CHAPTER V

SUMMARY AND CONCLUSIONS

5.1 THE STATEMENT OF THE PROBLEM

The success of education to a great extent depends on the quality of human resources, which in turn influence the standard of education. The role of the teacher is very important in imparting the knowledge and implementing the plans and programme of the nation. Kallen, speaking of the responsibility of teachers, says, “teachers are custodians of the nation’s human capital, the guardians of the nation’s youth, the keepers of the nation’s most precious treasure, the shapers of the nation’s future’. Every education commission that examined the educational problems of India had drawn attention to the role of the teachers as a key factor. The Secondary Education Commission (1953) accepted the key role of teachers and reported that “We are however convinced that the most important factor in the contemplated educational reconstruction is the teacher, his personal qualities, his educational qualifications, his professional training and the place that he occupies in the institution as well as the society”. Thus the reputation of a school and its influence on the life of the community invariably depend on the quality of teachers and the effectiveness of their teaching.

The studies reviewed also indicates that there are studies on the knowledge of teachers in Content, Pedagogy and studies related to the knowledge of teachers in content and Pedagogy in other subjects at Secondary level. There were no studies related to the Teachers Competence and Learners Achievement at Primary level in Mathematics. There is a major research gap. In order to contribute to this gap,

Influence of primary School Teachers Competence on Learners Achievement in Mathematics in Anantapur District of Andhra Pradesh was undertaken.
5.2 NEED AND IMPORTANCE OF THE STUDY

Mathematics is one of the compulsory subjects at the primary stage. The general experience is that the performance of the pupils at the primary stage is not satisfactory. It is also observed that very few pupils develop a real interest in the subject. The main reason for this is that teaching of Mathematics at the primary level is not effective. All the teachers are required to teach Mathematics irrespective of their subject background. Most of the teachers were exposed to Mathematics only up to the Matriculation level only. The Mathematics Teacher should have a basic understanding of nature of subject; nature of learner and learning process in Mathematics aims of education in general and that of Mathematics in particular; methods and techniques of teaching Mathematics; and should have a positive attitude towards teaching of Mathematics.

Quality of Mathematics instruction at elementary school level depends on the preparation of elementary teachers to teach Mathematics. Without sufficient knowledge of Mathematics and Mathematics pedagogy, it is unlikely that elementary teachers will be able to deliver sound Mathematics instruction to their pupils. In addition, the Mathematics teacher should have positive attitude towards both Mathematics and teaching of Mathematics. Otherwise they could not develop positive attitude towards Mathematics in small children. Teachers’ negative attitude may inhibit their learning and may be transmitted to their pupils Mathematics achievement. (Larson, 1983; Shofield, 1981)

The primary teachers are supposed to teach all subjects, they should have good knowledge in all subjects and its methodology. However, some of the teachers working in the elementary stage have not studied method of teaching Mathematics. They do not know how, when to use the techniques to teach Mathematics. It affects the learners’ achievement in Mathematics and the quality of education.

The quality of teachers influences the level of attainment of the students. As Kothari Commission has remarked, “Of all the different factors which influence the quality of education and its contribution to national development of the quality, competence and character of teachers are undoubtedly most significant”.
There is little research work done to find the effectiveness of Mathematics education programme on the achievement of students in Mathematics especially at elementary level. Thus the present study is an attempt to evaluate the influenced of primary teachers’ competence (knowledge in content and pedagogy and teaching competence in Mathematics) over the learners’ achievement in Mathematics.

5.3 OBJECTIVES OF THE STUDY

The following are the major objectives of the study.

1. To study the attitude of primary school teachers towards teaching Mathematics.
2. To assess the primary school teachers’ knowledge in content of Mathematics.
3. To assess the primary school teachers’ knowledge in pedagogy of Mathematics.
4. To evaluate the primary school teachers classroom performance in Mathematics.
5. To study the learners achievement in Mathematics.
6. To study the relationship of the teachers attitude towards teaching of Mathematics with a) knowledge in content; b) knowledge in pedagogy; c) classroom performance; d) overall teaching competence and e) learners achievement.
7. To study the relationship of the teachers’ knowledge in content with: a) knowledge in pedagogy; b) classroom performance; c) attitude towards teaching Mathematics; d) overall teaching competence, and e) Learners Achievement in Mathematics.
8. To study the relationship of the knowledge in pedagogy with a) Knowledge in content; b) Classroom performance; c) attitude towards teaching Mathematics; d) overall competency, and e) Learners Achievement.
9. To study the relationship of classroom performance with: a) Knowledge in content; b) knowledge in pedagogy; c) overall competency; d) attitude towards teaching Mathematics, and e) Learners Achievement.
10. To study the relationship between the teacher attitude towards teaching Mathematics, the knowledge of teachers in content and pedagogy, teacher classroom performance, overall teaching competence and learners achievement with respect to: a) Sex b) Age c) Caste d) Educational Qualification e) Experience f) Management g) Locale h) School type.
11. To study the linear relationship of teachers knowledge in content and pedagogy; classroom performance and attitude towards teaching with learners achievement.

5.4 THE HYPOTHESES OF THE STUDY

In order to achieve the objectives of the study, the following hypotheses were formulated for testing.

1. There is no significant difference in the Content Knowledge in Mathematics among the Primary Teachers with respect to: a) Sex; b) Age; c) Caste; d) Educational Qualification; e) Experience; f) Management; g) Locale, and h) School type.

2. There is no significant difference in the Pedagogical Knowledge in Mathematics among the Primary Teachers with respect to: a) Sex; b) Age; c) Caste; d) Educational Qualification; e) Experience; f) Management; g) Locale, and h) School type.

3. There is no significant difference in the Classroom Performance in Mathematics among the Primary Teachers with respect to: a) Sex; b) Age; c) Caste; d) Educational Qualification; e) Experience; f) Management; g) Locale, and h) School type.

4. There is no significant difference in the Overall Teaching Competency in Mathematics among the primary teachers with respect to: a) Sex; b) Age; c) Caste; d) Educational Qualification; e) Experience; f) Management; g) Locale, and h) School type.

5. There is no significant difference in the Attitude towards Teaching of Mathematics among the Primary Teachers with respect to: a) Sex; b) Age; c) Caste; d) Educational Qualification; e) Experience; f) Management; g) Locale, and h) School type.

6. There is no significant relationship between the teachers Knowledge in Content; Pedagogical Knowledge; Classroom Performance; Overall Teaching Competency, and Attitude towards teaching of Mathematics.

