the related literature allows the investigator to acquaint himself with current knowledge in the field or area in which the investigator is going to conduct her research. Its provides following guidelines to the researchers.

1. **To enable the investigator to define the limits of his field**

   Review helps the investigator to delimit and define his problems. The knowledge of related literature makes the investigator up to date on the work which others have done. It enables him to state the objectives clearly and concisely.

2. **To avoid unfruitful and useless problem area**

   The investigator can select those areas in which positive findings are very likely to result and his endeavors would be likely to add to the knowledge in a meaningful way.

3. **To avoid unintentional duplication of well established findings**

   It is of no use to replicate a study when the stability and validity of its results have been clearly established. Review helps to achieve this objective.

4. **To given an understanding of the research methodology**

   Review refers to the way in which the study is to be conducted. It helps the investigator to know about the tools and technique which proved to be useful and promising in the previous studies. The related literature provides insight into statistical methods for analysis through which validity of results is to be established.

5. **To know previous recommendations**

    The final and important specific reason for reviewing the related literature is to know about the recommendations of previous research for further researches which they have listed in their research report.

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3.3.0 Sources of Literature

In general, there are two types of sources-primary and secondary. Dissertations and Theses are considered as primary source while abstracts published in papers by other than authors are secondary resource.

As has mentioned in chapter I and II that Activity-based, Joyful learning and Competency-based approach is a new concept in our education system, very very few research directly related to the present study had been undertaken up to now. The present study has two major objectives: Its first objective was to develop tests and establish reliability and validity of the developed tests and second was to study the competency level i.e. achievement in the context of same variable on the basis of given Action-oriented competencies of MLLs. The review of the related literature has been undertaken in two main parts.

1) Review of the work related with CRTs
2) Review of the work related with MLLs

3.4.0 Review of Studies related with Criterion Referenced Tests (CRTs)

In this part reviews of studies related with Criterion-Referenced Tests have been presented. Investigator has gone through many studies related with CRTs in various subject units and for different Grades (Standards), for the review purpose. The investigator has decided to select only those studies of CRTs which relates with Grade I to VII in Mathematics subject. The researcher found that same M.Ed. dissertations have been done in this area and very few Ph.D. thesis in such situation, the researcher has incorporated M.Ed. dissertations in this part.
Study 1

- **Title**: Construction and validation of Criterion-Referenced Test in some basic concept of Algebra

- **Investigator**: Mehta, A.N.

- **Year, Uni.**: 1993, Gujarat Vidyapith

- **Degree**: M.Ed.

- **Objectives**:
  1. To construct a CRT for class- IV in some basic concept of algebra.
  2. To establish Validity of the developed test.

- **Sample**:
  The purposive sample of 200 students have been selected from the primary schools of Ahmedabad city.

- **Tool and data Analysis**:
  90 multiple choice items have been constructed under well defined behavioral domains. Test items were logically and empirically reviewed.

- **Major Findings**:
  1. The value of Item Objective Congruence Index for every items ranges from 0.011 to 1.00
  2. The Per test – Post test Difference Index of all the items ranges from 0.37 to 0.82.
  3. Content validity and criterion related validity were established and they were found 0.87 and 0.92 respectively. The reliability of domain score estimation and reliability of mastery-non mastery classification decision were also found.
  4. The cut off score determination for each of the behavioral domains were found between 2 and 6.
  5. The value of standard error of domain score estimation ranges from 0.00 to 0.16.
  6. The indices of mastery-non mastery classification decision reliability ranges from 0.00 to 0.57.
  7. The value of Kalic constant for every domains was positive to establish construct validity.

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3 Mehta A. N. (1993), *Construction and Validation of Criterion-referenced Test in some basic concepts of Algebra for Class IV*, (M.Ed. unpublished Dissertation, Gujarat Vidhyapith – Ahmedabad)
Study 2

- **Title** :- Construction and Try-out of Criterion-Referenced Test in some topics of class V mathematics.

- **Investigator** :- V. N. Patel

- **Year , Uni.** :- 1993, Gujarat University

- **Degree** :- M.Ed.

