CHAPTER II

REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

The importance of related researches cannot be denied in any research. It works as a guide post or a light house. The review of related or similar studies not only gives us the direction to attain the objectives of new study but also enables the direction of new study. It also enables to perceive the gap and lacuna in the field of research concerned. Review of related literature gives valuable guidelines to defining the problem, recognizing its significance, suggesting promising data gathering devices, helps to choose appropriate study design and source of data. The studies reviewed are classified under the following heads:

2.1 STUDIES RELATED TO COGNITIVE PERFORMANCE OF TEACHERS

Pillai K.K. (1970) conducted a survey entitled “A survey of teaching Mathematics in secondary schools in Kerala”. The objectives of the study were: 1. to analyze the content in Mathematics; 2. to study the professional preparation of the Mathematics teachers, and 3. to study the methods and Techniques followed in teaching Mathematics. The major findings of the study were: 1. About 97% of the teachers handling classes in Mathematics were having degrees in Mathematics and were trained in the methods of teaching Mathematics. 2. Many teachers lack knowledge of modern trends in teaching Mathematics and are no familiar with modern Mathematics books and literature.

Sharma (1971) found that teaching aptitude, academic grades, socio economic status, teaching experience and age in order of their arrangement appeared to be sound predictors of teacher effectiveness.

Debnath (1971) identified that experience, academic achievement and professional training were significant determinants of teaching efficiency.
Ben-Peretz (1975) identified that the teachers content knowledge may also influence how they exploit the curriculum how they exploit the curriculum potential of a subject.

Balachandran (1981) arrived at the conclusion that the factors of teaching effectiveness from classroom point of view are subject mastery and intellectual kindling, responsiveness, integrity and communicative ability commitment to teaching, impartiality, motivating concern for the students. Progress and in formal academic help.

Goknar S.C. (1981) conducted a study on the “Teachers impact on the Mathematics students”. He found that the main effect of academic qualification was found to be highly significant on the criterion measures. The teachers’ qualification both academic and professional and achievement on the Mathematics concepts test are significantly related with each other. The academic qualification of the teacher seemed to be operating as powerful influence in the sense that children hailing from schools where post graduate teachers teach tended to perform better in the entire conceptual test than their counterparts from schools where merely graduate teachers teach. The teaching experience did not affect the attainment of the student in Mathematics, the variable in service training received by a teacher proved to be ineffective in accounting for the significant variance with regard to the acquisition of Mathematical concepts.

Grewal S.S. and Kiralkaur (1981) conducted a study on “Achievement motivation and anxiety as related to academic success in Mathematics. “The results of the study were: The achievement motivation and achievement in Mathematics are significant positively and a significant negative relationship with the success in Mathematics. The measure of anxiety correlates significantly negatively with n-achievement scores: subjects with low anxiety and high motivation have better academic achievement in Mathematics than any other combination of anxiety and motivation.

Rahamtulla Khan (1981) Enquired in to the attitudes and Problems of trained teachers teaching subjects other than their subjects of specialization found that there is
a significant difference of teaching competency between one who trained subject specialization and other who were not trained the subject specialization.

Tharyani (1986) studied that intelligence and knowledge in their subject areas were found to be the best predictors of teacher effectiveness. In a study conducted by Buch Pal (1989) has considered the dependence of achievement in Mathematics on four variables of the effective dimension viz, self concept, anxiety, attitude and academic motivation. He formulates 56 hypotheses relating to these variables and classification of students in to Urban, Semi-urban and rural students and male female students. He finds the regression equation to predict the performance in Mathematics as a linear combination of the four affective variables.

Aggarwal (1989) found that more than 53% teachers were not intelligent enough to be teachers, and intelligence was significantly and positively related to their subject knowledge. The main problems of the teachers listed were: low salary irregularity in increments, salary incommensurate with qualifications, transfers, etc. The problems faced in schools were multiple class teaching, attendance, and the number of students in a class, poor accommodation, non-availability of teaching aids, teacher parent relationship supervision and the relation between school and community. According to evaluation, the administrators, inspectors and HMs considered 40% of the teachers as competent and teachers considered 42% of them as competent.

Carlsen (1991) found that teachers were more likely to ask cognitively lower levels questions in areas in which they were less knowledge and higher level questions in these areas where they felt themselves to be knowledgeable.

Elbaz (1993) identified knowledge of self as an important fact for teachers practical knowledge. This knowledge of self includes teachers awareness of their own values, goals, philosophies, styles, personal characteristics, strength and weaknesses as they relates to teaching.

Parmesh (1994) conducted A study entitled “Teachers awareness of Mathematics as a discipline”. The objectives of the study were: 1. to study the teacher’s comprehension of the nature of Mathematics; 2. to infer the teacher’s
awareness of the foundations of Mathematics; 3. to investigate into teacher’s perception regarding the nature of inquiry in Mathematics; 4. to appraise of teachers conceptions of Mathematics reality; 5. to evaluate teacher’s knowledge of the turning points in the history of the development of Mathematics; 6. to comprehend of teachers knowledge of the concepts basic to modern Mathematics; and 7. to infer the teachers’ awareness of the existence of integrating elements in the different streams of Mathematics. The findings of the study were: 1. Few teachers seemed to be sensitive in their perception about the intrinsic worth of ideas and expressions; and 2. Teachers’ qualifications seemed to have no impact on the awareness of the discipline. Even the very experienced and highly qualified ones made absurd responses.

Gupta (1996) has reported that knowledge of content among teachers needs enrichment. According to him, the achievement of teachers is below expectations “It is a most common question as to how the teachers can perform and guide their students in the classroom. The achievement of the minimum essential levels of the learning by all children without equipping teachers with the competencies is an elusive goal. The concept of multiplication by zero was not mastered by 45% teachers. More than 25% teachers could not successfully complete the problem based on addition, subtraction, multiplication and division. The deficiencies in different competencies were scattered over the entire content areas of elementary Mathematics curriculum.

Ramakumar, Vasantha (1998) conducted a study on “The present status of classroom Practices on the Districts under DPEP II, Kerala State. The major findings of the study were: 1) Primary School teachers possessed the potential in terms of subject competencies and teacher qualities to make classroom teaching to enjoyable learning experience for pupils and to attain the target out comes; 2) Through a limited repertoire of teaching skills, reliance on only traditional method of teaching aids and disinterest in using teaching aids was observed, yet it indicated a gap between potential and performance. Intrinsic motivation of the individual teacher and building up of required capabilities empowerment both as a teacher and as an important member of the community had to be the critical input and 3) Primary
education needed to be administratively de-linked from Upper Primary and Secondary education should be visualized and set up.

Shobha T.C. (2000) conducted a study entitled “Assessment of knowledge and teaching performance in Mathematics and attitude towards Mathematics of prospective primary school teachers. The objectives of the study were: 1. to assess the knowledge competence in Mathematics of prospective primary school teachers in the content to be taught; 2. to assess the attitude of prospective primary school teachers towards Mathematics; and 3. to assess the teaching performance of prospective primary school teachers in the teaching of Mathematics; She found that the prospective primary school teachers lack mastery over the content of elementary school Mathematics. The major findings of the study were: 1. Mathematics knowledge of prospective primary school teachers has no relation with their classroom teaching performance; 2. Attitude towards Mathematics of prospective primary school teachers is related to the achievement in Mathematics; 3. Attitude towards Mathematics of prospective primary school teachers and their teaching performance are not related; 4. Male and female prospective primary school teachers have similar attitude towards Mathematics and 5. Male and female prospective teachers’ don’t differ in their Mathematics knowledge.

Unnikrishanan (2000) conducted a study entitled “Assessment of competence in teaching Mathematics of prospective primary teachers”. The major objectives of the study were: 1. to analyse prospective primary teacher’s performance in the achievement test to evaluate the competences in methodology of teaching Mathematics; 2. to analyse the attitude towards teaching Mathematics of prospective primary teaching; 3. to analyses the performance of prospective primary teachers in Mathematics teaching and 4. to find whether there is any relationship between attitude towards teaching Mathematics and their performance in actual Mathematics classroom teaching. The findings of the study were: 1. The prospective primary teacher education curriculum failed to produce significant proportion of masters in individual and overall competencies in both rural and urban area. Not even a single student teacher had shown a mastery of more than 60% of the competencies; 2. Both
government and than private teacher education institutions failed to produce significant proportion of masters of individual and overall competencies in methodology of teaching Mathematics and 3. There was no significant proportion of masters of individual and overall competencies in methodology of teaching Mathematics.

