CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. INTRODUCTION

This chapter presents a review of the literature consulted for the study. The number of research studies conducted in mathematics education over the past three decades has increased dramatically (Kilpatrick, 1992). The resulting research base spans a broad range of content, grade levels and research methodologies. The results from these studies, together with relevant findings from research in other domains, such as cognitive psychology, are used to identify the successful teaching strategies and practices.

A good deal of research had gone into methods or strategies of teaching mathematics and teacher behaviour. Other areas of research include effective learning that is, understanding mathematics concept as opposed to rote learning; comparative studies in mathematics education across countries, states and districts; diagnostic and other tests in mathematics; curriculum and textbooks; psychological factors affecting achievement in mathematics which are intelligence, level of thinking, sex, concept attainment in mathematics, motivation and reasoning ability, general mental ability, self-concept, attitude towards mathematics, mathematical creativity and so on. School and socio-economic factors which influence student outcomes on mathematics education have also been investigated in research studies.

A review of literature relevant to this study has been given below. Most research works are seen to investigate a set of interrelated factors concerning mathematics education. This provides a basis of support for justifying the choice of topic and the significance of the study in the present study. Problems in mathematics
education are universal. The review thus covers literature that provides an insight into the research studies done in other parts of the world, in our own country and specifically those researches related to mathematics education in the North-eastern part of India.

2.2. STUDIES DONE IN INDIA

Mrinal Sarma and Majidul Ahmed (2014) conducted a study on the difficulty of teaching and learning mathematics in under graduate level with special reference to Guwahati city. Mathematics, the only subject, which is used in every sphere of our lives. However, it can’t be learnt overnight. Understanding and practicing mathematics regularly helps to make a firm base. Though it is a fascinating subject, but a very large fraction of students find the subject creepy. Such problems may crop up as a result of improper guidance in their initial stages. This study is an attempt to study the difficulty areas occurred while learning and teaching mathematics. It is also aspired to bestow a fruitful implication for the development of teaching learning mathematics at the under graduate level.

Pratibha Sharma (2014) conducted a study on role of interactive multimedia for enhancing students' achievement and retention. This study argues about the role of interactive multimedia and conventional direct method of teaching English in relation to student’s achievement and retention. The interactive interface with the student is possible through computer, laptop and palmtop than any other media. The present experimental study compared the effectiveness of interactive multimedia and conventional direct method of teaching English in relation to students’ achievement and retention. Initially 154 students of class VII of aged 12-14 years was selected for the study and two grouped ware formed of 50 students each in controlled group and
Experimental group was taught through the interactive multimedia and control group was through the conventional direct method for teaching English. It is concluded that both the method taken for study are quite effective for teaching the English language to class VII students but however, out of these two methods, interactive multimedia method was found more suitable with respect to the marks achieved by them in English. When students were taught through, both direct conventional method and interactive multimedia method than it was found that the acquired retention was better in case of interactive multimedia method.

Darshna J. Dhimar and Kinnari B. Patel (2013) conducted a comparative study of two instructional methods: computer assisted instruction and conventional method for teaching mathematics in class IX. The biggest drawback of our education system is the traditional method of teaching. To overcome this, some changes in teaching methodology should be brought and by understanding the learning method, steps should be taken to make it speedier. Here is one tip for the same different activity of self learning should be implemented in order to get the students taking interest in study. This study investigated the effectiveness of computer assisted instruction and conventional method on the achievement of secondary school students in mathematics using experimental method. A pre test post test control group design was used 64 students of class IX were selected. These students were equally divided in to two groups by I.Q. test prepared by K.G.Desai. The experimental group was taught through computer assisted instruction and the control group was taught through conventional teaching. To find out the significant difference, t-test was used. The result shows that the effectiveness of the students of the experimental group was significantly higher than the control group. Hence, the effectiveness of teaching of
mathematics through computer assisted instruction was found to be more effective than conventional method.

**Dhevakrishnan S. Devi and Chinnaiyan (2013)** conducted a study on effectiveness of computer assisted instructions (CAI) in teaching of mathematics at secondary level. The present study was aimed at effectiveness of computer assisted instructions (CAI) in teaching of mathematics at secondary level adopted experimental method and observing the difference between (CAI) and traditional method. A sample of sixty (60) students of IX class in VVB Matriculation Higher Secondary School at Elayampalayam, Namakkal district were selected for a sample and sample was divided into two group namely experiment and control group. The experimental group consisted 30 students who were taught ‘Mensuration’ by the computer assisted instructions and the control groups comprising 30 students were taught by the conventional method of teaching. Data analyzed using mean, S.D. and t-test. Findings of the study clearly point out that significant increase in the mean gain scores has been found in the post test scores of the experimental group. Significant differences have been found between the control group and experimental group on post test gain scores. The experiment group, which was taught by the CAI showed better, learning. The conclusion is evident that the CAI is an effective media of instruction for teaching Mathematics at secondary students.

**Banajit Sarmah (2012)** conducted a study on teaching mathematics to the young learner in the modern perspective in India: a case study. Planning practices are necessary requirements for effective instruction. Their importance is illustrated in the guidelines produced by several national organizations such as National Council of Educational Research and Training (NCERT), All India Council of Technical
Education (AICTE). Planning time is considered important by teachers at the grassroots level in order for them to develop thought-provoking lessons that allow students to make connections and form meaning as well as to reflect on previous lessons in order to make improvements for subsequent lessons. Collaborative planning is also considered important; however, it usually occurs with respect to block schedules, inclusion of special education students in the regular classroom, and the middle school model of education. The question exists as to what impact planning practices may have on high school regular education Math classrooms. The purpose of this study is to investigate whether the amount of time a high School Math teacher spends planning, individually or collaboratively, affects the frequency of utilization of practices recommended by the NCERT. The population was described as secondary (grades 9-12) Math teachers in the public schools in Guwahati, Assam. Data was collected using an instructional practices survey constructed by the researcher. This study utilized ANOVA tests and ‘t’ tests for independent samples to determine if differences existed in the mean frequency of use of NCERT recommended instructional practices based on length of planning time. Findings indicated that teachers who planned longer, both individually and collaboratively, had significantly higher mean frequency scores. Length of planning time also resulted in differences when the NCERT recommended practices were divided into five process standards. It was also determined that statistically significant differences occurred in planning times and NCERT scores based on demographic variables.