- **Objectives** :-
  1. To specify well define domains from selected content areas of class V
  2. To construct a Criterion Reference Test(CRT)
  3. To determine cut-off score for the developed test.

- **Sample selection** :- The purposive sample of 160 students were selected from the primary schools of Ahmedabad city.

- **Tool and data Analysis** :- Self prepared achievement tests in Mathematics for Classes V with total item 60 under well defined behavioral domains each items was logically and empirically reviewed by experts has been prepared.

- **Major Findings** :-
  1. The value of Item Objective Congruence Index for every items ranges from 0.80 to1.0
  2. The Pretest-Posttest difference Index of all the items ranges from 0.00 to 0.40.
  3. Content validity and criterion related validity were established.
  4. The cut off score determination for each of the behavioral domains were found between 5 to7.

Study 3

- **Title** :- A Construction of Criterion-Referenced Test in maths for standard II students of Ahmedabad Municipal Corporation.

- **Investigator** :- Patel, K.C

- **Year , Uni.** :- 1992, Gujarat University

- **Degree** :- M.Ed.

- **Objectives** :-
  1. To specify well define behavioral domains from selected content areas of class II
  2. To conduct logically review of items by experts.
  3. To prepare a final form of the test from reviewed items.

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4 Patel V. N. (1993), *Construction and Validation of Criterion-Referenced Test in some topic of class VIII in mathematics.* M.Ed. (Unpublished Dissertation, Gujarat University, Ahmedabad)

• **Sample :-** The purposive sample of 200 students have been selected from the primary schools of Ahmedabad city.

• **Tool and data Analysis :-** Under six expected content units, the behavioral domains have been specified. The details about selected content units, number of well defined behavioral domains for each unit and the total number of items (40) have been constructed under all well defined behavioral domains for each unit. Test items were logically reviewed by four subject experts.

• **Major Findings :-**
  1. The value of Item Objective Congruence Index (IOCI) for every items ranges from 0.7 to 1.00.
  2. Empirical review of the items has not been included place in the study.

**Study 4**

• **Title :-** Construction and Validation of Criterion-Referenced Test in Mathematics of Class IV for addition.⁶

• **Investigator :-** Beradia, S.J.

• **Year , Uni. :-** 1989, Bhavnagar University

• **Degree :-** M.Ed.

• **Objectives :-**
  1. To construct a Criterion Reference Test of addition in mathematics.
  2. To establish validity of the developed Test.

• **Sample selection :-** The purposive sample of 100 students were selected from the primary schools of Bhavnagar city.

• **Tool and Data Analysis :-** 64 items were constructed with the help of special ADDRULE program developed by Rathod and Bhogayata in eight well defined behavioral domains. Mapping Sentence Technology was used for Problem Solving method. Test items were logically and empirically reviewed.

• **Major Findings :-**
  1. The value of Item Objective Congruence Index (IOCI) for every items was +1.0
  2. The Pre test-Post test Difference Index of all the items was more than 0.10
  3. Content validity and Criterion-related validity were established and were found 0.9 and 0.87 respectively. The reliability (0.89) of domain score estimation and reliability of classification decision were also found.

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4. The cut-off scores determined for each of the behavioral domains were found between 1 and 5.
5. The value of standard error of each domain score estimation ranges from 0.00 to 0.18.
6. The indices of mastery-non mastery classification decision reliability have established and the value of Kappa Index ranges from 0.08 to 0.52.
7. The Construct Validity also established on the basis of Graph Theory.

**Study 5**

- **Title**: Construction and Validation of Criterion-Referenced Test in Mathematics for Class III.
- **Investigator**: Shah Pallavi A.
- **Year, Uni.**: 1989, Bhavnagar University
- **Degree**: M.Ed.
- **Objectives**: To develop a Criterion Reference Test for Addition.
- **Sample**: The purposive sample of 110 students were selected from various areas, including rural, urban and town (kasba), of Bhavnagar district.
- **Tool and Data Analysis**: 64 items were constructed with the help of special ADDRULE program developed by Rathod and Bhogayata in eight well defined behavioral domains. Mapping Technology was used for Problem Solving method. Test items were logically and empirically reviewed.
- **Major Findings**:
  1. The value of Item Objective Congruence Index (IOCI) for every item ranges from 0.9 to 1.0
  2. The Pre test-Post test difference Index of all the items ranged from 0.49 to 0.87.
  3. Content validity and Criterion-related validity were established and they were found 0.85 and 0.88 respectively. The reliability of domain score estimation and reliability (0.89) of mastery classification were also found.
  4. The cut-off scores determined for each of the behavioral domains were found between 3 and 4.
  5. The value of standard error of each domain score estimation ranges from 0.00 to 0.18.
  6. The indices of mastery-non mastery classification decision reliability ranges from 0.088 to 0.97 and the value of Kappa Index ranges from 0.16 to 0.037.