Nafees Fathima (2002) conducted a study on “Assessment of cognitive competence in Mathematics of primary school Teachers”. It is found that the teachers were not all competent in solving problems related to BODMAS principle, Verbal problems in solving profit and loss, cost price and the area of a triangle when side are given as fraction.

Teachers also find difficult to solve problems on HCF and conversions of kilometers into meters. The findings of the study were: 1. The average performance of the primary school teachers in Mathematics is only 37.7% which is only 48.26% of the total score. The score is much below the expected score; 2. Only 3 teachers, that is 3.88% of the teachers have scored above 80% where as only 14.7% could score above 60% in the achievement test in Mathematics; 3. Male and female primary school teachers do not differ in their cognitive competence in Mathematics; 4. Cognitive competence in Mathematics of the primary school is better than the teachers working in lower primary school; 5. Cognitive competence in Mathematics of the primary school teachers working in urban schools is slightly better than the teachers working in lower primary school and 6. There is no variation Mathematics of the primary school teachers with different Mathematical background.

2.2 STUDIES RELATED TO PEDAGOGICAL KNOWLEDGE OF TEACHERS AND STUDENTS ACHIEVEMENT

Debnath H.N. (1971) conducted a study on “Teaching efficiency: its measurement and some determinants”. The important correlates of teaching efficiency, as found in the study, were knowledge of the subject matter, sincerity in teaching, mastery of the method of teaching, academic qualifications, mode of exposition, sympathetic attitude towards students, discipline, students participation, proper use of aids and appliances in teaching, and the art of questioning. Analysis of
data gathered through questionnaires revealed that professional training, intelligence, interest in teaching, friendliness, democratic behaviour, ability to judge reactions of others, and possession of all round information were related to teaching efficiency. The findings through actual classroom observations revealed that age, experience, academic achievement and professional training were significantly related to teaching efficiency. It was finally concluded that age, experience, academic achievement and professional training were the significant determinates of teaching efficiency.

Finn (1972) has found that an individual will be able to achieve better if he can perform to the level of his own expectations as well as the expectations of the teacher. Aspy (1972) found teachers' knowledge of learning theory not related their classroom performance.

Dave P.N. and Anand C.L. (1973) conducted a study on validity the hierarchy of Educational objectives and relating it to the medium of instruction of Adolescents of Mysore state. The investigation was undertaken to test following hypotheses (i) difference will exit among the level of learning identified as knowledge (K) understanding (U) and application (A) (ii) the level K, U and A, would not be independent of each other but form a cumulative hierarchy and (iii) differences will exit between the attainment levels of student taught though the medium of the mother tongue and the other tongue. The findings were as follows. The learning outcome, even when not derived through a controlled teaching learning process with specific goals was found to form the hierarchy as envisaged by Bloom: the learning out comes in terms of K, U, and A were different and were found to be hierarchically related.

Rajendra Prasad (1975) studied junior high school Mathematics teachers and found them to be very responsive to students’ questions and statements in the problem solving sessions. The teachers’ positive intention to redirect student thinking to proceed reflectively on the problem solutions has shown better student performances. He found that student performance is a significant factor of teacher responding behaviour in the Mathematics classroom.

Wolf and Engel (1978) underlined the impotence of teacher pupil relationship on the academic achievement of the pupils. Vygotsky L. (1978) in the article “Mind
in society” has shown that students who cannot solve problems on their own can often solve them if they are given temporary supports or “Scaffolds” from another person who is more competent in the particular area. Research studies suggest that the teacher should provide hints, clues, or ask “leading “questions when students need help in solving problems, instead of giving them the answers. Then also suggest that this support should be faced out to foster independent problem solving.

Rajasekhara (1979) observed that one of the drawbacks in Mathematics teaching in rural areas in the wide communication gap between the urban planners of school Mathematics curricula and the conditions prevailing in rural schools and common curriculum designed for urban and rural students without taking into consideration the latter’s environment.

Mathew (1980) made a study of factorial structure of teaching competencies among secondary school teachers they study attempted to identify desirable teaching competencies of the physics process and product variables. The major findings were: 1.14 factors were identified. They interpreted were as general teaching competency, competency of teachers concern for students, competency of using A.V. aids, competency of professional perception, competency of giving assessment, competency of illustrating with examples competency of classroom management, use of questions use of black boards competency of achieving closure and 2. The competency identified through factor analysis related much closed with those expected of teachers by students. Passi and Sharma (1982) study also reveals the same factors.

Cooney (1980, 1981) made a study of how teachers make decisions and observed that “teachers gather and encode information generate alternatives, and select a course of action. The broad categories were identified as a) cognitive decisions relating to content and the selection of teaching method. b) affective decisions relating to inter personal aspects of teaching and c) Managerial decisions relating to time allocation and the overall co-ordination of the classroom environment with in each of these. There are many subcategories. But this conceptualization broadly paralleled that suggested by smith, where in the domains of teacher
performance was initially identified and the specific objectives subsequently emerged from them. Cooney also extended Henderson’s (1963) view of teaching as a three-part relation, made up of sequences of teacher actions, the subject matter and the behaviors of those taught, to include a fourth consideration the setting. This scheme may be a convenient one, but it appears to be over simplified in the light of research in these four areas, when a more complex view emerges.

Mohammad Miyan (1982) examined the effectiveness of methods of the teaching Mathematics found that for the ninth class students guided discovery method yielded remarkable results in promoting creative thinking. In other words, poor teaching led to increasing number of problems for children.

Arul Nirai Selvi (1982) conducted a comparative study of the strategies used in teaching Mathematical concept at primary and secondary levels among 20 teachers using normative surrey method. The objectives of the study were i) to identify the difference in the strategies used in teaching Mathematics concepts the primary and the secondary level and ii) to compare the objectives of teaching concepts in Mathematics with the objectives generated from the strategies used by the teachers and the relevancy and, or the adequacy of the strategies used in teaching Mathematics concepts for the achievement of the objectives of teaching those concepts.

Chitriv (1983) Evaluated differential effectiveness of Ausbel and Bruner strategies for acquisition of concepts in Mathematics. The major findings of the study were that the Ausbel strategy was superior to the traditional strategy for teaching Mathematics concepts to eleventh Grade students, so far as knowledge transfer and heuristic transfer of the concepts were concerned. The Burner strategy was superior to the traditional strategy for teaching mathematical concepts to eleventh grade students, so far as knowledge and heuristic, transfer, short term retention and long term retention of the concepts were concerned. Ausbel and Bruner strategies were equally effective for teaching mathematical concepts to acquire knowledge grade students so far as student’s ability to acquire knowledge of the concepts was concerned.

Indranidevi (1983) has conducted a study titled “An evaluation of the cognitive abilities of prospective secondary school mathematics teachers in the methodology of
teaching Mathematics.” The study arrived at the conclusion that Mathematics education curriculum needs to be strengthened to develop in prospective Mathematics teachers, basic understanding in methodology of teaching Mathematics competencies and skills required of a mathematics Teacher.

In a study on teacher knowledge conducted by Elbaz (1983) identified knowledge of self as an important facet teacher’s practical knowledge. This practical knowledge of self includes teachers awareness of their own values, goals, philosophies, styles, personal characteristics, strength and weaknesses as they relates to teaching.

Yadav and Seshadhari (1984) developed instructional strategy in teaching of Mathematics and found that strategy was effective enough to prepare students to come well up to the expected level.

Chikara (1985) conducted a study on the effectiveness of different strategies of teaching on achievement in Mathematics in relation to intelligence, sex and personality. The major objectives of the study were i) whether achievement in Mathematics was affected by different strategies of teaching. ii) Whether different strategies had different effects on achievement of male and female students He found that all the three strategies, namely a) Lecture discussion b) Inductive drill and c) Auto instruction group discussion were equally effective in terms of achievement in Mathematics disregarding levels of intelligence, sex, and personality type; and boys and girls of superior ability did not show any significant difference between their mean scores on achievement in Mathematics.