Pramila Ramani and Harsha Patadia (2012) conducted a study on the effectiveness of computer assisted instruction in teaching arithmetic. This True Experimental study compared academic performance of students in class VIII in one of the English Medium School of Vadodara, India among traditional instruction, only Computer
Assisted Instruction (CAI) and Computer Assisted Instruction with simultaneous discussion. The design used in this study was posttest only control group design. Three sections of class VIII students were selected and groups were randomly allotted. ANCOVA was used in data analysis. There was significant difference in the post test scores of students receiving traditional method, only CAI and CAI with simultaneous discussion. Bonferroni correction was used for Post hoc test. It revealed that traditional method is as effective as only CAI. CAI with simultaneous discussion is more effective than traditional method. CAI with simultaneous discussion is more effective than only CAI.

**Jorryt Van Bommel (2011)** conducted a study on improving teaching, improving learning, improving as a teacher mathematical knowledge for teaching as an object of learning. This study concerns teaching in mathematics teacher education and is based on the implementation of a learning study at teacher training. The overall purpose was to investigate in what way teacher training could facilitate and improve student teachers’ Mathematical Knowledge for Teaching (MKT). In the learning study design, MKT was conceptualized as an object of learning with a meta-character, which meant that it was applicable to and transferable between different content areas of mathematics. This made it possible to vary the mathematical content between lessons but to keep the object of learning constant. Four critical features of the object of learning were found, giving insight in some of the problems related to teacher education. Student teachers had to be able to formulate proper aims for a lesson and to give detailed descriptions of elements of MKT for coherence in their MKT to occur. A focus on student teachers’ role as mathematics teachers had to be established and finally, sufficient mathematical knowledge was found to be a prerequisite for their MKT to develop. The study shows that enactment of these critical features improved
the teaching by the teacher educators, which in its turn improved the student teachers’ learning with regard to MKT. The study also indicates that the prescribed design is worth considering for future collaborative efforts of improving teaching where other objects of learning with a similar meta-character are involved.

**Riasat Ali (2010)** conducted a study on effect of using problem solving method in teaching mathematics on the achievement of mathematics students. The major purpose of study was to investigate the effects of using problem solving method on students’ achievement in teaching mathematics at elementary level. Pre-test post-test design was used in the study. Results were analyzed using mean, standard deviation and t-test. From the findings it was observed that the use of problem solving method enhanced the achievement of the students in mathematics. The result showed that there was significant difference between the effectiveness of traditional teaching method and problem solving method in teaching of mathematics at elementary level. The study recommended that the teachers should be encouraged to employ problem solving method in teaching mathematical concepts like set, information handling and geometry etc. Regular training, workshops and seminars should be arranged for teachers to give them knowledge and understanding of problem based learning.

**Fatma Aslan Tutak (2009)** conducted a study of geometry content knowledge of elementary preservice teachers: the case of quadrilaterals. Teacher quality is the most influential factor in student learning (Ferguson, 1991). However, quality teaching requires a unique body of knowledge for teaching. Among the different types of teacher knowledge, the content knowledge of a teacher plays a crucial role (Brown & Borko, 1992). In particular, beginning teachers are not equipped with necessary content for teaching geometry (Jones, 2000, Swafford, Jones & Thornton, 1997). On
the other hand, research on teachers’ geometry content knowledge is limited. The purpose of this research is to understand preservice teachers’ geometry learning as investigated by qualitative methods which to inform the following investigation to study preservice teachers’ geometry content knowledge. This study took place in an elementary methods course. For the qualitative investigation, narrative analysis (Labov, 1972) and thematic analysis (Coffey & Atkinson, 1996) methods were used. As a result of narrative analysis two main kinds of stories emerged: as a learner and as a beginning teacher. The thematic analysis results yield to three themes: history of learning geometry, perceptions about geometry, effective geometry instructional practices. The results informed the following study on geometry content knowledge for the case of quadrilaterals. During the second phase of the study, 102 participants who enrolled in the methods course completed pre and post test of teachers’ geometry content knowledge, measured by Content Knowledge for Teaching Mathematics Measures (CKT-M). Treatment group participants (n=54) received intervention, a protocol focusing on quadrilaterals which was developed as a result of the qualitative investigation, and control group participants (n=48) received traditional instruction. Repeated measures ANOVA results showed a significant change in treatment group participants’ geometry content knowledge F (1, 49) = 16.08, p<.001, R2 = .25, eta2 = .25. The mixed ANOVA results indicated a significant main effect of knowledge F(1, 91) = 28.38, p<.001 but no significant interaction between geometry content knowledge and grouping (treatment/control), F (1, 91) = .21, p=.646. Even though treatment group participants’ geometry content knowledge growth was significant, the difference between treatment group and control group participants’ growth in geometry content knowledge was not significant.
Catherine C. Stein (2008) conducted a study of an exploration of elementary preservice teachers’ performance and beliefs when negotiating reform-based mathematics education. The purpose of this qualitative research study was to investigate the relationship between eight preservice teachers’ participation and beliefs about their role as teachers in a reform-based mathematics methods course and the ways they performed, believed, and imagined themselves as teachers of mathematics in their internships and student teaching. The study was conducted in two schools in an urban setting. Data sources included lesson observations, field notes, interviews, and written reflections. Data analysis performed included domain analysis, grounded theory, and non-parametric statistical analysis. Results of a background study indicated that preservice teachers participated as students during mathematics methods in ways that resisted, acknowledged, embraced, and created the complexity of reformed-based teaching. Scores on a performance observation framework and other qualitative data indicated that the preservice teachers in the four groups from mathematics methods performed as teachers in internships and student teaching in ways that were significantly different from each other. In addition, they perceived their role as teachers of mathematics differently. The preservice teachers imagined themselves differently in relation to the classroom context, but no discernible patterns existed between the four groups and contextual factors. The findings suggest that preservice teachers make their own meanings of their participation in common experiences in mathematics methods and teach in ways that reflect those meanings. The different meanings preservice teachers make can be understood as different entry points into the practice of reform-based teaching. Knowing the entry points and the paths to which they lead has practical implications for teacher educators as they make instructional decisions in methods courses and
policy implications for the structure of teacher education courses. Future research should help identify these paths and the experiences that help preservice teachers move along them.