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3.5.0 Review of Studies Related to MLL

Gujarat Achievement at Primary (GAP) I to V studies undertaken by GCERT are the main source for the present study. Gap VII is in pipeline. GAP gives the Gujarat state the achievement level of the students from Grade III to VII in all subjects. From the results of the GAP, GCERT (at State level) and DIET (at District level) have been planned In-Service training Programmes for the primary school teachers. The study will help the DIET personnals to organize need based and area based training. GAP is the guide line for Quality Improvement in Achievement level of the students of Gujarat.

As mentioned earlier, Action-Oriented, Joyful learning and Competency-based approach is a new concept in our education system and not many researches have been considered uptill now. But some researches related to MLLs had been undertaken for the resources.

Study 6

- **Title** :- Construction and validation of competency based tests in view of MLLs at Primary Stage.\(^8\)
- **Investigator** :- Devda D.H.
- **Year , Uni.** :- 1996, Sardar Patel University, Vallabha Vidhyanagar.
- **Degree** :- Ph.D.
- **Objectives** :-
  1. To construct competency based tests in Mathematics for class I to IV.
  2. To estimate reliability and validity of the constructed tests.
  3. To study competency wise achievement of the students from class I to IV. The test includes competencies for class I to IV were 20, 18, 42 and 46 respectively. Items were selected for class I to IV were 30, 50 and 60 respectively.
- **Sample** :- 100 Students from class I to IV for try-out purpose. The Final sample of 5700 students of class I to IV from 3 different areas (Rural, Urban, Ashram shala).
- **Tool and data Analysis** :- Self prepared Competency based achievement tests in Mathematics for Classes I to IV. Reliability and Kappa index were found for all the four grades. Data had been classified in frequency distribution

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and percentages of students. Competency wise achievement was found. Hard spot were also found for each grade.

- **Major Findings :-**

1. The reliability of the estimated competency score was established on the basis of standard error of measurement, which ranges from 0.00,0.35, 0.27, 0.18, 0.09 and 0.19 when competency contained 1,2,3,4,5,6,8,10 and 12 items respectively.

2. The kappa value ‘K’ for class I was found between 0.46 and 0.85, for class II was found between 0.48 and 0.89, for class III was found between 0.21 and 0.81 and for class IV was found between 0.16 and 0.91. So it could be said that each competency of classes I to IV was reliable for classifying into master- non master categories.

3. All items of the tests for classes I to IV were found valid for testing their respective competency.

4. For class I out of total 20 competencies, at mass level 2 competencies were achieved in very good level, 10 in satisfactory level, 2 in average and 6 in below average level. In rural area, 5 competencies at very good level and 8 at satisfactory level. Same happened in urban area also and in Ashramshala 8 competencies were achieved at satisfactory level.

5. For class II out of total 18 competencies, at mass level, 10 competencies were achieved at satisfactory level. In rural area, 4 competencies at very good level and 11 at satisfactory level. In urban area 1 competency at very good level and 14 at satisfactory level and in Ashramshala 5 competencies were achieved at satisfactory level.

6. For class III out of total 42 competencies, at mass level 18 competencies were achieved at satisfactory level, in rural area,2 competencies at very good level and 17 at satisfactory level. In urban area 26 competencies at satisfactory level and in Ashramshala 1 competency at very good level and 8 competencies were achieved at satisfactory level.

7. For class IV out of total 53 competencies, at mass level no competency was achieved at very good level but 11 at satisfactory level, in rural area, 14 at satisfactory level. In urban area 2 at very good level and 15 at satisfactory level and in Ashramshala only 3 competencies were achieved at satisfactory level.