7. There is no significant difference in the Learners Achievement in Mathematics among the Students with respect to: a) Sex; b) Caste; c) Father Education;
d) Mother Education; e) Management of School; f) Locale of the School, and g) Type of School.

8. The Content Competence of Teachers is not significant predictor of Learners Achievement.

9. The Pedagogical Competence of Teachers is not significant predictor of Learners Achievement.

10. The Classroom Performance of Teachers is not significant predictor of Learners Achievement.

11. The Overall competency of Teachers is not significant predictor of Learners Achievement.

12. The Attitude of Teachers towards Teaching of Mathematics is not significant predictor of Learners Achievement.

5.5 REVIEW OF RELATED LITERATURE

The studies reviewed have been classified as 1) Studies related to Teachers and 2) Studies related to Students

Studies related to teachers
- Studies related to achievement in content of mathematics and students achievement
- Studies related to achievement in pedagogy of mathematics and students achievement
- Studies related to teachers classroom performance and student achievements
- Studies related to attitude towards teaching mathematics

Studies related to students
- Studies related to students achievement in mathematics
- Studies related to Socio Economic Status, Intelligence and achievement in mathematics

Insights from the review of related literature

From the reviews it is found that there are few studies conducted separately on subject knowledge of the teachers, pedagogical knowledge of the teachers, and classroom performance of the teachers.
Some of the studies are also conducted on correlating with subject knowledge of the teachers and teaching performance; pedagogical knowledge of the teachers and classroom teaching performance of the teachers.

Some of the studies are conducted on Effect of teaching method and students’ achievement.

Some of the studies are also conducted on classroom teaching performance of the teachers and students achievement.

From the review it is evident that the studies are conducted in either in Secondary school level or higher secondary level, no study is conducted at primary level. It is also found that no study is conducted on correlating 1) Content knowledge of teachers 2) Pedagogical knowledge of teachers 3) Classroom teaching performance of the teachers and 4) Attitude towards teaching mathematics with student’s achievement at primary stage. Hence, the present research is a significant contribution in reducing the gap.

5.6 DESIGN OF THE STUDY

The study is aimed at finding out the Influence of primary School teacher’s competence in relation to students Achievement in Anantapur District of Andhra Pradesh state. Therefore, it is a survey type research. The study is focused on a systematic analysis of the data from

I) Competence of Primary School Teachers in Mathematics.
II) Attitude of Teachers towards Teaching Mathematics.
III) Students achievement in Mathematics.

5.7 SAMPLING PROCEDURE

The Sample for the study is selected by means of multiage cluster random sampling technique.

Selection of Mandals (Paste Flow chart)

Anantapur district is consisting of 64 Mandals. These Mandals are divided into four clusters based on Enrolment and Retention.

1. High enrolment – High retention
2. High enrolment - Low retention
3. Low enrolment - Low retention
4. Low enrolment - High retention
Two Mandals from each cluster, total 8 Mandals have been selected randomly. Selection of schools 25 schools from each Mandal, (200 schools) which are having minimum strength of 10 students in V standard have been randomly selected from the records of Mandal Education Offices during the academic year 2005-2006. Thus the sample of 200 teachers who are teaching mathematics for V standard are randomly selected for the study. Ten students from each school, the sample of 2000 students, both boys and girls have been randomly selected for the study.

5.8 VARIABLES OF THE STUDY

The variables related to the teachers Teaching Competence in Mathematics which includes the content Competence, Pedagogical Competence and Classroom Performance and Attitude towards teaching Mathematics are independent variables, and Sex, age, caste, Educational qualifications management, locale and school type are considered as demographic variables.

The achievement of V grade students has considered as the dependent variable. The other variables related to the background of the students are sex, caste, father education, mother education, locale of the school.

5.9 TOOLS USED FOR THE STUDY

The tools developed for the present study are presented in the following tabulation.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the tool</th>
<th>Kind of Reliability</th>
<th>r -Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Criterion referenced Achievement test in content of Mathematics</td>
<td>Split- half</td>
<td>0.774</td>
</tr>
<tr>
<td>2</td>
<td>Criterion referenced Achievement test in pedagogy of Mathematics</td>
<td>Split- half</td>
<td>0.8527</td>
</tr>
<tr>
<td>3</td>
<td>Classroom Observation Schedule for Primary Teachers</td>
<td>Expert Opinion</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Attitude towards teaching Mathematics</td>
<td>Split- half</td>
<td>0.784</td>
</tr>
<tr>
<td>5</td>
<td>Criterion referenced Achievement in content of mathematics for V standard students</td>
<td>Split- half</td>
<td>0.7138</td>
</tr>
</tbody>
</table>
5.10 STATISTICAL TECHNIQUES EMPLOYED

The following statistical techniques are used in the present study.

- Descriptive Statistics
- Pearson Product Movement Correlation
- t – test
- F-test
- One – way ANOVA
- Linear Regression Analysis

5.11 DELIMITATIONS OF THE STUDY

The present study has been limited only to some aspects listed due to time limitation.

- The study is delimited to randomly select eight Mandals of Ananthapur district of Andhra Pradesh only.
- The study is delimited to the teachers teaching mathematics for Class V and the students of the year 2005 – 06 academic year only.
- The study is delimited to Government primary schools, viz. Mandal Parishad and Municipality.
- Testing the Mathematics Teachers’ knowledge in Content is delimited to Syllabus up to Class VII of the Andhra Pradesh state.
- The test in pedagogical knowledge in Mathematics is based on D.Ed. Course syllabus offered in DIETs of Andhra Pradesh.

5.12 FINDINGS OF THE STUDY

5.12.1 Achievement in content of mathematics

1. The male and female primary school teachers do not differ significantly in achievement in content of Mathematics.

2. There is a significant difference between the mean scores of teachers of different ages with reference to their achievement in content of mathematics. The young teachers (up to 30 years age) are high in their content competency in mathematics than the teachers above 50 years.

3. There is a significant difference between the mean scores of teachers of different Castes with reference to their achievement in content of mathematics. It is found that the teachers belonging to General Category are having high Content
Competency in Mathematics than the teachers belonging to other Castes viz. Other Backward Castes, Scheduled Tribes and Scheduled Castes. It is further found that the Content competency of teachers differed based on their caste.

4. There is a significant difference among the teachers of various experience groups in their Achievement in content of mathematics. It is clear that the teachers with up to 5 years experience is very high and teachers above 30 years experience is very low.