**Judith Preiner (2008)** conducted a study on introducing dynamic mathematics software to mathematics teachers: the Case of GeoGebra. This study aims to identify effective approaches for introducing dynamic mathematics software to secondary school mathematics teachers, and to develop corresponding instructional materials for professional development in the use of this software and technology. Based upon an analysis of introductory workshops for the dynamic mathematics software GeoGebra, frequently occurring difficulties and impediments that arise during the introduction, process as well as challenging tools and features of GeoGebra were identified in this study, a set of complexity criteria for dynamic geometry tools were established that permit the classification of such tools according to their general difficulty level in order to facilitate their introduction to novices, and workshops and accompanying instructional materials are being designed in order to reduce common impediments that arise during the introduction process of dynamic mathematics software, and to enable teachers to more effectively integrate GeoGebra into their teaching practices. The instructional materials derived from the analysis of identified impediments will provide a basis for future professional development with GeoGebra offered by the International GeoGebra Institute with the goal of supporting mathematics teachers who would like to effectively integrate dynamic mathematics software into their teaching practices.

**Johnson (2007)** conducted a study on the interactivity effect in multimedia learning. The aim of this study was to determine whether the addition of interactivity to a
computer-based learning package enhances the learning process. A sample of 33 (22 male and 11 female) undergraduates on a Business and Management degree used a multimedia system to learn about the operation of a bicycle pump. The system consisted of a labelled diagram of the pump, followed by a description of twelve stages in its operation. The sample was randomly divided into two groups who used either an interactive (I) or a non-interactive (NI) version involving both images and text. The I system differed from the NI system by the incorporation of control of pace, self-assessment questions and an interactive simulation. Students then undertook two different types of tests to assess their learning: one designed to evaluate their memory by recalling facts from the lesson, and another designed to assess their understanding through solving novel diagnostic problems. Students using the I system outperformed those using the NI system in the problem-solving test, and needed less time to complete both memory and problem-solving tests. This result is consistent with the hypothesis that interactive systems facilitate deep learning by actively engaging the learner in the learning process. This suggests that educational designers who seek to foster deep learning (as opposed to mere factual recall) should adopt the incorporation of interactivity as a design principle.

**Jothikani and Thiagarajan (2007)** conducted a study on effectiveness of computer assisted instruction in mathematics among B.Sc., degree students Objectives of the study were: To analyze the efficiency of teaching Mathematics to B.Sc. degree students through CAI over conventional method for knowledge, comprehension and application objectives; (ii) To compare the effectiveness of teaching Mathematics through CAI to B.Sc. degree (Mathematics) students over conventional method in terms of the level of achievement; and (iii) To study the effectiveness of teaching Mathematics through CAI to B.Sc. degree (Mathematics) students over conventional
method in terms of objectives of teaching Mathematics and their level of achievement. Two equivalent groups each in I year, II year and III year of Mathematics students were formed based on their achievement score in the previous year. The investigator taught the control group and the experimental groups were taught through CAI. ‘t’-test was applied in order to test the significance difference between the mean scores of pre test and post test of conventional and experimental group and to test the significance of CAI over conventional method for the mean gain scores of control and experimental groups. Findings of the study were: (i) There is no significant difference between the mean scores of pre test for the control and experimental group in all six units with reference to the objectives such as knowledge, Comprehension and application and their level of achievement such as Low, Average and High achievers. (ii) The mean scores of post test of control group are significantly higher than that of the experimental group in all six units with reference to the objectives and their level of achievement in both the years 1999-2000 and 2001-2002. (iii) The mean gain scores of the control group are significantly greater than that of experimental group in all six units with reference to the objective and their level of achievement in both the years 1999-2000 and 2001-2002. Hence, it is concluded that the conventional method is more effective and efficient than CAI method.

Ramganesh (2006) conducted a study on effect of metacognitive orientation on enhancing problem solving competency in mathematics among B.Ed. trainees. The objective of this study was to develop metacognitive orientation to enhance problem solving competency in mathematics among B.Ed. trainees. Post test experimental design has been adopted. Findings of this study were: (i) The achievement in problem solving of experimental group was more significant in post test 1 and post test 2. (ii)
There is a steady decrease in the mean score of anxiety towards mathematics teaching in post test 1 and post test 2. (iii) There was a high negative correlation between metacognitive awareness and anxiety. (iv) There is no significant mean difference in achievement in problem solving among five sub groups of experimental group in pre test 1, post test 1 and post test 2.

Sharma (2006) conducted a study on computer assisted instruction on learning mathematics for X level. The objectives of the study were to find out the effectiveness of computer assisted instruction. The study found that there was a significance difference in achievement between experimental and control group. The experimental group performed better than the controlled group. It was also revealed that there was a significance difference between the learning achievements produced by the variation in the strategy of instruction.

Palaniappan (2005) made an attempt to find out the effectiveness of computer assisted instruction in learning the triangles in mathematics for the +1 standard one groups was allowed to learn through computer assisted instruction and another group was allowed to learn through traditional method of teaching. The study revealed the following findings. (i) The performance of the students learning thorough computer assisted instruction was better than that in the traditional method. (ii) No significance difference between the high achievers of both the groups. (iii) The performance of the low achievers in computer assisted instruction was better than that of the other.

Singh, Ahluwalia and Verma (2004) conducted a study on teaching of mathematics: effectiveness of computer assisted instruction (CAI) and conventional method of instruction. The study centers upon the problem of the effectiveness of computer assisted instruction and of the conventional method of instruction in teaching
mathematics, in terms of achievement of mathematics and direction of change in attitude towards mathematics of male and female students. Objectives of the study were: (i) To study the difference in mathematics achievement which occurs as a result of the difference in instructional strategy among boys and girls separately and as a group. (ii) To study the direction of change in attitudes of male and female students separately and as a group towards mathematics as a result of two different instructional strategies. The sample of the study consisted of 220 students from four selected higher secondary schools, covering the good, average and poor schools of the Bhilai steel plant, Bhilai (M.P.). Findings of the study were: (i) The students who used the computer scored significantly higher than those taught mathematics through the conventional method. (ii) The students who used the computer showed significantly highly favorable attitude towards mathematics than those who did not use the computer (iii) Achievement in mathematics and change in attitude towards mathematics were found to be independent of the sex factor.

Karunakaran (2003) conducted a study on application educational technology in teaching of mathematics at the secondary level in Pattukottai (located in Tamilnadu) Educational District. Objectives of the study were; (i) The equipments and appliances made available through advances in science and technology are very much contributed teaching learning task; (ii) The application of Educational Technology appeals to the senses of students and prove an effective helping hand for the realization of teaching-learning objectives. The sample of the study consisted of 300 students from secondary level. The investigator concluded that; (i) the availability of Educational technology should be adequate in the schools to a satisfactory level; (ii) all Schools may be provided with at least instrument box and graph boards because maximum number of teachers of mathematics feel that these are more useful in
Mathematics teaching; (iii) In-service Training Programme should be made intensive; (iv) Some special incentive schemes to encourage the use of Educational Technology should be implemented.