8. Only 17 competencies from classes I to IV were achieved at satisfactory level at mass level and also in three areas.

9. Four competencies of class I, one competencies of class II, 7 of class III and 20 competencies of class IV were considered as hard spots.
Study 7

- **Title** :- Minimum Levels of Learning (MLLs) Mathematics of first standard : An Assessment.  

- **Investigator** :- Tilakratne R.M.

- **Year , Uni.** :- 1992, M.S.University, Vadodara

- **Degree** :- M.Ed.

- **Objectives** :-
  1. To assess the competencies of MLLs for selected units.
  2. To study the impact of gender on attainment of MLLs of first standard students.
  3. To study the impact of medium of instruction on attainment of MLLs of first standard students.
  4. To study the impact of Parents’ qualification on attainment of MLLs of first standard students.
  5. To identify the most difficult and the easiest competencies in selected units.

- **Sample** :- A final sample of 232 grade one student from three English medium and three Gujarati medium schools of Baroda city have been selected. Data had been analysed using Mean, S.D. and t value.

- **Tool and data Analysis** :- Self prepared Competency based achievement tests in Mathematics for Class I. The achievement test comprised 18 competencies with 40 items. Data had been classified in frequency distribution and percentages of students. Competency wise achievement was found. Hard spot were also found.

- **Major Finding :-**
  1. First standard students had not understood the notion of zero and the order of number.
  2. The use of the symbols ‘>’ and’<’ was also not understood in their proper sense.
  3. The students could not add horizontally, although they could do the same actively vertically.
  4. The students had difficulty in understanding the ‘Moreness’ and ‘Lessness’ while comparing the numbers.

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5. There was no significant difference in the achievement of the students of English medium and the students of Gujarati medium.
6. Those students whose parents were graduates performed better than those whose parents were non-graduates.
7. The students had mastered the basic skills in numbers from 1 to 5 rather than from 6 to 10.

**Study 8**

- **Title**: “Minimum Levels of Learning (MLLs) based approach to improve instruction in Mathematics for class I and II in Baroda City”.
- **Investigator**: Kothari R.G.
- **Year, Uni.**: 1995, Center of Advanced Study in Education, M.S.University
- **Degree**: Individual Project
- **Objectives**:
  1. To identify different competencies for minimum levels of learning for selected units of Mathematics for class I and II
  2. To develop brief but adequately comprehensive plans for instruction which intend to facilitate the attainment of MLLs.
  3. To study the item wise performance level of class I and II students for different competencies on MLLs for selected units.
  4. To study the competency wise performance level of class I and II students for different competencies on MLLs for selected units.
  5. To identify most difficult competencies for class I and II for selected units.
- **Sample**: A final sample of 90 students of Class I and 125 of class II was selected randomly from two municipal schools of Baroda City.
- **Tool and data Analysis**: Self prepared Competency based achievement tests in Mathematics for Classes I and II. Test for class I includes 16 competencies with 50 items while test for class II includes 20 competencies with 60 items. Data had been classified in frequency distribution and percentages of students. Competency wise achievement was found. Hard spot were also found.
- **Major Finding**:

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10 Kothari R. G. (1995), Report of the Project on “Minimum Levels of Learning (MLLs) based approach to improve instruction in Mathematics for class I and II in Baroda City”. (Baroda, CASE, M.S. University)
1. Out of 16 competencies identified for MLLs of class I, only 3 competencies were not mastered by the students up to the expected level.

2. Arranging the numbers in ascending order was most difficult task for the students. Only 60% of the students responded correctly to this competency. Item wise variation was also very high for this competency.

3. Only 62.3% of students could state the place value of the digits in the number given. This was the second most difficult competency.

4. Competency number 1.1.3 (Identifies zero as the number representing nothing or the absence of objects in a collection) was the third most difficult but the average percentage of correct response was very near to the expected level.

5. Competency based on demonstrating understanding of place value by expressing the expanded form as a two digit number was easiest 97.3% of students responded correctly to this.