5. Mandal Parishad and Municipality school primary school teachers do not differ significantly in achievement in content of Mathematics.

6. Rural primary school teachers and urban primary school teachers do not differ significantly in achievement in content of Mathematics.

7. Monograde and Multigrade schoolteachers do not differ significantly in achievement in content of Mathematics.

8. There is a significant difference among mean scores of teachers’ Achievement in mathematics based on their optional subjects studied at Intermediate level. The teachers who have not studied intermediate are securing very low scores.

9. There is a significant difference among mean scores of teachers’ Achievement in content of mathematics based on their Degree qualification. The teachers who have not studied Degree secured very low score.

10. There is a significant difference among mean scores of teachers’ Achievement in content of mathematics based on their P.G. Degree qualification. The teachers of M.Com. Degree secured very low score.

11. There is a significant difference in the content competence of teachers who studied mathematics with those who are not studied mathematics at an level. The teachers who studied mathematics at any level are significantly higher than their counterparts.

12. There is a significant difference among mean scores of teachers’ Achievement in content of mathematics based on their Diploma in Education. The teachers whose qualification is JBT have secured a very low score.
13. There is a significant difference in the content competence of teachers who studied the Pedagogy of teaching mathematics with those who are not studied in Diploma in Education. The teachers who studied Pedagogy of teaching mathematics at Diploma in Education Course are significantly higher than the teachers who have not studied pedagogy of teaching mathematics.

14. There is no significant difference in the content competence of teachers who studied B.Ed. and those who have not studied B.Ed. programme.

15. There is a significant difference between the teachers who studied the Pedagogy of teaching mathematics in their B.Ed programme and teachers who have not studied pedagogy of teaching mathematics. The teachers who studied pedagogy of teaching mathematics are significantly higher than the teachers who have not studied the pedagogy of teaching mathematics at B.Ed. course.

16. There is a significant difference in the content competence of teachers who studied pedagogy of mathematics with those who are not studied pedagogy mathematics at any level. The teachers who have studied pedagogy of mathematics are significantly higher than the teachers who have not studied pedagogy of mathematics.

17. There is significant proportion of teachers who are the masters achievement in mathematics.

5.12.2 Achievement in pedagogy of teaching Mathematics

18. The male and female primary school teachers do not differ significantly in their achievement in pedagogy of teaching Mathematics.

19. There is a significant difference in mean scores of Teachers Achievement in pedagogy of teaching mathematics based on their age. The teachers with age up to 30 years are very high and the teachers with age 40 to 50 years are very low.

20. There is a significant difference in mean scores of teachers Achievement in pedagogy of teaching mathematics based on their caste. The teachers belonging to S.C. Caste is very low and the teachers belonging to General Caste is very high.

21. There is a significant difference in the Achievement in pedagogy of teaching mathematics among the teacher of various experiences. The teachers with up to 5
years experience scored high and the teachers with 21 to 30 years experience are scored low.

22. Mandal Parishad and Municipality primary school teachers do not differ significantly in the achievement in pedagogy of teaching Mathematics

23. Rural and Urban primary school teachers do not differ significantly in achievement in pedagogy of teaching Mathematics.

24. Monograde and multigrade primary school teachers do not differ significantly in achievement in pedagogy of teaching Mathematics.

25. There is a significant difference among mean scores of teachers’ Achievement in pedagogy of teaching mathematics based on their optional subjects studied at Intermediate level. The teachers who studied C.E.C. as an optional subject are scored a very low score.

26. There is a significant difference among mean scores of teachers’ Achievement in pedagogy of teaching mathematics based on their Degree qualification. The teachers who have not studied Degree secured very low score.

27. There is a significant difference among mean scores of teachers’ Achievement in pedagogy of teaching mathematics based on their P.G. Degree qualification. The teachers whose qualification is M.Com., Degree secured very low score.

28. There is a significant difference between the teachers who studied mathematics at any level with the teachers who are not studied Mathematics at any level with reference to the pedagogical competence. The pedagogical knowledge is high among the teachers who studied the mathematics as subject when compared with other teachers who are not studied the mathematics.

29. The teachers having different diploma courses do differ significantly in achievement in methodology teaching Mathematics. We can observe that, those who have not studied any diploma in Education achieved very high and those who are having J.B.T qualification achieved very low, in pedagogy of teaching Mathematics.

30. There is a significant difference between the teachers who studied pedagogy of teaching mathematics with the teachers who not studied Diploma in Education
with reference to the pedagogical competence. The pedagogical knowledge is high among the teachers who studied the mathematics as methodology subject in their Diploma in Education course when compared with other teachers who are not studied the mathematics.

31. There is no significant difference in the pedagogical competence of teachers who studied B.Ed. and who are not studied B.Ed. programme.

32. There is a significant difference in achievement in pedagogy of teaching mathematics between teachers who studied pedagogy of teaching mathematics with the teachers who have not studied pedagogy of teaching in B.Ed. programme.

33. There is a significant difference between the teachers who studied Pedagogy of mathematics at any level with the teachers who are not studied pedagogy Mathematics at any level with reference to the pedagogical competence. The pedagogical knowledge is high among the teachers who studied the mathematics pedagogy as subject when compared with other teachers who are not studied the mathematics Pedagogy.

34. There is significant proportion of non-masters in pedagogy of teaching mathematics - 25% of the teachers are the masters in four competencies.

5.12.3 Performance in classroom teaching

35. The male and female primary school teachers do not differ significantly in their classroom performance in teaching Mathematics.

36. There is a significant difference in mean scores of teacher’s classroom performance based on their age. The teachers who are below 30 years are performed better than the others. The teachers who are under the age group of above 50 years performed very low.

37. The primary teachers belonging to different casts differ significantly in their classroom performance in teaching Mathematics. General caste teachers showed high performance in classroom teaching Mathematics and S.T category teachers showed very low performance in classroom teaching.

38. There is a significant difference among the teachers of various experiences in their classroom performance in Mathematics. The teachers less than 5 years experience
having high performance and teachers with 21 to 30 years experience are having low performance. This may be due to glow on ness of newly appointed teachers and also familiarity with content and pedagogy.


40. Rural primary school teachers and urban primary school teachers do not differ significantly in classroom teaching in Mathematics.