Rao (1986) conducted an investigation in to the relative effectiveness of guided discovery and expository approaches of teaching Mathematics. The major findings were: 1) There was no significant difference in achievement in Mathematics when taught by the guided discovery and expository approaches. 2) There was no significant difference in achievement in mathematical concept taught by the guided discovery and expository approaches. 3) There was no significant difference in problem solving when taught by the guided discovery and expository approaches, except in the case of girls where a significant difference was found, and 4) There was
no significant difference in variance in achievement when taught by the guided
discovery and expository approaches.

Dorasami (1986) conducted a research study entitled “Development of
competency based curriculum design for methodology of teaching Mathematics and
its validation”. The main objectives of the study were: 1) to identify the major
weaknesses in the existing methodology course in Mathematics with regard to the
development of competencies, skills and attitudes required of a mathematics teacher.
2) to develop a competency based curriculum design in the methodology of teaching
Mathematics at the secondary level, and 3) to validated the design empirically with
particular reference to A) Cognitive abilities in the methodology of teaching
Mathematics. B) Attitude towards various aspects of training and C) Teaching
performance of student teachers The CBC design found to be superior for developing
a) cognitive competencies in the methodology of teaching Mathematics b) attitude
towards various aspects of training and c) Teaching performance of student teachers.

According to Peterson A.D.C. (1986) the principle of ‘Learning through
practice’ asserts that every piece of Mathematics learnt by the pupil must be put to
immediate use in the solution of a large number of exercises and problems. The
extent, to which this principle is applied, distinctively characterizes Mathematics
textbooks and classroom activity. It is usual for each Mathematics lesson to contain
an item of individual work by the pupils in which they apply the Mathematics they
have been taught to the solution of sequences from the textbook. Teaching of this
kind requires textbooks with a large number of examples, and the most popular
textbooks provide them. This is the reason why there is more number of problems in
the present day textbooks and less emphasis on concept teaching.

Sharma K.K. and R. Bhattacharya (1987) Conducted a study on Effect of
additive model of integrating skills on the teaching competence of student teachers.
The major findings of the study were: Significant difference was found between the
experimental and control groups on gains scores on both the group. All the
comparisons between groups on all the four groups yielded significant difference the
value of the experimental intervention it is contended is established and the model of integrating skills on the teaching competence of students teach were established.

Prasad S. (1990) made an indepth study of the programme. The findings were: 1) the awareness with regard to the major thrusts and concerns of the theoretical perspectives of the NPE, the specific objectives of PMOST and its implementation, was reflected favorably in both elementary and secondary teachers. However the awareness was more among the female teachers than male counterparts; 2) The teachers had also conceived their role as an implementer of the policy; their emerging role as a facilitator, a guide and co-partner in learning activates, and their professional, Social and leadership role as a teacher; 3) They considered professional growth and improvement in their teaching- learning strategies as a major out come and 4) They felt that all instructional modules were useful, but the activity and curriculum based modules were rather more useful to them.

Krishnan N.J. (1990) has found that there is no significant relationship between identification of problems solving strategies (IPSS) and either applications of problem solving strategies (APPSS) or achievement of problem solving Mathematics (APSM), though the last two are significantly correlated. The essential problem in school Mathematics is how to teach problem-solving strategies to students so that they may become efficient problem-solvers.

Shankara Narayanan B.L. (1990) has found that guided discovery learning is always better than learning under reception conditions. However, the students of high intelligence perform better and the students with anxiety perform worse under both systems. The first order interaction between the method of instruction and level of intelligence is found to be significant, but the corresponding interaction between the method of instruction between the method of instruction and anxiety is not found to be significant.

Akpe C.S. (1991) conducted a study titled “choice of teaching subjects in pre service teacher education in Nigeria.” In this study students choice of teaching subjects in their year programme seems to be influenced by their level of performance in the chosen subjects during the first two years programme. It revels the significance
of inter relationship between students attitude towards teaching a particular subject and their performance in that subject which is here the investigator trying to find out.

Sarma H.N. (1991) found that while all the head masters were trained, 75% of assistant teachers had undergone Normal / Basic training. However, 53% of the assistant teachers did not apply the training methods taught in the actual teaching learning situation. The same team, through their 1992 study reported that at the middle level, less than 50% had either long or short term training and only 33% had undergone a special orientation programme under the NPE1986. Here again, about 50% of the trained teachers did not apply their training methodologies in class. The reasons afford were want of time want of teaching aids tight syllabus and training not applicable in regular class situation.

Nalayani (1991) has examined the effectiveness of using number games to teach arithmetic. In eight of the comparisons made, five have shown significant improvement due to supplementary use of number games. Such a study should be conducted particularly for children from backward classes, first-generation learners and others who otherwise show lack of interest in Mathematics. It will be worthwhile to find out whether number games can lead to increase in interest in Mathematics.

Vani R.H. (1992) conducted research on “A study to identify the essential competencies in teaching Mathematics as perceived by secondary teachers” The objectives of the study were: 1. to identify the competencies essential to teach Mathematics as perceived by school teachers teaching Mathematics; 2. to analyze and clarify the preferences of teachers under three domains viz., cognitive, affective, and psychomotor and 3. to study the core competencies of teachers in teaching Mathematics. The major findings of the study were: 1. There at least 9 essential competencies found among the secondary school Mathematics teachers; 2. at least 21.4% of total competencies are essential and 3. only one competency as been identified as essential under the effective domain.

Gaikwad (1993) investigated the effect of mastery over the theory and planning skills on B.Ed. teacher trainees’ classroom teaching and his pupil’s achievement. Anne Meredith (1993) attempted to investigate following with respect to student
teachers view. 1. How do students views of pedagogical content knowledge relate to teaching. 2. What and how do students teach in the content of different forms of training? 3. Results showed, most of the students have positive attitude towards pedagogical content knowledge.

Norman G. Lenderman, Julie Gess Newsame and Marks Latz (1994) “The nature and development of pre service teachers conceptions of subject matter and pedagogy”. The purpose of study was: 1. to assess the development and changes in pre service science teachers “subject matter and pedagogy knowledge structure as they proceed through professional teacher education programme; 2. what is the relationship between these knowledge structure and how do they relate to the act of teaching. The major findings of the study were: 1. The pre-service teachers began to structure their subject matter knowledge in terms of how it should be taught. The act of teaching and thinking about how one-will teach subject matters appears to have had a significant influence on the way that subject matter conceptualized. 2. Pedagogy structure were also seen to shift towards a focus on student concerns at the same time the pre service teachers were actively involved in the planning and implementation off lessons

Shivaprasanna T.D. (1993) conducted research on “A study of problems of Mathematics teachers in Bangalore City in teaching Mathematics at secondary level”. The major findings of the study were: 1. Three main areas of the problems of teachers are personal, administrative and student related; 2. Understanding Mathematics depends upon the ability of learners and the time taken to teach; 3. Sufficient drill work is necessary and good coverage of content for the examination is necessary; 4. Workload of Mathematics teachers must be reduces; 5. Special classrooms with audio- visual facilities are to be provided and 5. Last periods to be avoided for teaching Mathematics in the secondary schools.

Teresa M. Medevit et al. (1995) conducted a study to evaluate prospective elementary teachers understanding science and Mathematics in a model pre-service programme. Two cohorts of students preparing to become elementary teachers participated in model programme in science and Mathematics. These students
compared were to other students taking similar course on their conceptual understanding of science and Mathematics their investigative proficiencies and their beliefs about effective methods of teaching these subjects.

Singal and Sharma (1996) examined the effect of training teachers in achieving subject specific competencies in primary classes on their self-efficacy and competence.

Kumar, Surrender and Susumu, Harizuka (1996) Meta cognition and achievement through cooperative learning. Major findings of the study were: 1. It was found that there was significant difference between the experimental and control groups scores at pre-test and posttest stages; 2. It was found that there was positive interaction between the groups for the performance (achievement) of the students. Mean of the achievement scores control group and experimental group at pre-test stage were not significantly different; 3. It was found that mean learning awareness scores of students differed significantly between the experimental and control groups at pre-test and test stages, and 4. It was found that the effectiveness of cooperative learning based approach in the improvement of meta-cognitive knowledge of the students was more than that of the conventional approach of teaching –learning.