6. The concept of ‘more than’, ‘less than’, the ‘greatest’ and the ‘least’ was very well demonstrated by most of the students.

7. Average correct response for all sixteen competencies was found to be 84.25 percent. This shows that on an average 84.25 percent students could attain and identified MLLs. So it can be concluded that MLLs based approach for improving instruction in mathematics was effective for class I.

8. Out of 20 competencies identified for MLLs for class II, only two competencies were not mastered by the students up to expected level.

9. 54% of students could not solve one step of daily life problems based on subtraction of 2 digit numbers with borrowing. This was the most difficult competency.

10. Competency related with subtract two digit number with borrowing was achieved by only 57.8% students.

11. 91.8% of students respond correctly in competency based adding of two numbers mentally.

12. 87.2% of students could add two digit numbers without carrying and sum not exceeding 99. This was the second easy competency.

13. The overall picture shows that except two competencies out of twenty, could not reach up to the expected mastery level. For the remaining seventeen competencies, the average percentage of correct responses was more than 70. It can be concluded that MLLs based approach for improving in mathematics was effective for class II.
• Title :- An Achievement Survey of Competency based learning in Mathematics of Grade IV students of Ahmedabad district.11

• Investigator :- Mandora Renu

• Year, Uni. :- 1998, Gujarat University

• Degree :- M.Phil

• Objectives :-
  1. To study the effect of competency based approach on the achievement level of the students in Mathematics.
  2. To study the competency wise achievement of the students in Maths.
  3. To find out the score wise achievement of the students in Maths.
  4. To compare the achievement of the students of urban area and rural area schools.
  5. To find out the difference between the achievement level of boys and girls.
  6. To compare the achievement of the students of the schools run by Jilla Panchayat, Municipal Corporation and Private Bodies.
  7. To analyse the competencies used in the question paper and to find out the difficult competencies or hard spots.

• Sample :- A final sample of 526 boys and 444 girls of Class IV was selected through Stratified, incidental, random, cluster method from Ahmedabad district.

• Tool and data Analysis :- Self prepared Competency based achievement test in Mathematics for Class IV. Which includes 46 competencies with total 55 numbers of items. Total item was given 45 minutes to the students. Data had been classified in frequency distribution and percentages of students. Competency wise achievement was found. Hard spot were also found.

• Major finding :-
  1. Out of total 46 competencies selected for testing, at mass level, no competency was achieved at very good level, 6 competencies were achieved at good level, 4 competencies were achieved at satisfactory level, 7 competencies were achieved at average level and remaining 29 competencies were achieved at below average level.

11 Mandora Renu (1998), An Achievement Survey of Competency based learning in Mathematics of Grade IV students of Ahmedabad district., Unpublished M.Phil. Thesis (Gujarat University)
2. Comparing the scores of the students from Rural and Urban area, achievement level of the competencies of the rural area school students was much better than urban area where not even a single competency had achieved at very good level and 33 competencies were achieved at below average level, which was quite a greater number in compare to 27.

3. There are very low variations between boys and girls with reference to competency achievement.

4. In rural area, 13.73 % students have achieved very good or full mastery and 58.31 % students could not go beyond the red line while in urban area 57.27 % students were at or below 'Red line' and only 5.70 % could achieve good mastery.

5. Only 9.12 % boys and 12.84 % girls could achieve very good mastery level while 41.63 % boys and 42.56 % girls could not go beyond the 'Red line'.

6. At mass level, only 42.06 % students were able to go beyond the 'Red line' which shows that more than 50 % students were below the red line level.

**Study 10**

- **Title :-** A study of educational Achievement of Std. IV students of Baroda District in Minimum Levels of Learning (MLLs) approach.12
- **Investigator :-** Pathak Satish P., Patel Vijay S. and Shah Sanjay K..
- **Year , Uni. :-** 1997
- **Degree :-** Independent research
- **Objectives :-**
  1. To study the educational Achievement of the students of Std. IV studying in the schools conducted by Jilla Panchayat of Baroda in Gujarati, Environment and Mathematics.
  2. To study the competency wise achievement of the std. IV students.
  3. To do the comparative study of the educational achievement in all the three subjects of the students of 4 different block of Baroda district.
- **Sample :-** A final sample of 280 students from 16 schools of 4 different blocks were selected randomly.
- **Tool and data Analysis :-** Competency based question papers of all the three subjects which comprise selected competencies and were prepared by the