41. Monograde and Multigrade primary school teachers do not differ significantly in classroom teaching.

42. The primary teachers studying different optional subjects at Intermediate level differ significantly in performance in classroom teaching. The teachers who studied M.P.C. showed high performance in classroom teaching and the teachers who have not studied Intermediate showed very low performance in classroom teaching.

43. The primary teachers having different degree qualifications differ significantly in performance in classroom teaching the teachers with B.Sc degree performed very high and the teachers who have not studied any degree performed very low.

44. The primary teachers having different P.G. qualifications differ significantly in performance in classroom teaching. The teachers with M.Sc degree showed very high and the teachers with M.Com showed very low performance in classroom teaching in Mathematics.

45. There is a significant difference between mathematics studied at any level and mathematics not studied Teachers in their teaching competence. The teachers who studied mathematics at level of their qualification is significantly higher than the teachers who have not studied mathematics.

46. The primary teachers studied different various diploma courses like D.Ed./TTC/TCH/JBT, etc. differ significantly in classroom performance in Mathematics. The teachers who have not studied any diploma course performed very high and the teachers studied J.B.T performed very low.
47. There is no significant difference between teachers who studied pedagogy of teaching mathematics and teachers who are not studied the pedagogy of teaching mathematics not studied Teachers in Diploma in Education in their teaching competence.

48. There is no significant difference in the classroom performance of teachers who studied B.Ed. with those who are not studied in B.Ed.

49. There is a significant difference in teaching competence of teachers between pedagogy of teaching mathematics studied and pedagogy of teaching mathematics not studied in B.Ed. programme.

50. There is a significant difference between mathematics studied at any level, mathematics not studied Teachers at any level in their teaching competence.

5.12.4 Overall teaching competence in Mathematics

51. The male and female primary school teachers do not differ significant in overall teaching competence in Mathematics.

52. There is a significant difference in the mean scores of teachers overall teaching competency in mathematics based on their age. The teachers with up to 30 years age is very high and teachers with above 50 years age is very low.

53. There is a significant difference in the overall competency of teaching mathematics among the teachers belonging to various castes groups. Teachers belong to SC Caste scored low and those who belonging to General Caste scored very high.

54. There is a significant difference in the overall competency of teachers in mathematics based on their experience. The teachers with up to 5 years experience are very high and teachers with above 30 years experience are having low performance.

55. Mandal Parishad and Municipality primary school teachers do not differ significantly in overall teaching competency in Mathematics.

56. Rural and urban primary school teachers do not differ significantly in overall teaching competence in Mathematics.
57. Monograde and Multi grade primary school teachers do not differ significantly in overall teaching competence in Mathematics.

58. There is a significant difference among mean scores of teachers’ overall competency in teaching mathematics based on their optional subjects studied at Intermediate level. The teachers who are not having intermediate qualification are secured a very low score.

59. The primary teachers having different degree qualifications differ significantly in overall teaching competence. The teachers with B.Sc. degree qualification performed very high in overall teaching competence and the teachers who have not studied any degree achieved very low in overall teaching competence.

60. The primary teachers having different P.G. qualification differ significantly in overall teaching competence in Mathematics. The primary teachers with M.Sc. degree showed very high and the teachers with M.Com. degree showed very low, overall teaching competence.

61. There is a significant difference between mean scores of teachers’ overall competency in teaching mathematics based on their optional subject mathematics studied at any level. The teachers who have not studied mathematics at any level secured a very low score.

62. The primary teachers studied different courses in diploma in education differ significantly in overall teaching competences in Mathematics. The teachers who have not studied diploma course scored very high and the teachers studied J.B.T course scored very low in overall teaching competence.

63. There is a significant difference between teachers who studied the pedagogy of teaching mathematics and teachers who are not studied the pedagogy of teaching mathematics in their Diploma in Education course in the overall teaching competence. The overall teaching competence is high among the teachers who studied mathematics as a methodology subject in their Diploma course.

64. There is no significant difference in the overall competency of teachers who studied B.Ed. with those who are not studied in B.Ed.
65. The primary teachers studying pedagogy of teaching Mathematics in B.Ed. differ significantly high compared to the teachers who have not studied pedagogy of teaching Mathematics in B.Ed. in overall teaching competency.

66. There is a significant difference in the Overall competency of teachers who studied pedagogy of mathematics with those who are not studied pedagogy mathematics at any level.

5.12.5 Attitude towards teaching Mathematics

67. The male and female primary school teachers do not differ significantly in their attitude towards teaching Mathematics.

68. There is a significant difference in the attitude towards teaching mathematics among the teachers of various age groups. The difference is high among the teachers belonging to 30 years and low among teachers belonging to above 40 years. It clearly indicates that the younger teachers are having high attitude. This may be due to a glow on ness of the teachers who just entered into the profession. There is a need to sustain the glow on ness of these teachers.

69. There is a significant difference among teachers of various castes in their attitude towards teaching mathematics. The teacher belonging to general caste are have high positive attitude and the teacher belonging to SC caste are have low positive attitude towards teaching mathematics.

70. There is no significant difference among the teaches based on their experience. In other words, the experience of the teacher is not a criterion variable for their attitude towards teaching mathematics at primary level.

71. The teachers working in Mandal Parishad and Municipality have not showed significant difference attitude towards teaching Mathematics.

72. The attitude towards teaching Mathematics of primary school teachers in rural area is not significantly different from that of teachers in urban area.

73. There is a significant difference between mono grade school teachers and multi grade school teachers in their attitude towards teaching. The teachers working in monograde school teachers are having high positive attitude.
74. There is a significant difference in the attitude towards teaching mathematics among the teachers categorised based on their optional subject studied at Intermediate level. Hence the attitude towards teaching mathematics is high among the teachers who studied MPC as an optional subject at Intermediate and low among the teachers who studied HEC as an optional subject at Intermediate level.

75. There is a significant difference among the mean scores of teachers' attitude towards teaching Mathematics based on their various degree qualifications. Teacher with B.Sc. degree have high positive attitude and those who are not having degree qualification have low positive attitude towards teaching mathematics. It means the attitude towards teaching mathematics is high among B.Sc. graduate teachers than the others.

76. The primary school teachers studied Post Graduation do not differ significantly attitude towards teaching Mathematics.

77. There is a significant difference between teachers, mathematics studied at any level and mathematics not studied at any level in their attitude towards teaching Mathematics.

78. The teachers studied with different professional diploma qualifications like T.T.C., D.Ed., T.C.H etc. do not differ significantly in their attitude towards teaching Mathematics.