Verma, Pushpa and Chapra S. (1996) conducted a study on the application of pedagogical knowledge and skills acquired during the teacher training. School teaching by primary school teachers of mathematics in studies on classroom processes and school effectiveness at primary stage (NCERT) The major findings of the study were: 1. Teachers had sufficient knowledge of subject matter and they did make an initial preparation for the course in advance; 2. Teachers tended to use predominantly one or two teaching techniques namely, illustrations and problem skills; 3. Most of the homework given by the teachers originated from the assigned test book and was checked by teachers and 4. Majority of the teachers were found having higher professional qualifications than required which led to the difficulties of handling all subjects by a single teacher.

Santhamma Raju and Sri Prakash (1996) conducted a study on “Mathematical aptitude in relation to socio – familial variables “to find out the relationship between
nine socio-familial variables and Mathematical aptitude of secondary school pupils. The results show that out of the nine variables considered, except the family environment index, other variables have marked a slight relationship with the Mathematical aptitude. There is no difference based on gender (except for family acceptance of education), locale (rural – burn) and caste (forward and backward) in the relationship between socio-familial variables and Mathematical aptitude. However, there exists a significant difference in the mean socio-familial variables except family environment, high-average and low – Mathematical aptitude.

Mehata (1997) studied effectiveness of MLLS based training programme conducted by DIET Baroda in Baroda district. Majority of teachers opined that training was effective.

Basavayya D and Patnaik S.P. (1997) Conducted a study on the Effect of training of primary teachers in the child centered approach on the student’s attainment of MLL competencies in Mathematics. The main objectives of the study were: 1. to identify the difficulties of students in learning Mathematics in class I; 2. identify teachers’ problems in teaching Mathematics in class I; 3. measure the groups between the attainments of MLL competencies of different student groups; 4. develop relevant training package containing child centered activity based teaching strategies to teach Mathematics in class I. and 5. To evaluate the effectiveness of the package. Fifteen sample schools from six modals of the D.P.E.P district Kurnool in A.P. were selected to collect the required information. Keeping in view the SC/ST population Low/high enrolment, low enrolment of girls, two-stage cluster sampling procedure was used. Information was obtained from 201 selected students who had just completed class I and 15 teachers teaching Mathematics in class I. Difficult competencies were identified with the help of diagnostic test based on MLLs of class I. Problems faced by the teachers were identified using teachers questionnaires and through personal interaction. The obtained information was analyzed using mean, SD and ‘t’ test/CR significant difference was found between the attainment of boys and girls monograde and multigrade, rural and urban students. It was also found that in only four out of twenty-four competencies the students attained mastery level. The teachers expressed
difficulties were not aware as to how to equal the attainment of competencies in Mathematics and to take necessary remedial measure for weaker students. Based on the findings, a training package containing child-centered activity based teaching strategies was prepared and evaluated for its effectiveness through class I students’ achievement. It was found if the teachers were trained through DIET, as indicated in the package, they would be able to bring qualitative improvement in achievement in Mathematics.

Lakshminarayana (1997) studied to know the impact of Andhra Pradesh Project Primary Education Project in-service training on teacher empowerment with special reference to professional skills of primary teachers. Manjula P. Rao and G. Viswanathappa (1998) conducted a study on “Teacher competencies and learners achievement in the tribal areas of Karnataka state. The study reveals that the majority of the teachers were found to be low competent in EVS-1 (66.5 %).

Arora G.L., Raj Rani, Saroj Pandey (2000) studied the “Training needs of primary school teachers” concluded that inadequate knowledge of teachers in the content and pedagogy of Mathematics made it difficult to transact the curriculum in classroom situation, and most of the schools lacked basic infrastructure facilities like chalk room, chalk and duster, toilets for girls and drinking water etc.

An attempt was made by Hukum Singh (2000) in his study “Status Mathematics Education – Suggestions for improvement” to analyze the problems and highlight the present trends in Mathematics education and then to suggest measures for its improvement. He observed that lack of real meaning, motivation and purpose cause widespread dislike among the students for the subject. He also emphasized that Mathematics education is under tremendous pressure due to the explosion of knowledge represented by 1. the change in Mathematics; 2. the change in computer; 3. the change in the breadth and depth of applications of Mathematics; 4. the change in the psychology of learning and, 5. the change in education technology.

Siva Kumar R. (2001) conducted a research on the “Awareness and practice of Innovative teaching methods by primary school teachers” and he came to conclude that no significant difference between men and women teachers in innovative
teaching methods in primary schools this shows that there is no gender difference regarding the innovative teaching methods in primary schools, which is a welcome trend.

Vadivambal G.N. (2001) conducted a study on “Remedial teaching in the Achievement of Standard II mathematics competency”. The major findings of the study were: All the students showed improvement in their performance. The use of graded, Activity- Based learning involving songs, games, individual activities and group activities had considerably improved the competency of class II and III standard students to do addition of two digit numbers.

Mallareddy B. (2005) conducted a study on “Assessment of Prospective Primary Teachers Teaching Competency in Mathematics.” The major findings of the study were 1) There is a significant difference between male and female attitude student teachers towards teaching mathematics; 2) There is no significant difference in attitude of student teachers of different age group; 3) There is no significant difference in attitude of student teachers of various educational qualifications; 4) There is no significant difference in attitude towards teaching mathematics among their educational background; 5) There is no significant difference between male and female student teachers achievement test in methodology of teaching mathematics; 6) There is no significant difference in methodology of teaching mathematics between student teacher of various groups. 7) There is no significant difference between student teachers of various educational qualifications in achievement in methodology of teaching mathematics; 8) There is no significant difference among the student teachers of based on their educational qualifications in achievement in methodology teaching mathematics; 9) There is no significant difference between male female student teachers in teaching competency in mathematics; 10) There is no significant difference between student teachers of different age groups in their teaching competency in mathematics. 11) There is no significant difference between student teachers of various educational qualifications in teaching competency in mathematics; 12) There is no significant difference among the student teachers various optional subjects in teaching competency in mathematics; 13) There is no significant
difference between Attitude and Achievement in teaching mathematics; 14) There is a significant difference between achievement and teaching competency in teaching mathematics and 15) There is a significant difference between Attitude and teaching competency in teaching mathematics.

2.3 STUDIES RELATED TO TEACHER CLASSROOM PERFORMANCE AND STUDENTS ACHIEVEMENT

Prasad (1970) evaluated the professional efficiency of primary school teachers from three angles. Efficiency in classroom teaching, efficiency in organizing co-curricular activities and efficiency in organizing activities related to school community relationship.

Desai and Trivedi (1972) tried to relate the training of teachers in achievement motivation to the pupil academic achievement. Jangaria (1972) made an attempt to investigate the relationship among the classroom behavior training, teacher behavior and pupil adjustment, after having controlled the effect of fourteen teacher factors such as sex, initial teaching ability, halo effect maturation etc. Lulla (1974) conducted an investigation into the effects of Teacher’s classroom Behavior on pupils Achievement. The study revealed that the pupils who were taught by the teachers trained in using indirect behavior scored higher as compared to their counter parts studying under the teachers who were not provided and training. It was also implied that the indirect teacher behavior may raise the interaction potential of the classroom climate resulting in free communication and open interaction between the teacher and the group of pupils. It was found that such an atmosphere not only stimulated the learner in learning but also provided a congenital climate to the teacher for conducting his teaching.