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12 Pathak S. P. et.al. (1997), "A study of educational Achievement of Std. IV students of Baroda District in Minimum Levels of Learning (MLLs) approach" (Unpublished study Baroda, DIET)
investigators. The competencies selected for Gujarati, Maths and Environment were 20, 15 and 17 respectively. Also the Items were 30 for each subject. Data had been classified in frequency distribution and percentages of students. Competency wise achievement was found. Hard spot were also found.

- **Major finding :-**

1. The students of Dabhoi taluka have achieved the expected level of 50X50 in all the competencies in Gujarati while the students of Baroda, Vaghodia and Savali taluka could not achieve the expected level in two competencies i.e. 5.4.2 and 6.4.1.

2. In Mathematics, the students of Dabhoi taluka, have achieved the expected level in all the competencies while the students of remaining 3 taluka could not achieve the expected level in competency 3.4.1.

3. The students of Dabhoi taluka have achieved the expected level of 50X50 in all the competencies in Gujarati while the students of Baroda could not achieve the expected level in competency 10.4.1, Students of Vaghodia taluka in competency 6.4.1, 8.4.5 and 10.4.1 and the students Savali taluka could not achieve the expected level in two competencies 8.4.5 and 10.4.10, for Gujarat.

4. The comparison of the percentage of the masters in all the subjects and all the four talukas shows that the achievement level was highest in Dabhoi taluka.

5. On the basis of score based frequency distribution, it can be observed that in Baroda and Vaghodia taluka the percentage of the students who have scored more than 50 % marks in Gujarati is less than 50 % while in Sawali and Dabhoi taluka it was more than 50 %

6. The percentage of the masters was more than 50 % in Mathematics in all the 4 talukas.

7. In environment the percentage of the masters was more than 50 % in Baroda, Sawali and Dabhoi taluka while less than in Vaghodia taluka.

8. On the basis of the Mastery Scale, 72.1 % students have scored 50 % or more marks, 13.0 % have scored 80 % or more than that while 27.9 % students have scored 50 % or less marks in Mathematics.

9. 59.17 % students of total group have scored 50 % or more than 50 % marks, 12.92 % have scored 80 % or more than 80 % marks and 40.83 % have scored less than 50 % marks in environment.

10. In Gujarati subject, 56.67 % students have scored 50 % or more marks, 12.5 % have scored 80 % or more marks while 43.33 % have scored less than 50 % marks.
11. On the basis of the mastery scale it can be said that out of all the 3 subjects the achievement level of the students was highest in Mathematics and lowest in Gujarati.

**Study 11**

- **Title**: Gujarat Achievement at Primary (GAP-1 to 5). \(^{13}\)
- **Investigator**: Director, GCERT, Gandhinagar.
- **Year, Uni.**: 1999-2008
- **Degree**: Institutional research
- **Objectives**:
  1. To explore the profiles of academic achievement of the primary school children of Gujarat for the academic year in the context of MLL program.
  2. To compare the academic achievement in the academic years 1998-99, 2000-2001, 2002-2003, 2004-2005 and 2007-2008 (i.e., to compare the results of GAP5 with reference to GAP1, GAP2, GAP3 and GAP 4).
  3. To find out the relationship of students' academic achievement to their gender in GAP1 to 5.
  4. To find out the "Hard Points" of the syllabi of the selected subject areas of primary education in the context of MLL program.
- **Sample**: All the children in the standards V, VI, and VII of Gujarati medium primary schools of Gujarat State in the academic year 2004-2005 comprised the population of the present research project.
- **Tool and data Analysis**: In the present research project, 21 achievement tests of different subject areas of standards V to VII were used for data collection. During the research project GAP 1 18 achievement tests were developed and validated, whereas nine tests were developed and validated in the Phase I of the research project GAP 2, for the standard III to VII. Out of these 27 achievement tests 21 tests of Standard V to VII were used in the GAP 4. In short, the selected achievement tests were collaboratively developed and validated by the lecturers of the DIETs of Gujarat State. These lecturers were trained for the development and validation of achievement tests in a two-day seminar by the teachers of the DEBU and

\(^{13}\) **GAP (Gujarat Achievement at Primary Report : I To V)**: Gujarat Council of Educational Research and Training, Gandhinagar (1999 – 2008)
DESU on December 7 and 8, 1998 during the GAP1 research project for the development of 18 tests (see Bhogayata, Rathod, Ramanuj, Joshi and Vyas, 1999, p.15). Data was analysed through using NRTVB software.