79. The primary teachers studied pedagogy of teaching Mathematics in diploma in education are not significantly different from that of the teachers who have not studied pedagogy of teaching Mathematics in Diploma in education in their attitude towards teaching Mathematics.

80. There is no significant difference in mean scores of Teachers’ Attitude towards Teaching Mathematics based on their Professional Degree.

81. The primary teachers studying pedagogy of teaching Mathematics in B.Ed. have shown significantly high positive attitude compared to the primary teachers who have not studied pedagogy of teaching Mathematics.
82. There is a significant difference between teachers who studied mathematics pedagogy at any level with the teachers who have not studied and mathematics pedagogy in their Attitude towards teaching Mathematics.

5.12.6 Relationship between Content, Pedagogy, Classroom Performance and Attitude

83. There is a significant relationship between achievement in content of Mathematics and achievement in pedagogy of teaching Mathematics.

84. There is a significant relationship between achievement in content of Mathematics and performance in classroom teaching in mathematics.

85. There is a significant relationship between achievement in content and overall teaching competence in Mathematics.

86. There is a significant relationship between achievement in pedagogy of teaching and performance in classroom teaching in Mathematics.

87. There is a significant relationship between achievement in pedagogy of teaching Mathematics and overall teaching competence in Mathematics.

88. There is a significant relationship between overall teaching competence and performance in classroom teaching in Mathematics.

89. There is a significant relationship between attitude towards teaching and achievement in content of Mathematics.

90. There is a significant relationship between attitude towards teaching and achievement in pedagogy of teaching Mathematics.

91. There is a significant relationship between attitude towards teaching and classroom teaching in Mathematics.

92. There is a significant relationship between attitude towards teaching and overall teaching competence.

5.12.7 Students Achievement In Mathematics

93. There is no significant difference between mean scores of male and female student’s achievement in Mathematics.
94. There is no significant difference of scores in Mathematics among children belong to various Castes. The students belongs to S.T. category secured high score and the students belong to General Category secured very low scores in mathematics.
95. There is a significant difference in achievement of mathematics among children based on their fathers’ educational qualifications.
96. There is no significant difference in achievement in mathematics among the students based on their mothers’ educational qualification.
97. There is a significant difference between mean scores of Mandal Parishad School students and Municipality School students in their achievement in content of mathematics.
98. There is a significant difference between mean scores of Rural School students and Urban School students in their Achievement in mathematics.
99. There is a significant difference between mean scores of Mono grade school students and multi grade school students in their Achievement in content of mathematics.

5.12.8 Prediction Of Academic Achievement Of Students

100. Content Competence of Teachers do Predict the Academic Achievement of Students.
101. Pedagogical Competence of Teachers do Predict the Academic Achievement of Students.
102. Classroom Performance of Teachers do Predict the Academic Achievement of Students.
103. Overall competency of Teachers do Predict the Academic Achievement of Student.
104. Attitude towards Teaching Mathematics do Predict the Academic Achievement of Student.

5.13 DISCUSSIONS
5.13.1 Findings Related to Teachers

Sex: There is no significant difference between male and female primary school teachers in their content knowledge; pedagogical knowledge; classroom performance;

Age: In this study, there is a significant difference in mean scores of teachers’ achievement in content knowledge; pedagogical knowledge; classroom performance; overall competence; and attitude towards Teaching Mathematics based on their age groups. Babu (1999); Sabu S. (2005); Raju V.S. (1994) and Ramakrishnanath (1989) are supporting this finding. Sukhwal (1977) contradicting with these findings.

Caste: There is a significant difference in mean scores of teachers, content knowledge; pedagogical knowledge; classroom performance; overall teaching competence; and Attitude towards Teaching Mathematics based on their caste. In all the components SC community teachers have scored very low when compared with others.

Experience: There is a significant difference in mean scores of teachers achievement in content, pedagogical competence, classroom performance, overall competence, and attitude towards teaching mathematics based on their experience. Experience is inversely proportional, in all these areas. This means less experienced teachers are exhibiting the better competencies than more experienced teachers. But there is no difference in the mean scores of attitude towards teaching mathematics among the primary school teachers with various experiences.

Management: There is no significant difference between mean scores of Mandal Parishad School Teachers and Monograde School Teachers in their achievement in content competence; pedagogical competence, classroom performance, overall competence and Attitude towards Teaching Mathematics. These findings coincides with Sobha (2000). Whereas Sabu (2005) findings are contradicting with this.

Locale: There is no significant difference between mean scores of Rural School Teachers and Urban School Teachers in their Achievement in content knowledge pedagogical knowledge; classroom performance and overall teaching competence and

**School Type**: There is no significant difference between Monograde School Teachers and Multigrade School Teachers in their Achievement in content knowledge; pedagogical knowledge; classroom performance; overall teaching competence in mathematics. Sabu (2005) findings are also coincides with these findings. But there is a significant difference in the mean scores of Multigrade School Teachers and Monograde School Teachers in their Attitude towards Teaching Mathematics.

**Educational Qualifications**: There is a significant difference in the mean scores of Teachers Achievement in content knowledge; Pedagogical knowledge; Classroom performance and overall Teaching Competence with different educational qualifications of the teachers. It was observed that there is a significant difference in the mean scores of teachers who have studied different optional subjects at Intermediate, Degree with mathematics and without mathematics. We can also see the significant difference between the teachers who have studied mathematics at any level and who have not studied mathematics at any level. These findings coincides with Nafees Fathima (2002), Raju V.S. (1994), Sobha (2000), Sukhwal (1977). It is also observed that there is no is significant difference with B.Ed. studied teachers and B.Ed. not studied teachers in content knowledge. There is no significant difference in the mean scores of teachers who studied pedagogy of teaching mathematics, those who have not studied pedagogy of teaching mathematics in their achievement in pedagogical competence. Nafees Fathima (2002), Raju, K. (1994), Sabu (2005) studies are coinciding with these findings.

Comparing educational qualifications with attitude towards teaching mathematics it was observed that there is a significant difference in the mean scores of teachers with different optional subjects taken at Intermediate, Degree. It was also observed that there is a significant difference between the teachers who studied mathematics at any level and mathematics not studied at any level, also the teachers who have studied pedagogy of teaching mathematics in B.Ed. and who have not
studied in B.Ed. programme. These findings are coinciding with the findings of Sobha (2000), Sukhwal (1977) and Raju K. (1994).