2.3. STUDIES DONE IN ABROAD

Renu Ahuja (2014) conducted a study on professional competence in teaching of mathematics in selected high schools of India and U.S.: the interplay of cognition, conceptions, and context. The aim of this research involving a qualitative, grounded theory study. The purpose of this cross-cultural study was to analyze classroom practices of mathematics teachers recommended as competent by their principals in two selected high-achieving high schools of India and the United States. A socio constructivist-interpretive framework was used to analyze teaching with a view of developing models of professional competence that characterize mathematics teaching in these two cultural contexts. Even though a comparison of mathematics teaching in the two settings revealed certain global strategies, conceptions, and patterns of effective mathematics teaching, a noticeable feature of the mathematics teaching in the Indian setting was an emphasis on imparting conceptual understanding and the use of precise mathematical language during classroom discourse. This emphasis was observed to a lesser extent in the United States. While the findings are in accord with the existing literature, the substantive theory provides new insight in that it underscores the importance of looking at professional competence as both the possession of various components of teacher’s professional knowledge base and the process of activating those components in actual teaching situations. The study has implications for teachers, educators, administrators, and researchers.
Nathan Moore (2014) conducted a study on alternative strategies and techniques for teaching mathematics. Underachievement in mathematics is an ongoing issue in schools across America. Many students, beginning at the elementary level, are not motivated in mathematics and perform poorly. Part of the reason for this problem may be due to poor attitudes towards mathematics and poor teaching strategies in mathematics. In order to begin to remedy this problem of poor mathematics motivation and achievement, elementary teachers need to be aware and implement the best teaching practices. Research validates the best teaching practices of games, use of manipulatives, real life application, differentiated instruction, and integrating technology into mathematics instruction. The intent of this culminating project was to explore the use of best practices that are effective in improving student achievement in mathematics. The teaching strategies focused on all ages of students, but particularly on the elementary level because that is where negative views of mathematics typically emerge. Teaching strategies that were discussed include games, use of manipulatives, real life application, differentiated instruction, and integrating technology devices into mathematics. These strategies excite and engage students in the learning process, thus both student achievement and motivation will improve. The author developed four units that include all these research-based teaching strategies for a fourth grade mathematics class. Utilizing non-traditional teaching strategies and techniques will raise student motivation levels and their achievement levels. Once aware of the best practices, teachers can begin to implement them in their own classrooms which will begin to remedy the problem of low mathematics motivation and achievement among students throughout America. Furthermore, this research will aid college professors in highlighting the best teaching practices in their instruction. Professors can then include this instruction in their teaching and pass this knowledge
on to their students, pre-service teachers, thus making them more confident and knowledgeable as future elementary school teachers.

Anowar Hossain and Rohani Ahmad Tarmizi (2013) conducted a study on effects of cooperative learning on students’ achievement and attitudes in secondary mathematics. The main purpose of this study was to identify the effects of cooperative learning on students’ mathematics achievement and attitudes towards mathematics in selected secondary schools in Bangladesh. A total of 80 students (40 from Boys’ school and the other 40 from Girls’ school) of grade nine participated in this study where quasi-experimental design was administered. Data were analyzed using independent-sample test. The results showed that cooperative learning had significant effects on mathematics achievement and attitudes towards mathematics. It was found that students’ performance in mathematics and attitudes towards mathematics were affected by exposure to the cooperative learning. The findings of this study have shown a great improvement in mathematics achievement and attitudes towards mathematics. Therefore, cooperative learning can be successfully used to promote student’ performance in mathematics in secondary schools in Bangladesh.

Beverly Caswell (2013) conducted a study on teaching toward equity in mathematics. This research is a qualitative case study examining changes in urban Canadian elementary teachers’ conceptualizations of equity and approaches to pedagogy in their mathematics teaching in relation to their involvement in multiple professional learning contexts. The study focuses on four major professional development (PD) efforts in which five focal teachers participated over a school year. Data sources include researcher observations, field notes, video-recordings of PD sessions and classroom mathematics teaching, as well as a series of one-on-one interviews. Data
analysis revealed three main ideas related to equity that were adopted by focal teachers: 1) the importance of developing awareness of students and their communities; 2) teaching strategies to scaffold students’ development of mathematical proficiency; and 3) strategies for structuring student-driven, inquiry-based learning for mathematics. The multiple contexts of professional learning presented contradictory messages. Thus, teachers took up some ideas and left others behind and sometimes took up ideas that served conflicting goals of education. Future studies of teacher PD should focus on the teacher’s perspective and the role of any individual PD within the multiple contexts of professional learning in which teachers participate.

Shahinshah Babar Khan (2012) conducted a study on preparation of effective teachers of mathematics for effective teaching of mathematics. In Pakistan, Mathematics’ teachers use different techniques and strategies for effective teaching of mathematics. Teacher’s dynamic participation and active role in the mathematics’ classroom can make it more effective and interesting. Effective teaching of mathematics can be done only when teacher has subject matter knowledge and know the ways to transfer knowledge. It is a common observation that students feel mathematics a dry subject as teachers remain failed in making mathematics an interesting subject. It is also argued that mathematics courses in teacher training program do not prepare student-teachers for conceptual teaching and these student-teachers join their job with poor content knowledge and pedagogical skills, there teaching depend on their academic qualification rather than professional qualification. National Educational Policy (2009), claims that in-service teachers training in mathematics shall be provided, with due attention to developing conceptual understanding, procedural knowledge, problem solving and practical reasoning skills.
The objective of the study was to explore the opinion of the teachers about the content of the mathematics courses in teacher training programs. The research question was: what is the impact of job category (Primary, Middle, and Secondary) and gender on total score of teachers’ satisfaction about content of mathematics course in teacher training programs? The sample for the study was the mathematics’ teachers who have mathematics background and have taken mathematics as a subject in teacher training program. A questionnaire was developed on five point Likert scale for knowing the opinion of the teachers. ANOVA was used for finding the impact of job category and gender on teachers’ satisfaction about content of mathematics course in teacher training program.