Mehta (1974) made an enquiring into the relationship between teacher’s classroom communication pattern and certain perceptual factors the major findings of the study were as follows. 1) There was no relationship between the age of the teachers and their communication pattern in classrooms. And similar results found between the sex of the teachers and TRR (Teachers Response Ratio) ii) Significant relationship was observed between the qualification of teachers and TQR (Teacher
Question Ratio) was observed between the qualification of teachers and TQR (Teacher Question Ratio). iii) No relationship was found between the regency of training and teaching experience with the teachers classroom communication pattern. iv) the teachers teaching in boys school differed significantly from the teachers of the other two types of school on TRR. v) the male teachers were not found to differ from the female teachers significantly regarding i/d, I/D, and TQR. vi) The male teachers differed significantly from female teachers regarding TRR. vii) as regards i/d, I/D and TRR, the post graduate teachers did not differ significantly from the graduate teachers on TQR. viii) Teachers having history at the graduate levels as well as at professional level did not have history at both the levels in their communication pattern in actual classroom situation. ix) There was no relationship between the teachers instructional goals perception i/d, TRR and TQR. x) Negative relationship was found to exit between teachers instructional goals perception I/D xi) Teachers perception of student was not found to have relationship with their communication pattern in the classroom. xii) The multiple correlation coefficient was found to be significant in the case of I/D, T/S (Teacher/Student) TT (teacher talk) and ST (student talk).

Masin (1976) checks listed the teacher behavior to relate if to the hierarchical learning out comes in biology. Malhotra (1976) investigated the interaction among teacher attitude and adjustment, teacher behavior and students linking for teachers. Maheswari (1976), studied the classroom verbal interaction pattern of effective and ineffective teachers and found that effective teachers involved more creative teaching models. Raijiwala (1976) conducted a study to investigate the effect of training in modifying the teacher behavior (indirect) and its subsequent effect on pupil’s adjustment in general and specific to teacher school, peer or father as well as achievement in science. Roka (1976) conducted a study to ascertain whether different types of training in selective verbal behavior patterns helped modify teacher behavior and whether these patterns were related to hierarchical pupil achievement at the levels of knowledge understanding and application in general science. Desai (1977) conducted a study an changing teacher behaviour in the teaching of mother tongue and studying its effects on pupils. The major findings of the study were i) Training in
FIACS modified teachers indirect behaviour positively 

ii) The training and feed back given to the experimental group of teacher affected the academic achievement of the pupils in mother tongue positively 

iii) the training and feed back affected pupils classrooms trust, peer, and teacher also positively.

Roy (1977) investigated the effect of the three styles of classroom questioning on the hierarchical pupil achievement. Doyle (1977) defined successful teachers are those who maintained high levels of student work involvement and low levels of disruptions in their classrooms. Dasgupta (1977) studied that organization of teaching process and out of school activities have an impact on the efficiency of the teacher. Pillai (1978) investigated the relationship between the patterns of teaching and creative thinking. Raghavakumari (1978) investigated teacher’s attitude and perception and pupil perception. Exemmal (1980) made a comparative study of various models in the teaching biology. Naidu (1980) and Tareen (1980) also studied such a triangular relationship among teacher training teacher behavior or teacher competence and pupil academic achievement. Mathew (1980) found that factor analysis resulted in 12 factors which influenced competency of teachers concern for students, using audio- visual aids, professional perception giving assignments, introducing logical exposition classroom management, use of questions, initiating pupil participation, use of black board, achieving a closure and recognizing attending behavior of students. The effectiveness of teacher education was assessed by comparing the professional efficiency between the trained and untrained teachers (Sinha 1980; Vyas1991)

Kirkire P.L. (1981) made an attempt to Analysing the impact of objective based lesson plans on the classroom verbal interaction Behavior of teachers and on the pupils achievement in Mathematics major findings: 1. There was no significance; effect of assignments on the pupils achievement; 2. Teaching with the help of objective based lesson plans did not significantly affect the mean gain achievement; 3. The manner in which the instructional material was used affected the classroom climate; 4. Indirect teacher’s behavior did not help in increasing the achievement level; 5. The settings up of systematic objectives yielded better results; 6. The
teacher’s behavior was a stronger function of teachers and the teaching method than that of class groups, and 7. The responsive behavior of teachers was independent of differences between the teachers as well as differences between the classes.

Shah (1981) conducted a study to relate same selected teaching strategies to academic achievement and creative thinking in science. Sundhralakshmi (1981) made an effort to study the effect of instruction strategies on both the classroom climate and pupil attainment. Das, Passi, Jangira and Singh (1982) have conducted a study on effectiveness of different strategies of interaction of teaching skills in developing general teaching competence of student teachers. Nickerson R.S., Perkins D.N. and Smith E.E. (1985) in their study “The teaching of thinking “involved teaching a group of students to plan their problem solving in preparation for an exam they were going to take. Another group of students studied as they normally did for the exam. Students who were in the planning group performed better than those who used their traditional study methods, even though this group reported spending more time in studying than did the students in the planning group. Hence, the study suggests that students need time to practice planning their solutions to problems. Related work on teachers routines is teachers’ general knowledge of lesson of structure, which includes the knowledge necessary to plan and teach lesson, to make smooth transitions between different components of a lesson and to present clear explanations of content (Lein Hardt and Smith 1985).

Suthar J.N. (1987) conducted a study on “An investigation into the effect of caste and sex of the primary school teachers upon the pupils achievement. The major findings of the study were: 1. The non backward class teachers were more effective than the backward class teachers. 2. The male teachers were more effective than the female teachers. 3. The more experienced teachers were found more effective than the less experienced teachers. 4. The teachers of grade VI were found to be more effective than the teachers for grades V and VII for high effectiveness scores. The teachers for grade VII to be more effective than teachers for grades V and VI for low effectiveness. 5. Out of 18 interactions, only one turned out to be significant at 0.05 levels in first order interactions and it was caste X experience. The second order and
third order interactions were not significant. This was for high effectiveness scores. 6. For low effectiveness scores, out of 18 interactions not a single one turned out to be significant. 7. The caste of the teacher was not a factor that influenced responsibility of the teacher. 8. Sex of the teacher was not a factor that influenced the responsibility of the teacher. 9. The grade of the teachers in which they were teaching affected their responsibility. For high responsibility scores it was found that the teachers of the fifth grade were more responsible than the teachers of sixth grade and the teachers of the sixth grade were more responsible than the teachers of the seventh grade. 10. Out of 18 interactions, two turned out to be significant at 0.01 level in first order interactions and in second order interactions two turned out to be significant at 0.01 level the third order interactions were not significant. The interactions that were significant were sex X grade, caste X experience, caste X sex experience, and sex X experience X grade. 11. The caste of the teachers did not have any effect on pupils’ achievement. 12. Male teachers were found to be more effective than female teachers. 13. The responsibility of the teachers had no effect on pupils’ achievement. 14. The pupils studying under high effective teachers had achieved more than pupils studying under low effective teachers. The grade of the teachers had no significant effect on pupils’ achievement scores.

Naik (1989) studied on teaching effectiveness and teacher attitude. Panda (1990) studied the impact of some curricular strategies on certain cognitive and non-cognitive traits of the learners. Velmani (1990) found out effects of teachers’ classroom interaction patterns of pupils’ creativity and academic achievement. Kulkarni (1991) had studied the use of drama in improving the teaching learning process. Some of the major findings of the study were: 1. Out of the 80 measures of performance, on 14 performances, the discrepancy was severe, on 48 performances, the discrepancy was severe, on 48 it was moderate, and whereas on the remaining 18 performance measures the discrepancy was low; 2. The extent of discrepancy was more in most expected and expected performances, whereas it was low in less expected performances; 3. There was no significant difference between the performance discrepancy of female and science teachers, urban and rural teachers in
relation to most of the measures of performance of teachers and 4. It was found that the discrepancy in performance affects the achievement of students, higher the discrepancy, lower would be the achievement.

Raju P.V.S.N. (1994) found that planning, presentation of lesson, closing, evolution and managerial dimensions are the best predictors of teachers’ teaching competency. Verma and Chabra (1996) studied the extent to which the primary school mathematics teachers employ the competencies, knowledge and skills acquired during teacher education programmes in actual school situations in teaching of mathematics. Gupta (1996) assessed teachers performance on Mathematics and languages and identified areas of deficiencies in these subject. The study revealed that teachers had trouble in solving problems. Pradhan and Mistry (1996) studied the teaching learning process in primary schools and the nature of teacher- student interactions, which are responsible for good and poor results. Dutta (1998) attempted to study into modification of teaching behaviour of upper primary science teachers through verbal interaction analysis feedback and its effect on scholastic achievement of pupils of class VII in Delhi schools.