**Major finding :-**

1. According to GAP – I, the average achievement of the primary school children of Gujarat was 48.08 percent in the 18 subject areas of stds. III to VI. Students’ academic achievement was far from satisfactory level.

2. The average academic achievement ranged from 31.05 percent (in mathematics std. V) to 57.96 percent (in mathematics std.IV).

3. The achievements of the students of the lower standards of primary schools was higher than that of the students of the upper standards.

4. There was relationship between the students’ academic achievement and their gender in 8 out of 18 subjects.

5. There was relationship between the students’ academic achievement and their area of residence in 12 out of 18 subjects.

6. The percentage of the students successful at the achievement level of 80 percent or more ranged from 2 (Mathematics std. V) to 36 (Environmental studies std. IV). Seventy five percent or more students were not successful in any of the 18 subjects at the achievement level of 80 percent.

7. Fifty percent or more students were successful at the level of 50 students or more in six subjects out of 18 subjects.

8. At the traditional level of 35 percent, 100 percent students were not successful in any of the 18 subjects.

9. According to GAP V with compare to GAP I, profiles of academic achievement of the primary school children were not at satisfactory level but there was significant improvement in the academic achievement. With compare to Gap I, 13.695 % gains is found in average academic achievement (minimum 0.08 for mathematics std.VI and maximum 24.06 for social science std. V) at the state level.

### 3.6.0 How this study Differs from other studies

As mentioned earlier that not much literature is available on Competency-based achievement but the investigator has reviewed the available literature and has tried to work in a different way from other studies. The present study differs from them in following ways-
1. Population: The population chosen for the study was the students of Grade V, VI and VII of Gujarat State.

2. Area: Students of rural as well as urban, both the areas of the State were selected for the study.

3. Sampling: The sample was selected by the method of Stratified random sampling technique.

4. Tool: A self-prepared Action-oriented competency-based achievement tests were put into use. Which is an individual test with the use of Mathematical instruments.

5. Objectives: This study has its own objectives, which are different from other studies and are already mentioned in chapter one.

6. Variables: In this study following variables were taken to study the achievement of the students-
   a. Area- Rural and Urban
   b. Gender- Boys and Girls

7. Validation: All the three tests which have been prepared for the study have been Standardised.

8. Analysis: In the present study analysis has been done through Computer software NRTVB and also competency wise, for example for each competency percentage of the achievers has been calculated taking into consideration all the decided variables, which has become a unique feature of the study.

9. Test Administration: Only Action-Oriented competencies were included in the three self-designed tests for grade V, VI and VII. The tests were designed as an individual tests. Also the test has been prepared in such an manner that one has to give answer only. With the help of mathematical instrument/aid. Mathematical kit were distributed to each student by the investigator.

All the above reviews were on the basis of written competencies of grade I to V. As far as GAP I To V were concerned, they all were based on written competencies of grade III to VII. So no study was conducted for the action oriented competencies.
On the basis of above discussion, it can be said that the present study is quite different from other studies and will be useful for the related persons.

3.7.0 Conclusion

After surveying various research studies and comprehensive discussion of related researches the investigator was enlightened for the future planning of her own study. With the help of these studies the investigator come to know the important components of the test; different methods of finding reliability and validity, size of sample to be selected etc.

After the study of related literature, the investigator used to gained knowledge of this study in the following points.

1. In deciding the types of item
2. For fixing the size of sample
3. Process of construction and standardization of test
4. Administration of test
5. Methods of Data analysis
6. Strategy for deriving conclusions

As mentioned earlier, the next chapter is based on the design of the work. This chapter deals with planning and execution of test construction.