**Mollie Helen Appelgate (2012)** conducted a study on connecting math methods and student teaching through practice based strategies: a study of pre-service teachers’ math instruction. This study investigated how these practice based, high leverage strategies emerged in preservice teacher practice in their student teaching classrooms. Focusing on secondary math in a large urban school district, this study sought to answer the questions 1) How do the practice based strategies taught in a math methods class emerge in pre-service teachers’ student teaching practice? 2) What supports the emergence of these strategies in a pre-service teacher’s student teaching practice and what impedes it? The study followed six pre-service teachers through a yearlong methods course and into their student teaching classrooms, and used classroom observations, interviews, artifact collection and logs of teacher practice to answer the questions. The findings suggest that pre-service teachers can use high-leverage practices in a way that is rigorous, creates student mathematical discourse, and equitable participation. The study proposes the following additions to the design of future math methods courses: 1) pre-service teachers enacting the practices in
environments with increasingly more independence and less support before trying it in their own classrooms and 2) sharing with their math methods course peers their findings after the enactment of the strategies in their student teaching classroom. These findings have implications for how we may more effectively teach methods to bring about change in classroom practices.

**Jakob Gyllenpalm (2012)** conducted a study on teacher’s language of inquiry the conflation between methods of teaching and scientific inquiry in science education. The objective of this thesis is to describe and analyse customs of science teaching in secondary schools and teacher education programmes in Sweden in relation to the notion of “inquiry” in science education. The main focus is on customs of language use and the educational goal of learning about scientific inquiry as distinct from the related goals of learning to do inquiry and learning canonical science content. There is also an exploration and description of different teaching approaches associated with “inquiry”. Previous research has noted that a key issue for reaching the goal of learning about scientific inquiry is the extent to which teachers are able to guide students to explicitly reflect upon this topic. A prerequisite is that teachers give students access to relevant categories of language for explicit reflection on the characteristics of scientific inquiry. Because of the situated nature of language use and learning, this also raises the need to address topics of context, culture and customs in science education. This thesis addresses the questions of how existing customs of teaching science are related to the goal of learning about scientific inquiry, how inquiry-related terminology is used in this context, and how relevant distinctions can be made to aid explicit reflection on these issues. Data has been collected in two studies and analysed and presented in four papers. Study 1 is based on interviews with twelve secondary school science teachers, and Study 2 is based on focus group
interviews with 32 pre-service teacher students. The results include a description of the existing customs of inquiry-oriented instructional approaches in Swedish secondary schools. They show that these are often not connected with an explicit focus on teaching about the characteristics of scientific inquiry. Inquiry related terminology is analysed with a focus on the role and use of the terms “hypothesis” and “experiment”. Based on a theoretical framework of sociocultural and pragmatist views on language and learning, it is shown how the use of these terms, both in secondary schools and teacher education, tend to conflate the two categories methods of teaching and methods of scientific inquiry. Some problematic consequences for reaching the goal of learning about scientific inquiry are discussed, as well as possible origins of the problems and how the results from this thesis can be useful in overcoming these.

Yasemin Copur Gencturk (2012) conducted a study on teachers' mathematical knowledge for teaching, instructional practices and student outcomes. This dissertation examines the relationships among teachers’ mathematical knowledge, their teaching practices and student achievement. Quantitative and qualitative data collection techniques (content knowledge assessments, surveys, interviews, and classroom observations) were used to collect data from 21 teachers and 873 students. Twenty-one in-service teachers who enrolled in a master’s program designed specifically for the needs of a partnership district were followed for 4 years to study how their mathematical knowledge as well as their teaching changed over time. Of the 21 teachers, 8 teachers were chosen for additional classroom observations and interviews. For the quantitative part of the study, two-level linear growth models were used to examine the effects of the mathematical knowledge of K-8 teachers on their instructional practices. After student-level data were added, three-level growth models
were used to analyze the effects of teachers’ knowledge and instructional practices on students’ gain scores. Teachers’ beliefs about teaching and learning mathematics were also included in some analyses. The results indicated that, compared with the initial baseline data, teachers’ mathematical knowledge increased dramatically, and the teachers made statistically significant changes in their lesson design, mathematical agenda of the lessons, task choices, and classroom climate. The gains in teachers’ mathematical knowledge predicted changes in the quality of their lesson design, mathematical agenda, and classroom climate. Teachers’ beliefs were related to the quality of their lesson design, mathematical agenda, and the quality of the tasks chosen. However, only student engagement was significantly related to students’ gain scores. Neither teachers’ mathematical knowledge nor other aspects of instruction (inquiry-oriented teaching, the quality of task choices, and the classroom climate) were associated with students’ gain scores. The qualitative analyses revealed particular strands of the complex relationship between teachers’ mathematical knowledge and their instructional practices. Teachers’ beliefs played a mediating role in the relationship between teachers’ mathematical knowledge and instructional practices. Teachers favoring standards-based views of mathematics tended to teach in more inquiry-oriented ways and ask more questions of students; however, among teachers with limited mathematical knowledge, these practices seemed superficial. Additionally, the teachers’ task choices appeared to be confounded by teachers’ current level of mathematical knowledge and their textbook use.

Joakim Samuelsson (2011) conducted a study on the impact of teaching approaches on students’ mathematical proficiency in Sweden. The present study examines the effect of two differently structured methods, traditional and problem-solving, of teaching children mathematics the first five years in school as well as differences
between boys’ and girls’ achievement depending on teaching approaches. The progress made by these students is presented by the five component measures of their mathematical proficiency; productive disposition, conceptual understanding, procedural fluency, strategic competence and adaptive reasoning. The tests (test in pre-school and national test in school year five) employed in this study were developed by an expert group contracted by the National Council of Education in Sweden. Differences between school A and School B, and boys and girls, on mathematical skills at 11 years of age were examined using t-tests for independent samples. The t-test was performed on raw scores across the entire sample. The results show that there are no significant differences between teaching methods when assessing procedural fluency. Students’ progress in conceptual understanding, strategic competence and adaptive reasoning is significantly better when teachers teach with a problem-based curriculum. In order to develop aspects of self-efficacy, the results show that pupils would better benefit from a traditional curriculum. Boys and girls who have been taught with similar methods perform equivalent in both the traditional and the problem solving group.