Sperry, Shannon Kelly (1999) in their study of “The effects of three professional development methods on pre-school teachers use of classroom management skills and the social behavior of at-risk pre-school children, results showed coaching teachers was an effective method for increasing teacher use of classroom management strategies with pre-school children. In addition increased teacher use of was related classroom management strategies was related to positive changes in the social play behavior of pre-school children at-risk for peer rejection. Surendranath Babu (1999) studied the influence of certain Psycho- social variables on teacher competency and has found that primary school teachers of DPEP districts better motivated than the Non – DPEP were counter parts. Teacher motivation, age of teachers, teacher attitude and teacher adjustment factors influence the teaching competency of primary teachers on the DPEP districts. Bhattacharya (2000) studied relationship between intrinsic motivation and teaching competence at primary level.
Luo, Jiali (2000) in the study of graduate teaching assistants perception of their instructional roles and classroom management, found that, 1. Graduate teaching Assistants (GTAs) to the nature of courses, course materials and student needs; 2. GTAs experienced problems in their classroom instruction, such as lack of commitment and disagreement on the part of students; 3. When handling classroom problems U.S. GTAs focused more on communication skills, whereas international GTAs emphasized prevention and understanding students. 4. U.S. GTAs tended to enhance classroom communication by the proficient use of the language and the criterion of interactive classroom via group work and role playing. In contrast international GTAs were likely to use handouts visual aids, computer solutions and print-outs and 4. GTAs relied on their supervisions for guidance in course coverage, potential problems and instructional expectations.

Harilal (2001) had undertaken a study of the teaching competencies and student achievement in science of standard V. The findings of the study were: 1) there is a difference in the mean of the competencies of teachers belonging to state (mean = 22.5) and CBSE (unaided) schools (mean = 20.3). 2) The mean of the total competencies of the teachers in the state and unaided schools found to be 58.92 and 64.26 respectively. 3) The mean of the achievement of students in Government and aided school (mean= 12.53) and that in the Private Unaided Schools (mean= 12.51) did not show much difference. 4) the achievement mean of boys (12.84) is found to be greater than that of girls in the Government schools (12.26); 5) The female teachers in both CBSE (mean = 57.5) and state schools (mean = 57.56) have no difference in their pedagogical competencies; 6) There exists some difference in the mean of the total competency of male(mean = 21.85) and female teachers (mean = 22); 7) there is no significant difference in the achievement of students in the state and CBSE schools in Science 8) there is no significant difference in the achievement of boys and girls in Science of standard V; 9) There exists appositive correlation between the teacher competencies and student achievement in Government schools and Private schools; 10) Demographic variables like age and sex affect the teacher competency; 11) Teacher competency is higher in those teachers coming under the
range 1-5 years; 12) It is also found that the competency of teaching Science in standard V is greater for teachers who have low experience up to 5 years and lower for teachers who have more experience of 20-25 years; 13) Teachers whose qualification is B.Sc., B.Ed., have high correlation with their teaching; 14) Teachers whose qualification is B.A., B.Ed., have a very low correlation with the teaching competencies in Science; 15) It is also found that those teachers who have undergone in- service training programmes establish a high correlation with the competencies.

Sabu S. (2005) conducted a study on “Influence of Behavioural Problems, Attitude, Stress and Adjustment of Secondary School Teachers on their Teaching Competence”. The study reveals that ‘teaching competence’ depends up on age, experience behavioral problems, stress and adjustment. Among these, the behavioral problems and the age affect the teaching competence inversely, where as the ‘experience’ and ‘stress’ affects the teaching competence positively. The study also revels that the teacher adjustment is a factor which significantly affects the teaching competence.

Umer Farooque S.L.P. (2005) conducted a study on “English Language Competency of Teachers and Students’ achievement in English Medium Primary Schools of Kannur District”. The Study reveals that: 1) There is no significant relationship between English language proficiency of teachers and learners’ achievement in EVS; 2) There is a significant relationship between English language proficiency of teachers and learners’ achievement in English; 3) There is a significant relationship between English language proficiency of teachers and learners’ achievement in Mathematics and 4) There is a significant relationship between English language proficiency of teachers and overall achievement of students.

Raju B. (2005) conducted a study on “A Comparative Study of the Teaching Competency of D.Ed. and B.Ed. Trained teachers working in Primary School of Andhra Pradesh”. The major findings of the study were: 1) There is no significant difference in Cognitive based competency between urban and rural primary teachers. 2) There is no significant difference in Performance based competency between urban and rural primary teachers. 3) There is no significant difference in consequence based
competency between urban and rural primary teachers. 4) There is no significant
difference in an affective based competency between urban and rural primary
teachers. 5) There is no significant difference in an overall teaching competency
between urban and rural primary teachers. 6) There is no significant difference in
teacher competency such as cognitive based, affective based and consequence based
competency between male and female primary teachers. 7) There is no significant
difference in an overall teacher competency between male and female primary
teachers. 8) There is no significant difference in teacher competency such as cognitive
based, affective based and consequence based competency between young and old
primary teachers. 9) There is no significant difference in an overall teacher competency between young and old primary teachers. 10) There is no significant
difference in teacher competency such as cognitive based, affective based and consequence based competency between multigrade and monograde primary teachers.
11) There is no significant difference in an overall teacher competency between multigrade and monograde primary teachers and 12) There is no significant difference in teacher competency such as cognitive based, affective based and consequence based competency with respect to experience.

2.4 REVIEW RELATED TO ATTITUDE TOWARDS TEACHING PROFESSION

NCERT (1971) conducted a study of reactions of teachers towards teaching profession. The major findings of the study were: (1) the attitudes of teachers differed significantly under different managements; (2) the tenure of service did not affect the attitude of teachers; (3) the attitudes of male and female teachers differed significantly; (4) Marital status did not influence the attitude of teachers towards the profession; (5) Younger teachers showed more positive attitude towards profession than old teachers; (6) Experience and positive attitude were inversely proportionate; (7) Teachers with lower educational qualifications were having more positive attitude towards the profession than the teachers with higher educational qualifications; (8) The attitude of trained and untrained teachers did not differ significantly on
negative items, and (9) Training appeared to be a contributing factor in the development of apparent positive attitudes.

Samantary (1971) found that a positive relationship between teacher attitude and teaching efficiency indicating superior efficiency goes with favorable attitude. Quraishi Z.M. (1972) conducted a study on “Personality, Attitudes and Classroom Behaviour of Teachers”. The study revealed the following: 1) Teacher Verbal behavior in the classroom was related in small measure to their personality and attitudes. 2) Teachers’ attitude towards democratic classroom procedures correlated significantly with ID and id ratios. The coefficient of correlation with ID ratio was 0.15 and with id ratio 0.17. 3) The correlation coefficient of reflective trait with ID ratio was 0.16. 4) Sociable trait was significantly related to student initiation. The correlation between the two variables was 0.15. 5) Reflective trait and attitude towards democratic classroom procedures were found to be the best predictors of ID ratio, which was predicted to the extent of four percent. 6) In the prediction of ID ratio, attitude towards democratic classroom procedures, reflective trait, attitude towards management and sociable trait were found to be the best predictors. They predicted id ratio to the extent of eight percent. 7) Teacher behavior of accepting students’ ideas could not be predicted significantly by any of the predictor variable. 8) Sociable trait was found to be the best predictor of student initiation. It predicted student initiation to the extent of 2.25 present. 9) TS ratio could not be predicted significantly by any of the fifteen-predictor variables. 10) Direct and indirect teachers did not differ significantly from each other on the seven personality traits, implying that personality does not affect teacher behaviour.

Verma O.P. (1973) conducted a study on “Teacher attitude towards teaching profession, students achievement and leadership style”. The major findings of the study were: the teachers working under democratic principles showed the most positive attitude towards teaching profession whereas the teachers working under lassoer faire principles exhibited the least favourable attitude the teachers working under authoritarian principles displayed an inter mediary level of favourable attitude; the students studying in the school headed by authoritarian principal scored the
highest marks, under less faire principle, obtained the lowest marks and under
democratic principals they occupied an intermediary position. Chaya (1974) found
that effective teachers in comparison to ineffective teachers possess more favorable
attitude towards teaching than males.