It is also observed that there no significant difference among PG studied teachers, various professional diploma courses and degree studied teacher and with different pedagogy of teaching studied teachers. These findings coincides with Sabu (2005). Correlation between content knowledge; pedagogical knowledge; classroom performance; overall competence and attitude towards teaching mathematics.

There is a significant relation between content knowledge, pedagogical knowledge, classroom performance, overall competence and attitude towards teaching mathematics. The findings of Benz-Pertz (1975); Buch Aggrawal (1969); Tharyani (1986); Leinhrdt and Smith (1985); Shulman (1987) and Carlsen (1991); Maheswari (1976); Govinda R. and Varghese N.V. (1991); Howsam (1960); Elbaz (1993); Fattu (1962); Sobha (2000); Rastogi (1983); Jain (1979); Gopi (1981); Raju K. (1994); Aggrawal (1969) and Singh (1974) are supporting the findings of the study. It means that each component dependent on another. Sabu (2005), Sobha (2000), Aspy (1972), Government Central Pedagogical Institute (GCPI) (1981). Chaube (1985) and Saxena (1969) are contradicting with this finding.

5.13.2 Findings Related To Learners Achievement

**Sex and Achievement:** In this study, there is no significant difference between mean scores of male and female student’s achievement in Mathematics. Further, when we compared the means it is noticed that the achievement of male and female students are nearly equal. Reddy (1971), Shukla. (1975) and M. Sharadha (1982) are supporting the findings of the study. But Umar Farooque S.L.P (2005), Lalithamma (1975), Mishra (1986), Abdul Kareem (1998) and Husen (1967) are contradicting the findings of the study.

**Caste and achievement:** There is no significant difference of scores in Mathematics among children belong to various Castes. The students whose caste is S.T. secured high score and the students belong to General Category secured very low scores in mathematics. The present study contradicts with the studies of K.N. Lalithamma (1975) Singh Satvir (1996).
Educational background of father / mother and students achievement: Reddy (1971) found that education background of the family have significant relation with the nature of concepts of casual relation acquired by the children. Nagpal and Wig (1975) found that, the pass group students had more often fathers who were better educated and who had professional executive or managerial occupations. Husten (1967), Dave and Dave (1971) found that poor academic achievement of their children was due to the low educational slandered of their parents. Gakhar S.C. (1986) found that parent’s education potentially causing significant differences in the learning of concepts. Menon (1986) found that higher occupational and educational level of father and mother were related to high achievement. Suhashini Tsupa (2002) found that students of literate parents of superior to their counter parents whose parents are illiterate in their problem solving ability.

Father Education and Learners achievement: In this study, there is a significant difference in achievement of mathematics among children whose fathers’ posses’ different educational qualifications. The students whose fathers are having Degree qualification secured low score when compared with others

Mother Education and Learners achievement: There is no significant difference in achievement in mathematics among the students whose mother’s possess different educational qualification.

Management of school and Learners achievement: Sharma (1977) found that children of the recognized private schools achieved higher scores in arithmetic than those of the corporation schools. Gakhar S.C. found that private school children achieved better than government schoolchildren in Mathematics. Sundarajan S. and Dhandapani B. (1991) found that expect in the case of government and private school girls, in all others the difference is significant in respect of their achievement in Mathematics. Here the girls are better than boys, the private school students are beater than boys, these private school students are better than the government school students and the urban students are better than the rural students in respect of their achievement in Mathematics. Buch M.B. and Sudame G.R. (1990) found that the achievement of the children in private schools in Gujarati language and Mathematics
were better than those studying in the municipal schools. In this study, there is a significant difference between mean scores of Mandal Parishad School students and Municipality School students in their achievement in content of mathematics.

**Locality of the school and Learners achievement:** In this study, there is a significant difference between mean scores of Rural School students and Urban School students in their Achievement in mathematics. Urban school students achieved better than Rural School students in Achievement in mathematics. Reddy (1971), Lalithamma (1975) studies were also supporting the same, but Abdul Kareem (1998) contradicting the study. Shukla (1984) Mishra (1986) were fund no significant difference.

**Type of School and Learners achievement:** In this study, there is a significant difference between mean scores of Mono grade school students and multi grade school students in their Achievement in content of mathematics. D. Basavayya and S.P. Patnaik (1997) are also supporting the study.

**5.14 EDUCATIONAL IMPLICATIONS, SUGGESTIONS AND RECOMMENDATIONS**

**5.14.1 Achievement in Content of Mathematics**

1. The primary school teaches of different age groups differ significantly in their achievement in content of Mathematics. The primary teachers below 30 years of age are achieving very high and the age group of above 50 years achieved very low in content of Mathematics. It shows that the age group of up to 30 years is aware of current knowledge in mathematics. The age group of above 50 years is not having sufficient knowledge in content and they are not aware of current knowledge in mathematics. Every mathematics teacher must acquire the awareness about the latest developments in mathematics. He must be aware about current knowledge to teach effectively and efficiently. So it is strongly recommended that orientation programmes for content enrichment may be conducted by the DIETs continuously for updating their knowledge.

2. The primary teachers belonging to different caste groups significantly in their achievement in content of Mathematics. The teachers belonging to general caste
and OBC caste achieved high scores in content and SC caste teachers achieved very low in content of Mathematics. It shows that General and OBC caste teachers have more exposure on content, while S.C caste teachers low exposure. It is true that some of them have passed with minimum pass marks. Even in teachers recruitment also there is no minimum qualifying marks. It affects the quality of education. Special orientation may be given for S.C caste teachers for content enrichment. The policy makers should take certain steps to rectify these differences.

3. The primary teachers having different experiences differ significantly in their achievement in content of Mathematics. The teachers with up to 5 years experiences have shown high achievement than the teachers above 30 years experience. It shows that the primary teachers having above 30 years experience having low ability in content. They are not aware of new trends and techniques in content of mathematics. Therefore, more experienced teachers may be given the orientation programme on content of mathematics. This will enable to raise the quality of primary education as expected in various programmes.