Matthew Steven Haas Travis and Twiford Chair (2011) conducted a study on the influence of teaching methods on student achievement on Virginia’s end of course standards of learning test for Algebra I. Given Virginia’s Standards of Learning (SOL)(1995) mandates, Virginia’s Algebra I teachers and school leaders should utilize research for teaching methods; further, the relationship between teaching methods and student achievement on Virginia’s End of Course SOL Test for Algebra I deserves investigation, since Virginia’s students must pass this test to earn verified credit toward high school graduation. Replicating Marcucci’s (1980) methodology for meta-analysis, the present study focuses on research with methods for teaching
secondary level algebra from 1980 to 2001. From a sample of 34 studies with 62 effect sizes, six categories for teaching methods and corresponding effect sizes were derived for “good” studies: direct instruction (.67), problem-based learning (.44), technology aided instruction (.41), cooperative learning (.26), manipulative, models, and multiple representations (.23), and communication and study skills (.16). Using results from the meta-analysis and review of literature and extensive content validation, a 51-item questionnaire with a reliability coefficient of .89 was developed. The questionnaire was posted as a web-site to survey selected Algebra I teachers in Region VII to ascertain how frequently they use research-based teaching methods and to determine the influence of teaching methods on their students’ achievement on the spring, 2002, Algebra I SOL Test. Ninety-eight percent of teachers surveyed responded. The 53 participating Algebra I teachers, representing 1,538 students, produced a passing mean scale score of 438.01 (SD = 32.67). Teachers indicated they used all teaching method categories more than half the time with mean usage frequencies ranging from 2.56 to 3.75 times out of five class sessions. Teaching method categories were then entered into a block wise multiple regression analysis, ranked according to the strength of their correlations to teachers’ mean scale SOL test scores. Teaching method usage shared 9.7% of variance with participating teachers’ scores. Meta- and regression analysis results suggest that Algebra I teachers should emphasize direct instruction, technology aided instruction, and problem-based learning. These three teaching method categories ranked highest in both analyses. The questionnaire developed here could be used with a larger sample for research into the influence of teaching methods on individual reporting categories on the Algebra I SOL test.
LiJin Yan (2010) conducted a study on math teachers: what influences their teaching methods. What types of teaching methods do teachers use to engage students in Math departments in an urban middle school? What are the influential factors that play a role in the methods that Math teachers use inside the classroom? Qualitative research methods of interviews to conduct study because wanted to personally experience the different math teaching styles that are used inside an urban classroom. Also, to interview the teachers’ individual and how their characteristics relate to the way they teach inside the classroom. After deciding this, gained permission to an urban middle school, and this urban middle school will be known as the H school. The teachers’ were randomly selected at the school. During time at the urban middle school, also investigated the types of teachers that are in the math classrooms and if their methods are engaging to their students. All of the teachers had to sign a consent form before started the interview and classroom observations. Throughout this whole study, given the school and the teachers a pseudonym in order to ensure confidentiality and protect the privacy of the teachers. In the H school, there are several different and interesting teaching methods that teachers use inside the urban middle school classrooms, which involve a combination of direct instruction, verbal interactions and hands on activities. The individual teacher’s teaching methods can be influence by various types of experience, training, and personality, which are crucial for becoming an engaging teacher. Furthermore, teachers do not necessary need to be math majors in order to be qualify to teach engagingly in the classroom. Most important of all, teachers need to have a strong foundation in teaching from the very beginning in order to be an engaging teacher. It’s the quality and quantity of the teacher’s teaching experience that would affect how engaging the teacher can be in a math classroom. This study is significant because Math is an important subject that all students would
need in their future endeavors. Math is such a fundamental tool that everyone needs in their daily life. Therefore, the investigator needs to ensure that all have adequate teachers that can engage our students to learn the math concepts they need to know. Furthermore, this study can play an important role in the math teacher hiring process. Administrators can use the findings from this study as a guide to help them figure out what type of teacher qualities they should pay attention to in order to ensure that they hire teachers that are capable of engaging the students in math.

Raquel Vallines Mira (2009) conducted a study on teachers’ beliefs regarding effective teaching strategies for American Indian students in mathematics. Extensive research has been conducted on teaching strategies that are effective for American Indians in mathematics. Despite the variety of cultural, linguistic, socioeconomic, and geographic factors influencing student learning within and among American Indian communities, common characteristics of learning styles and effective teaching practices have been identified. Though the wording in each definition varies, research based on a variety of theoretical frameworks and using a variety of methodologies and instruments suggests that among American Indian students, there is a tendency to learn better when the following three strategies are used: contextualization, modeling and demonstration, and joint productive activity. Despite the general agreement in education research that the beliefs that teachers hold about mathematics teaching and learning greatly impact their instructional decisions in the classroom, few, if any, of those studies have examined teachers’ beliefs regarding effective strategies for American Indians in mathematics. The main purpose of this study was to add the voices of four teachers to the research community conversation about effective teaching strategies for American Indians in mathematics. Two elementary and two high school teachers from two schools in Montana were selected for this study for
their experience with and commitment to the mathematics education of American Indian students. Two are American Indians and two are White. Using a combination of classroom observations and a modification of video clip interviews, the beliefs of the four teachers were identified with particular focus on the three teaching strategies mentioned above. The study shows that teachers’ definitions of research-based strategies often differ from those intended by the research. Teachers’ views about these strategies seemed to be idiosyncratic to individual teachers and appeared to be shaped by multiple lenses. In this study, some of those lenses emerged including, among others, school structures and teachers’ cultural backgrounds. In light of the results of the study, future efforts for constructive bi-directional communication between the research community and practitioners are recommended.

Jennifer R. Bradley, Charles E. Notar and Donna F. Herring (2008) conducted a study on teaching mathematics to elementary school students using a variety of tools. This study is based on a first-year, third-grade teacher’s attempt to improve instructional strategies for teaching mathematics in an inner city elementary school. Review of the literature suggested a variety of methods for teaching mathematical concepts to children in grades K-5. The researcher found that carefully-planned units that include group work, intervention groups, parental involvement, entertainment elements and explicit instruction increase students’ curiosity, enjoyment and success in learning mathematics.

Deepak Sharma (2007) conducted a study on effectiveness of information and communication technology (ICT) in teaching mathematics at secondary level. The purpose of this study was to determine the effectiveness of Information and Communication Technology (ICT) as compared to the traditional method of teaching
in the subject of mathematics at secondary level in India. It was an experimental study and post-test equivalent group design was used for the statistical analysis of the research at 0.05 levels of significance. As the target population was the secondary school students, a sample of one hundred and twenty students was selected in such a way that sixty students were available for each cluster of Public and Private sectors. Students of sample schools were divided into two equal groups, i.e. experimental group and control group, each having thirty students. Both the groups were equated on the basis of their scores by pair random sampling from the previous examination of class VIII in the subject of mathematics. The students of experimental group were exposed to the teaching through ICT, where as the students of control groups were taught through traditional method of teaching in the subject of mathematics. The units taught to both the groups were Sets, Algebraic Expressions, and Logarithm, chosen from the prescribed syllabi for class IX by Federal Board of Intermediate and Secondary Education. ICT was found effective as compared to traditional method of teaching in mathematics at secondary level for private sector school.