Lokesh Koul (1974) conducted a study to identify the personality factors of
teachers which correlate significantly with their attitude towards teaching in schools. It
was found that the teachers having favorable attitude towards teaching seem to be on
an average more, out going and more venture some than the teachers having
unfavorable attitude towards teaching and social work, the ‘16PF’ test brings out that
teacher with unfavorable attitude towards teaching tend to be emotionally expressive,
ready to co-operate, worm hearted, adaptable socially bold. Ready to try new things,
spontaneous, generous and abundant in emotional responses, the attitude of school
teachers are the result of the interaction of numerous factors, including academic and
social intelligence, general knowledge social skills teaching techniques etc., and the
“attitude” may be afford a key to the predication of the type of social atmosphere a
teacher will maintain in the classroom. Naidu (1974) observed that all teachers had
favorable attitude towards teaching but the females had a more favorable attitude
towards teaching than males.

Singh H.L. (1974) found that the teachers were having favorable attitude
towards child-centered practice and educational process were more favorable than their
attitude towards teaching. He further found that there was no difference in the
attitude of teachers due to difference in age: and male female teachers differ in their
attitude. Arora (1975) after comparing effectives and ineffective teachers concluded
that effective teachers had favorable attitude towards teaching, teacher-pupil
relationship, students’ democratic practices and modern methods of teaching.
Saran S.A. (1975) found that 1) the attitude of teachers towards the teaching
profession was positive, 2) inters was positively related with attitude towards the
teaching profession 3) adjustment and attitudes were not directly related to each other.
4) Attitudes towards teaching profession were not positively related to experience in
the teaching profession.
Srivastava S.K. (1977) found that the primary school teacher had a positive attitude towards their profession in his study. Sukhal K.D. (1977) in his study found that majority of the teachers favored the provision: the higher the age the greater was the increase in the degree of favorableness’ in attitudes towards the profession experience played a great role in the development of favorable profession attitudes, qualification wise there was an increase in the favorable attitude towards the profession with the increase in qualifications; and trained teachers were found to have more favorable attitude towards teaching than the untrained teachers.

Kushwaha (1979) made an investigation into the attitudes and role perceptions of secondary teachers the findings of the study were: 1) Teacher’s quality was inversely related to the referrer role. 2) Teachers quality point was inversely related to the disciplinarian role. 3) There was no relationship between teaching experience and the motion role. 4) There was no discrimination between teachers with high or low experience in their perception of the counselor role. 5) Teachers attitude was inversely related to the advisor role, referrer role motivator role and disciplinarian role. 6) The high quality point group choose the referrer role more of ten and more consistently and the medium quality point group. 7) The quality point did not seem to affect the teacher’s perception of their role. 8) The high, medium and low experience groups of teacher’s did not mutually differ from one another in their perception of any teaching experience was not a factor influencing the teachers role perception. 9) There was no significant differences among the high, medium and low attitude groups on the roles of the motivator and the counselor 10) The male teachers were better than the female teachers on advisor and disciplinarian roles. The female teachers were better than the male teachers on the motivator and counselor roles 11) Science teachers were superior to arts teachers in respect of referrer, motivator and disciplinarian roles. Both arts and science teachers were the same in respect of advisor and counselor roles.

Bhandarkare B.G. (1980) found that the attitudes towards teaching profession was not significantly related to the qualifications of the teachers, there was a significant and positive relationship between the age of the teachers and their attitude
towards the teaching profession. Govindaiah R. (1980) studied professional attitude of prospective primary school teachers found that 83% of the respondents had favorable attitude towards teaching as a profession. Further it is found that women teachers had better attitude towards professional growth than men teachers. Mann (1980) Observed significant differences between more successful and less successful teachers in their attitudes towards the profession and its allied aspects. Reddy V.C. (1980) Studied an investigation into the teacher effectiveness and attitude towards teaching of secondary school teachers and found that economic standard positively influenced the effectiveness of a teacher and experience was an influencing factor in a teachers’ effectiveness of a teacher and experience was an influencing factor in a teachers, effectiveness.

Morris (1981) teachers are important students to develop positive attitude towards the subject. Students’ of their Mathematics teachers towards them as learners of Mathematics relate strongly to students anxiety’. Gopi (1981) conducted a study to find out the relationship between academic achievement and attitude towards teaching among teacher trainees in the L.T. Courses. It was revealed that there was no relationship between academic achievement and attitude towards teaching among the teacher trainees. Blackwell and Tommie Ruth Boroughs (1982) studied the attitude change of pre –professional in the teacher educational programmer before and after the early filed experience had a positive impact on attitudes of the teacher trainees. They felt more positive attitudes towards pupils and teaching.

Gupta Y.K. (1982) conducted an investigation to find out the degree of relationship between the attitude of a teacher towards professional training and his teaching efficiency. It was found that there is a positive relationship between teachers attitude and teaching efficiency. The prediction of teaching efficiency through teachers attitude towards professional training is possible, sex difference is significant in teachers attitudes and the male teachers are better than the female teachers in their attitude towards professional training, art and science teachers do not differ significantly in their attitude towards professional training, there is efficiency and arts and science students do not differ significantly in their achievement.
Widmer and Chavez (1982) found that elementary teachers had generally positive attitude toward teaching Mathematics and that the teachers felt secure in their Mathematics teaching even though they had developed some negative attitude toward Mathematics as students. Rastogi (1983) conducted a study to establish a relationship between attitude and achievement. It was found that attitude towards Mathematics was closely linked with achievement. When command over basic arithmetic skills improved, attitude towards Mathematics became more favourable and achievement in Mathematics improved. Som P. (1984) studied teachers’ personality patterns and their attitudes toward teaching and other related areas. He found that female teachers tend to be higher than males in their attitude toward teaching and teaching profession. Attitude towards teaching as well as the attitude towards the profession correlated significantly with patience, initiative, carefulness, extroversion, and responsibility. Alvi (1986) of Cincinnati University has shown in his study of effects of individualized instruction on achievement and attitude in general Mathematics in the IX grade, that there was no significant difference between the attitude scores of the experimental group and those of the control group.


Anand (1992) observed the total commitment to the teaching profession and enjoying being in it, enhances teachers effectiveness. Teacher’s style of enjoying his job may compensate for the lack of required personality traits and qualifications for his effectiveness at his job. Raju P.V.S.N. (1994) found that there is a significant relationship between teaching competency of teachers and teacher attitude. Krishna Reddy (1995) conducted a study on the attitude towards teaching on the success of student teachers. The study found that attitude towards teaching could not
significantly influence the success of student teachers. The study found that attitude
towards teaching could not significantly influence the success of student teachers.
Venugopal (1995) studied the influence of teacher attitude towards pupils and
expectation from individual pupil on their achievement. Lalit Kumar (1996)
conducted a study entitled “Attitude of primary school teachers towards
Mathematics”. Major findings of the study were: 1) A few primary teachers possess
high favourable attitude towards mathematics. 2) Male teachers are superior in high
attitude group whereas female teacher are superior in low attitude group. They do
after significantly in averages.

Uma Devi and Venkataramiah (1996) attempted to know the effect of age,
qualification experience and place of residence of rural elementary school teachers on
teacher efficiency and attitude. Kishore Bhattacharjee (1997) studied the attitudes of
elementary teachers and found that 70% of teachers favored the teaching profession
and higher education of teachers improved the attitude levels of elementary teachers
towards teaching. Pande and Maikhuri (1999) examined the “attitude towards
teaching profession” of effective and ineffective secondary school teachers of
Garhwal. Bhattacharya (2000) established that intrinsic motivation is essential for
elevating level of teaching competence and improving attitude towards teaching
profession of primary teachers.

Annmalai (2000) measured the attitude of teachers towards teaching by using
Ahuluwalia’s scale. Selvin M., Ano G. Boopalarayan and William B. Dharmaraja
(2000) conducted a study on “Primary Teachers Attitude towards Teaching.” The
major findings of the study were: 1) There was significant difference between the
primary teacher in terms of their sex and the locale of the schools in attitude towards
teaching. 2) There was no significant difference among the primary teachers in terms
of their age, educational qualification and teaching experience in attitude towards
teaching.