4. Academic qualification of teachers playing a major role in achievement in content of mathematics the teachers who have studied mathematics at Intermediate, Degree and Post Graduate level are achieving high in mathematics. It is also found that the teachers who are having higher qualification in mathematics are expressing high ability. It means that the teachers with higher qualifications are having more knowledge and acquired current knowledge in mathematics. This is lack in teachers who have not studied mathematics at any stage of their higher education. They are not aware of current knowledge in mathematics. Mathematics is dynamic subject which needs continuous updating knowledge in the subject. Teachers must know the latest developments in mathematics. This will enable them to teach in a proper way. Therefore it is recommended that the teachers who are not having mathematics background may be given special orientation on content enrichment. The state government can also think about appointing subject specialised teachers at primary level.
5. The primary teachers who studied different courses in their diploma in education qualifications differ significantly in achievement in content of Mathematics. The teachers studied D.Ed. course are achieved very high and the teachers studied J.B.T. course achieved very low in content competence in Mathematics. It is evident that the teachers who studied D.Ed. course is providing more exposure to content enrichment in mathematics during their training. Whereas in the equivalent courses like T.T.C., T.C.H. and J.B.T. were not providing required exposure in content enrichment for students. Therefore it is strongly recommended that refreshers courses may be conducted for content enrichment for reducing these differences.

6. The primary teachers who have studied pedagogy of mathematics at B.Ed have mathematics background and the teachers who have not studied pedagogy of mathematics are Arts background teachers. The study reveals that mathematics background teachers are step ahead in mathematics that the teachers without mathematics. It is strongly recommended that content enrichment activities may be at B.Ed level with a specialization in Elementary Education. This certainly will enable to reduce the gaps between these groups.

5.14.2 Achievement in pedagogy of mathematics

1. The primary teachers having different age groups differ significantly in achievement of methodology in Mathematics. The primary teachers with the age group up to 30 years achieved very high and the age group 40 to 50 years achieved very low. It shows that younger teachers are aware of new techniques in pedagogy of mathematics where as the teachers with 40-50 years are lagging behind. It seems that as the age increases the knowledge in pedagogy decreases. It is not good sign in quality education. Therefore it is strongly recommended that orientation programme may be conducted to update their pedagogical knowledge in mathematics.

2. The primary teachers belonging to different caste group differ significantly in their achievement in pedagogy of teaching Mathematics. General caste teachers achieved very high in pedagogy of teaching Mathematics and S.C caste teachers
achieved very low in pedagogy of teaching Mathematics. It shows that General caste teachers have aware of Pedagogical techniques. They have entered into the profession with high qualifying marks. In the case of S.C. caste teachers, they have studied with minimum educational background. The Government of Andhra Pradesh has relaxed minimum educational qualifications for recruitment of S.C. Teachers. They have been appointed as teachers without Pedagogical knowledge. The primary teacher must have known different teaching methods. Without sufficient knowledge in pedagogy, the teacher will not be able to impart the knowledge among students. It is strongly recommended that refresher courses may be conduced in pedagogy for S.C. caste teachers.

3. The primary teachers having different experiences differ significantly in achievement in pedagogy of teaching Mathematics. The teachers with up to 5 years experience achieved high and the teachers with 21-30 years experience achieved very low. This shows that younger teachers are aware of new Pedagogical techniques. On the other hand more experienced teachers are not acquiring new teaching techniques. It affects the teaching of mathematics. Therefore, it is recommended that orientation programmes may be conducted for more experienced teachers to acquire new pedagogical techniques.

4. The teachers with different academic qualifications have achieved differently in pedagogy of mathematics. The teachers with mathematics and Science background at Intermediate, Degree and Post Graduation level have achieved very high in Pedagogy of mathematics. Where as in the case of Arts background teachers who have studied H.E.C., C.E.C. etc. as optionals in Intermediate, Degree and Post Graduation have achieved very low. It shows that mathematics and Science background teachers having more pedagogical knowledge in mathematics. But in the case of arts background teachers, they are not aware of teaching techniques in mathematics. Every Primary teacher must teach mathematics at Primary stage. It is essential to acquire sufficient knowledge in pedagogy teach mathematics effectively. It is strongly recommended that arts background teachers may be given special orientation in pedagogical knowledge.
5. The Primary teachers who have studied Pedagogy of mathematics either in Diploma in Education or B.Ed. have shown high in pedagogical performance in mathematics and the teachers who have not studied pedagogy have achieved very low. It is known that a person who knows the subject well can perform in better. The policy says that each and every teacher is expected to teach mathematics at primary stage. Therefore, it is recommended that the primary teachers who have not studied pedagogy of mathematics may be given special training to inculcate the pedagogical knowledge in mathematics.

5.14.3 Classroom Performance

1. The primary teachers having different age groups differ significantly in classroom performance in Mathematics. The teachers’ age up to 35 years performed very high and the age group above 50 years performed very low in classroom teaching. It shows that younger generation of teachers is aware of new teaching techniques. They are showing interest towards teaching. Where as, in the case of above 50 years, they are not acquiring new teaching techniques. Teaching–Learning quality depends upon the teacher. The low competent teacher produces low competent students. It is recommended that the age group of above 50 years may be given orientation on classroom practices and also teacher motivation.

2. The primary teachers belonging to different caste groups differ significantly in performance in classroom performance in mathematics. General caste teachers showed high performance in classroom teaching and S.T. category teachers showed very low performance in classroom teaching. It shows that, General caste teachers have acquired better performance in teaching learning process. The S.T. category teachers are not aware of the advanced techniques of instruction. It may be due to considerations given at the time of admission into The Government of Andhra Pradesh is also appointing S.T. teachers without any professional qualification. In order to reduce these disparities, a comprehensive training programme may be conducted for these people.

3. The primary teachers having different experiences differ significantly in classroom performance in mathematics. The teachers less than 5 years experiences
have shown better performance than teachers with 21-30 years of experience. It shows that newly recruited teachers are more familiar with classroom teaching techniques. They are more interested towards teaching mathematics. Whereas the more experienced teachers are not aware of new techniques in classroom teaching. Moreover they are passive towards classroom teaching. It is recommended that orientation programme may be conducted to give exposure on classroom teaching.

4. The primary teachers having mathematics background at intermediate, Degree and P.G. have achieved high in classroom performance. It is also found that the teachers having higher qualifications performed high in classroom teaching. Research findings says that highly qualified teachers ask (innovative ) quality questions in classroom teaching and low qualified teachers ask low quality questions. This is happened in the case of Arts background teachers. They have not acquainted with classroom teaching techniques in mathematics. Even though the commerce studied teachers have high qualification performed low in classroom teaching. It is recommended that refresher courses maybe conducted for Arts background teachers and commerce background teachers in classroom teaching.