Lynette Joan Thijsse (2006) conducted a study on the effects of a structured teaching method on mathematics anxiety and achievement of grade eight learners. There are several general aims with regard to the literature study and the empirical investigation. The aim of the literature study includes gathering information and analysing previous research in the areas of maths anxiety, maths achievement and teaching methods. The general aim of the empirical investigation is to investigate the relationship between maths anxiety, maths achievement and different teaching methods. In this research a case study research design is used. A cross-case analysis is used in this research. Criterion sampling involves the selection of cases that satisfy a specific criterion. Three out of the four learners participating in the Kumon
programme showed a decrease in anxiety. All learners in the control group showed a
decrease in anxiety. Comparatively, there was a greater decrease in anxiety amongst
the group participating in the intervention programme. Learners in the control group
had post-test anxiety ratings of forty or less. The learners, whose anxiety decreased in
the experimental group, had post-test ratings of above forty. The pre-test anxiety
ratings for both groups were approximately the same. From this is can be implicated
that the learners on the Kumon programme benefited in terms of significantly reduced
anxiety. It is possible that generalised anxiety (due to starting high school and the
introduction of a new environment) could have been present at the beginning of the
grade eight year when the pre-test was done. This could have decreased after five
months which could have influenced the results. All learners who participated in
Kumon who showed decreased anxiety, showed increased achievement on the P4
Kumon test. Those learners in the control group either remained the same, or
decreased their scores on the P4 post-test achievement test. All learners in the Kumon
group rated themselves as having increased confidence. This was also noted by the
teacher in three of the four cases. Three of the learners in the control group rated their
confidence to have increased, two as “good” and one as “average”. Only one learner
rated her confidence as “bad”. The teacher noted all the learners in the control group
as not showing any changes. The learners who participated in the Kumon programme
rated their own achievement as improved in terms of maths speed, accuracy and
school test marks. Learners from the control group rated their speed, accuracy and
school test results to have decreased remained the same or improved. School term
results improved for three out of four learners in the Kumon group. All learners in the
control group showed a decrease in their school term results. It can be implicated that
the Kumon programme had a positive effect on the achievement of learners. These
findings correlate with previous research from the literature study. All mistakes made by the Kumon group in the post-test P4 Kumon test related directly the level of mastery reached in the Kumon levels.

**Veronica Galvan Carlan, Renee Rubin and Bobbette M. Morgan (2006)** conducted a study on cooperative learning, mathematical problem solving, and Latinos. Working with fifth grade Latino students, professors engaged students in cooperative activities while solving mathematical problems. Their work was based upon theories of social interdependence, cognitive development, and behavioral learning. Results indicate four changes in student behavior: 1) students became more engaged in problem solving; 2) students moved from a competitive to a cooperative stance; 3) students discovered there were several correct ways of finding a solution; and 4) students code-switched between Spanish and English to ensure everyone in the group understood. Two changes in teacher behavior related to cooperative learning were: 1) the regular classroom teacher moved desks from rows to groups; and 2) the teacher became more aware of the students’ mathematical abilities.

**Deborah Loewenberg Ball (2005)** conducted a study on knowledge and reasoning in mathematical pedagogy: examining what prospective teachers bring to teacher education. This study focuses on the knowledge and beliefs about mathematics and the teaching of mathematics held by prospective teachers when they enter teacher education. It offers frameworks for thinking about the role and relationship of different kinds of knowledge in teaching mathematics. Grounded in a vision of a particular mathematical pedagogy, these frameworks are constructed around teacher knowledge, beliefs, and dispositions in the domains of subject matter, teaching and learning, students, and context. A two-part interview was designed to explore
prospective teachers' ideas and thinking about mathematics and the teaching and learning of mathematics. Nineteen prospective teachers were interviewed. The study's results include description and appraisal of the participants' understandings and ways of thinking about the subject matter, teaching and learning, the teacher's role, and students. These results suggest categories useful for examining what prospective teachers bring with them to their professional preparation to teach mathematics. Focal subject matter knowledge categories included the explicitness and connectedness of substantive understandings, as well as ideas about the justification and nature of mathematical knowledge and activity. With respect to teaching and learning, central categories were the teacher's role, how learning occurs and, with respect to learners, ideas about the sources of success and failure in mathematics, knowledge of and dispositions to learn about students. The analysis also highlighted the importance of clarifying terms such as "concept" and "explanation" which may be used in both professional and commonsense ways. Teaching mathematics is more than a sum of different components of knowledge; teachers' understandings and beliefs in one domain interact with their understandings and beliefs in others to shape their pedagogical reasoning. Therefore, a second theoretical framework was developed to appraise teachers' instructional representations of mathematics. Examining teachers' pedagogical reasoning in terms of the tacit or explicit warrants they use to justify their representations of the subject brings the components of teacher knowledge back together. The framework of warrants also offers another perspective for examining what prospective teachers bring, focusing on the patterns of thinking and justification that they assume as they enter teacher education.

Rivet (2005) conducted a study on students’ achievement in middle school mathematics: computer assisted instruction versus traditional instruction. An objective
of the study was: To examine changes in student achievement in middle school Mathematics on operations involving Fractions when computing two instructional strategies. The research questions in the study address the issue of student achievement, retention and cost effectiveness. Four 6th grade classrooms were identified, two classroom within each of two middle schools. Two classrooms used Computer Assisted Instruction as the primary means of content delivery involving Mathematical concepts all pertaining to the content area of Fractions. Within the same content area, the other two classrooms’ primary mode of instruction remained the lecture and textbook. A quasi experimental pre test post test design was used. Following a six week study, difference scores were examined to substantiate the primary hypothesis that the use of Computer Assisted Instruction led to increases student achievement when compares to traditional instruction techniques. Findings of the study were: In spite of variability in performance in individual types of fraction operations, the overall improvement scores were significantly greater in Computer Assisted classrooms than in the traditional classrooms. Further, in spite of the achievement difference between schools, the Computer Assisted classrooms performed better than the traditional classrooms at each school. Although the statistical analysis conducted revealed that there were no statistically significant difference rates between Computer Assisted Classrooms and traditional classrooms, in spite of marginally lower attendance rates in the Computer Assisted classrooms, overall improvement scores were significantly greater in Computer Assisted classrooms than in the traditional classrooms. In this study, students in the traditional classrooms on average improved 3 points on the 30 points post test while students in the Computer Assisted classroom on average improved 4 points. This signifies a 33% achievements benefit. Thus, 33% increase in student achievement was gained in
classrooms utilizing Computer Assisted Instruction as opposed to those utilizing traditional instructional technique.