Panda (2001) conducted a study on “Attitude towards teaching profession and
job satisfaction of college teachers of Assam and Orissa” found that; 1. A majority of
college teachers of Assam and Orissa have highly favourable or un favourable attitude
towards teaching profession; 2. A significant percentage of college teachers of Assam and Orissa and high or moderate degree of job satisfaction. But more than 40% female experienced, rural and urban college teachers of Assam and male experienced and aided college teachers of Orissa have shown dissatisfaction in their job; 3. College teachers of Assam and Orissa do not differ significantly in their attitude towards teaching profession irrespective of their sex, experience, location and status and 4. There is a significant and positive relationship between attitude towards teaching profession and job satisfaction.

Selwin and Bensom (2004) intended to find out the gender and group differences in self concept, intelligence and attitude towards teaching among D.T.Ed students”. The data were collected from 300 D.T.Ed students of both sex and groups (Arts and Science) and were analyzed using t-test and product moment correlation coefficient. The study revealed that male and female D.T.Ed students do not differ from each other in self concept and attitude towards teaching profession; female students are more intelligent than male students. Subject studied at +2 level had no effect on self concept and attitude towards teaching profession. Science based students are more intelligent than arts students.

2.5 STUDIES RELATED TO STUDENTS ACHIEVEMENT

Some studies were conducted on students academic achievement at Primary Stage.

Rawal S. (1998) has found that in Geometry students fail in understanding and application levels covered by the axioms and their explanations are not based on assumptions made.

Sen Gupta D. (1989) had found that the understanding of axioms in Geometry as self evident truths occurs in the course of growth between the age of 5 to 7 and the order in which children understanding axioms is different from the order which the axioms are given, though different children understand different axioms at different ages.

Buch M.B. and Sudame G.R. (1990) conducted a study on Achievement of Urban primary school children. Sengupta, Debjani (1992) conducted a study on child


Das (1996) focused his study on the effects of instructional strategy using self learning activity sheets on the problem solving behaviour of class III children leading to mastery level performance. Some of the studies were conducted on MLLs in India. Govinda and Varghese (1991) were conducted a study on The Quality of basic Education services in India - a case study of primary schooling in Madhya Pradesh. The study made on assessment of achievement in Mathematics with an intention to develop the competencies under MLLs. Suman Karandikar (1991) conducted a study on MLLs at the Sankar Shikha Samiti. DIET, Bhopal (1991) conducted a project entitled minimum levels learning at primary stage project-2. Similar studies were conducted in different states, Kurien et al. (1991) in Pune. Shailaja Shanbhag (1992) conducted a study entitled “A critical study of the minimum levels of learning in Mathematics at the terminal stage of primary education”.

Kothari (1995) developed a strategy based on MLLs to know the effectiveness over students performance. Few studies were conducted on academic achievement of Secondary School Students. Thakur (1972) had undertaken a study of the scholastic achievement of secondary school pupils in Bihar.

Hart (1978) in England conducted a project to examine the ability of children between 12 and 15 year old in computation of fractions. The study also tested their
ability to solve problems in which the some computations were embedded in real situation.


Few studies were conducted on Gender difference in academic achievement. Fennema and Sherman (1977) studies demonstrated that gender differences in Mathematics achievement were substantially reduced when numbers of Mathematics courses are controlled. The 1980 IEA Survey has studied sex difference in Mathematical attainment (Steiner, 1980) noting in its preparatory work that the relevance of different variables in explaining sex differences from country to country. The assessment performance unit surveys found significant difference in performance in several content categories. The girls did significantly ahead in the measure of length, area volume and capacity as well as in application of number and in rate and in ratio is noticed by APU (1980). Shuard (1981) analyses the difference of performance between boys and girls in a test given by Ward (1979) to 10 year olds in England and Wales.

Carpenter (1983) in reporting the results of the third Mathematics assessment of the national assessment of Educational progress (NAEP), address issues of sex
related differences in Mathematics achievement that males achievement exceeded that of females through at ages 9 and 13 the overall performance of males and females was not significantly different. Fenna and Peterson (1985) explained gender description in Mathematics achievement to high-level cognitive skills in Mathematics. Santosh Sharma (1999) conducted a study on “Influence of gender and Region on the achievement of primary school children”. Pattison and Greve (1984) studied whether sex differences contribute to spatial skills to tackle different types of Mathematical problems.

Some of the studies were conducted to find difficulties faced by the students in solving problems. Researchers constructed and validated The Diagnostic Tests for this purpose. Mehta (1996) constructed a diagnostic test related to the use of four fundamental rules of arithmetic. Patel (1976) developed a Battery of Diagnostic tests in arithmetic for the Gujarati medium students studying in grades V, VI and VII in greater Bombay. Thakur (1980) constructed diagnostic tests on fractions and decimal fractions for students of Grade V. Similar study was conducted by Angel Shailaja (1987) and Prasad Reddy (2004). Remedial teaching which resulted in significant improvement followed all these studies. Sharma (1969) constructed a diagnostic test in algebra for the students of grade VIII of Uttar Pradesh. Ashar (1972) standardized a diagnostic test in basic algebraic skills for the Gujarati medium students of grades VIII, IX, X from greater Bombay. The trend of errors continued to a greater extent in the higher grades VI and VII. A diagnostic test in the skill of using Geometrical Instruments was developed by the SIE, Gujarat (1969). Wagh (1987) constructed a battery of diagnostic tests in fractional numbers in Mathematics for the students studying in VII standard in Marathi medium schools. Goel, Manisha (1996) conducted a study on arithmetic difficulties among primary grade children.

Pendharkar V.Y. (1965), Construction and standardization of achievement tests in arithmetic for V, VI and VII for children studying through Marathi as the medium of Instruction in Greater Bombay. Shashikala S.M. (1985) conducted a research on an investigation in to the learning difficulties in algebraic factorization at VIIIth standard in some selected schools of Bangalore city and try out of a remedial approach.
Researchers conducted some studies to find the academic achievement of students relating with some factors. Kulwant Kaur (1974) had undertaken an investigation of differences existing among over achieving normal achieving and under achieving 10th class students in higher secondary schools.


Few studies were conducted on Backwardness in Mathematics.

Lohithakhan (1961) conducted “An Experimental study of Backwardness of the primary school stage”. Gupta (1972) studied the causes of backwardness in Mathematics and Basic Arithmetic skills found that low achievers in Mathematics had command over basic arithmetic skills. The similar study was conducted by Rastogi S. (1983), Sumangala V. (1995) Paranis H.N., Jnana Prabhaodhini (1978) investigated the causes of backwardness in Mathematics of students from standards V-VIII. Iyer K.K. (1977) found some factors related to under achievement in Mathematics of secondary school students. Somasundaram M. (1980) conducted a study on a comparative study of certain personality variables related to over normal and under
achievement in secondary school Mathematics similar studies were conducted by Chopra (1982) and Singh B. (1986).

Some studies were conducted on feedback. Sastri S.M. (1984) had conducted a study of delay of feedback and retention in rational understanding in Mathematics. Similar studies were conducted by Gogate (1984), Shukla (1995), Roy et al., Saxena et al. (1996) found that the achievement of students is still far from being satisfactory. Ralte L. (1992) in her study of development of primary education reported that the overall performance of candidates in Mizoram, who had appeared in the primary school scholarship examination was not satisfactory in the achievement in Mathematics, English and General Science.

2.6 CONCLUSION

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

It is evident from the review that the studies are conducted either at Secondary school level or higher secondary level. There were no studies on these aspects at primary stage. It is also found that no study is conducted on correlating: 1) Content knowledge of teachers 2) Pedagogical knowledge of teachers 3) Classroom performance of the teachers and 4) Attitude towards teaching mathematics with student’s achievement at primary stage. This is a major research gap. In order to contribute to this gap a study on “Influence of primary School Teachers Competence on Learners Achievement in Mathematics” was undertaken with a major objective is to know the relationship between content competence, pedagogical competence and classroom performance of teachers. The study also made an attempt to know the influence of these on learners achievement at primary level.