5. The primary school teachers’ performance in classroom teaching, differ significantly with pedagogy of teaching mathematics studied in B.Ed. and pedagogy of teaching mathematics not studied in B.Ed. The teachers with pedagogy of teaching have shown high performance and the teachers with out pedagogy of teaching have shown low teaching performance. It shows that pedagogy of a teacher plays a major role in classroom teaching. The knowledge of pedagogy gives the teacher to use appropriate teaching learning techniques in teaching. Therefore, it is recommended that refresher courses may be conducted on teaching learning processes.

5.14.4 Attitude towards teaching Mathematics

1. There is a significant difference among mean scores of teacher’s attitude towards teaching mathematics and their age. The teachers who are in the age group of up to 30 years scored high and the teachers in the age group of 40 to 50 scored low. It
shows that younger generation teacher have more positive attitude towards teaching. They have acquired more knowledge in mathematics. Senior teachers who are in the age group of 40-50 years having low attitude towards teaching. This positive attitude towards teaching mathematics may be due to lack of motivation. It is suggested to conduct teacher motivation programmes to motivate them towards teaching.

2. The Primary school teachers belonging to different caste groups (General, OBC, S.C., S.T.) differ significantly in Attitude towards teaching mathematics. The General caste teachers have high positive attitude towards teaching mathematics. This shows that, the General caste teacher have better education in mathematics and they know the importance of mathematics in every aspect. The S.C. caste teachers are showing low positive attitude towards mathematics. There is a need to inculcate positive attitude among the teachers to create interest towards teaching the subject. Therefore, it is recommended that teacher motivation programme may conduct for SC caste teachers to inculcate positive attitude towards teaching mathematics.

3. The primary teachers having mathematics background are more positive attitude towards teaching mathematics. The teachers with arts background, and who are not possessing higher educational qualification showed low positive attitude towards teaching. The teachers with mathematics background feel easy to solve problems. The teachers without mathematics background feel difficult to solve problems. It creates negative attitude towards the subject and towards teaching mathematics. It is recommended that orientation programme may be conducted to create interest on the subject.

4. The primary teachers studied with Pedagogy of mathematics in B.Ed. have shown high positive attitude towards teaching mathematics. Teachers with out Pedagogy of mathematics have shown low positive attitude towards teaching the subject. This shows that, the teachers with more knowledge are able to solve problems easily in the classroom and less able teachers, having negative attitude escape from solving the problems in classroom. They also develop negative attitude
towards the subject. It is recommended that mathematics pedagogy may be given orientation to create positive attitude towards the subject.

5. The primary teachers content competence, pedagogical competence; classroom performance overall competence; attitude towards teaching are the predictors of the learners achievement at primary level. It means that the teachers having these competencies can teach effectively. Primary education is the foundation for structure of education. So the Government seriously can think about the appointment of teachers to teach mathematics with the background of mathematics. This will enable to consider the indicators of quality education.

**5.15 THE SUMMARY OF EDUCATIONAL IMPLICATIONS OF THE STUDY**

Table 5.2: The summary of Low achievers recommended for orientation

<table>
<thead>
<tr>
<th>Low achievers</th>
<th>Low achievers in Content</th>
<th>Low achievers in Pedagogy</th>
<th>Low classroom Performance</th>
<th>Low achievers in Overall Competence</th>
<th>Low Positive Attitude towards Teaching Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Above 50</td>
<td>40-50</td>
<td>Above 50</td>
<td>Above 50</td>
<td>40-50</td>
</tr>
<tr>
<td>Caste</td>
<td>S.C</td>
<td>S.C</td>
<td>S.C</td>
<td>S.C</td>
<td>S.C</td>
</tr>
<tr>
<td>Experience (years)</td>
<td>Above 30</td>
<td>21-30</td>
<td>21-30</td>
<td>Above 30</td>
<td>--</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Mathematics Not studied</td>
<td>C.E.C; H.EC</td>
<td>Intermediate Not studied</td>
<td>Intermediate Not studied</td>
<td>H.EC</td>
</tr>
<tr>
<td>Degree</td>
<td>No Degree</td>
<td>No Degree</td>
<td>No Degree</td>
<td>No Degree</td>
<td>No Degree</td>
</tr>
<tr>
<td>Post Graduation</td>
<td>M.Com</td>
<td>M.Com</td>
<td>M.Com</td>
<td>M.Com</td>
<td>M.Com</td>
</tr>
<tr>
<td>Professional Diploma</td>
<td>J.B.T</td>
<td>J.B.T</td>
<td>J.B.T</td>
<td>J.B.T</td>
<td>--</td>
</tr>
<tr>
<td>Mathematics Pedagogy Studied</td>
<td>Pedagogy not studied</td>
<td>Pedagogy not studied</td>
<td>--</td>
<td>Pedagogy not studied</td>
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</tr>
<tr>
<td>Mathematics Pedagogy Studied</td>
<td>Pedagogy not studied</td>
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<td>Pedagogy not studied</td>
<td>Pedagogy not studied</td>
</tr>
</tbody>
</table>
The analysis of the contents in the above table recommends the following educational implications:

- An Orientation programme may be conducted for the age groups 40 – 50 and above 50 years (The More Experienced in Service Group) on Content, Pedagogy of Mathematics and Classroom teaching techniques so that the Attitude of the teachers towards teaching mathematics will also develop.

- Refresher Courses and Special Orientation programmes may be conducted for the Schedules Caste and Schedules Tribe Teachers so as to foster their abilities in the above three areas and for a better attitude.

- An Orientation programme may be conducted for the Non Mathematics teachers with or without pedagogical qualifications.

- It is recommended to include Basic Mathematics Content and related pedagogy as a compulsory ancillary subject for the Non Mathematics Pre-service teachers in B.Ed. also while the same is followed in D.Ed. course.

- It is recommended to appoint at least a Teacher who had studied Mathematics in both the Content and the Pedagogy at primary level for every teacher.

### 5.16 SUGGESTIONS FOR FURTHER RESEARCH

1. Similar study may be conducted in other school subjects.

2. Similar study may be extended to large sample by considering more socio-psychological variables.

3. The same type of study may be conducted in other levels of school education.

4. Similar study on the same topic in another part of the country maybe conducted with large samples of students and teachers by considering some more variables.

5. A comparative study of the “Influence of Primary school teacher’s competence on Learners Achievement in Mathematics” Andhra Pradesh with other states of the country may be taken up.


7. A comparative study of the “Influence of Primary school teacher’s competence on Learners Achievement in Mathematics” in CBSE schools and state recognised schools.