Cannon (2004) conducted student success: a study of computer base instruction versus lecture based instruction in developmental mathematics at a Tennessee community college. Objectives of the study were: (i) To examine the effects of incorporating Computerized Instruction developmental Mathematics courses. (ii) To study examined achievement, retention, persistence and success of students who began in elementary algebra, progressed into Intermediate Algebra and subsequently obtained their goal of completing an initial college level Mathematics course. Two groups of elementary algebra from Chattanooga State Technical Community College were used in this study. One group was taught using a lecture based approach and one group was taught using a computerized instructional approach. The lecture group consisted of 175 students where the computer group consisted of 208 students. Achievement was studied using elementary algebra final exam grades and overall course grades from students who were enrolled in elementary algebra during the fall 2002 semester. Retention was studied using students who began in the fall 2002 semester in elementary algebra, tracking them, to see if they enrolled in a Mathematics course during the spring 2003 semester. Persistence was studied using students who began elementary algebra in the fall 2002 semester, enrolled in a Mathematics course during the spring 2003 semester and persisted with their Mathematics by registering for a mathematics course in the summer 2003 semester or the fall 2003 semester. Student success was studied using students who began in the elementary algebra course in the fall 2002 semester and successfully completed a college Mathematics course by the fall 2003 semester. Success was determined by the number of students who made a letter grade of an A, B or C in any college level
Mathematics course. Findings of the study were: When examining achievement, retention, persistence and success, the only area in this study that showed a significant difference was among the achievement rates. The lecture students’ achievement rates were significantly higher than the students who received computerized instruction. Retention, persistence and success did not show any significant difference between the two groups.

2.4. CRITICAL REVIEW OF RELATED STUDIES

The investigator has reviewed a total number of 37 studies both Indian and Foreign studies. There are eighteen Indian studies and nineteen foreign studies.

From the above reviewed studies, the following inferences have been made; the utilization of computer and multimedia package has a positive effect on the teaching-learning process in our class rooms. The study of the utilization of computer and multimedia package will help the teachers, learners, policy makers, educational experts, thinkers and all those concerned with the field of education. The variables such as Teachers, Institutions, Medium of Instruction, etc, played vital roles in the availability and utilization and the success of computer and multimedia package in teaching various subjects. Other methods of conventional method and co-operative learning methods are less in learning improvement than multimedia package usage. Multimedia Learning method was more superior method of teaching in Mathematics than all other methods. With these relevant studies, the investigator wants to do depth, he studied this research.

In the above reviewed studies, survey method, experimental method, case study method, longitudinal method, quasi experimental pre test post test design method, factorial method and various methods were used to study the research problems. Samples taken for that investigation were purposive sampling, convenience
sampling, judgment sampling, random sampling and stratified random method. Population included in these studies were teacher trainees, B.Ed., students, undergraduate students, primary school teachers, secondary school teachers, college students, preadolescents, higher secondary students, mathematics students, mathematics teachers, IX standard students and different fields. Varied tools were used in their investigations. They are Observation, Interview, SES, Attitude of Mathematics, Multimedia Package, Computer Assisted Instructed, Cooperative Learning Method, Mathematic Attitude Scale and Mathematics Teaching Inventory. Some investigator made tools were also employed. The Mean, SD, ‘t’ test, Chi-square, ANOVA, ANCOVA, MANOVA, Skeweness, Kurtosis, Percentage Analysis, Regression, Factor Analysis, Path Analysis, Multiple Correlation and Pearson Product Moment Correlation were used for analyzing the data.

2.5. THE GAPS IDENTIFIED

From the studies reviewed by the investigator, the following gaps have been identified. The present study differs from the rest of the studies in several ways. First of all there was no study undertaken so far which had the variables of the impact of different teaching methods in mathematics. Therefore, the present study is the first of its kind in this regard.

Secondly, with regard to the teaching methods, there were many studies on CAI, computer instruction, power point presentation, problem solving method, conventional method, co-operative learning method and multimedia learning method of teachers, prospective teachers, high school students, adolescent students and relating them with many variables like achievement, socio economic status, parental attitude and teacher’s attitude, etc. But the different teaching methods are creatively combined with three methods namely conventional method, co-operative
learning method and multimedia learning method and on this ground it stands different from the rest of the studies conducted earlier.

Thirdly, though no study has linked different teaching methods with government, government aided and matriculation school higher secondary students and so in this regard, it stands unique.

The present study differs from the above studies in many ways. There has been no study, which has combined the two teaching methods in Mathematics. Especially there has been no study which has focused exclusively in matric. higher secondary and higher secondary school students. Therefore, the present study is probably the first of its kind in this region. Hence it is relevant for the investigator to study the impact of different teaching methods in mathematics among matric. higher secondary and higher secondary school students.

On the basis of the review of related studies, it was found that only few studies were conducted in assessing the effect of different teaching methods in different systems of education. Hence this will be a pioneering attempt and an eye opener for future research.

Finally the study was different from other studies through its methodology, experimental method, factorial design and background variables. Many studies were conducted on teaching methods in mathematics, yet this study was different from others by its combination. Therefore the study was different from other studies of its main variables in a matchless way. No study has combined focused on this study. Therefore the present study was a new one and it different from others in terms of population and sample. Hence it’s relevant for investigator to study impact of different teaching methods in mathematics among matric. higher secondary and higher secondary school students.
2.6. THE PRESENT STUDY

In order to bridge the gap mentioned above, in the present study, the investigator has used experimental method in exploratory design and simple random sampling technique. The investigator used pre test, post test questions (achievement test) and multimedia package for collecting data. Mean, SD, CR test, ANOVA test, ANCOVA test, 2 x 3 x 2 factorial experiment and 3 x 3 x 2 factorial experiment test were used for analyzing the data. Thus, the present study is different from the reviewed studies from all the above studying in the different teaching methods in mathematics. It seems, no study has been undertaken the impact of different teaching methods in mathematics among matric. higher secondary and higher secondary school students.

Research studies reviewed in this chapter reveal that a few research works have been conducted in India regarding the effect of different teaching methods. The review strongly suggests that better teaching methods will help the students in their achievement.

2.7. CONCLUSION

This chapter starts with introduction, and review of related studies relating to different teaching methods in mathematics and the chapter concludes with the inferences of the study.

The next chapter describes the methodology of the study.