CHAPTER – II

REVIEW OF RELATED LITERATURE

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CHAPTER-II

REVIEW OF RELATED LITERATURE

Review of research literature enables the researcher to get familiarized with the existing frontiers. A critical, insightful and comprehensive review of research has many values for the researcher.

2.1 THE ROLE OF RELATED LITERATURE

Though the work is often appears tedious, serves several functions (Donald Ary.et.al 1972).

1) Knowledge of related research enables the researcher to define the frontiers of his field.

2) An understanding of theory in the field enables the researcher to place his question in perspective.

3) Through studying related research one learns which procedure and instruments have proved useful and which seem less promising.

4) A thorough search research avoids unintentional replication of previous studies.

5) The study of related literature places the researcher in a better position to intercept the significance of his own results.(18)

To summarize the review provides the researchers with an opportunity of gaining insight into the methods, measures, subjects and approaches
employed by other research workers in the light of which significant improvement in the research design can be obtained. Keeping these understandings in view, the researcher has made an attempt to review the literature of the problem in a systematic way.

The studies reviewed are broadly grouped under three sections. They are:

1) Review of studies in the area of different approaches of teaching mathematics.
2) Review of studies in the area of problem solving ability
3) Review of studies in the area of Life Skills Education
4) Review of studies in the area of Self concept
5) Review of studies in the area of students Attitude towards mathematics.

2.2 REVIEW OF STUDIES IN THE AREA OF DIFFERENT APPROACHES OF TEACHING MATHEMATICS.

Yeo et al (2006), found Heuristics or heuristic strategies refer to specific tactics such as guess and check or modeling which are used by students to solve non routine problems which are used by students to solve non routine problems for which they do not have a reading assessable procedure. A total 621 secondary +2 students from the Singapore participated in the study. The study showed that the heuristics used by the students to solve the problems were guess and check and logical reasoning. (80:53-69)
Gayathri.S (2006), made a study on usage of Multimedia by mathematics teachers. The result of the study based on the data that was collected from Mathematics teachers in CBSE school of Bangalore. The tools were administered to teachers, head of the faculty and teacher in charge of mathematics laboratory in the school. The analysis was on the factors like-infrastructure support, teacher preparedness, personal vision, personal preference. The outcomes of the study were teachers need to overcome difficulties involving planning, time management and inclusion of relevance multimedia to the topic in the hand and method of evaluation.(23:63-77)

Chandrashekar.K & Santosh Kumar (2006), made a study of students achievement in mathematics and languages in relation to non-detention policy. To know the achievement level of the students, baseline achievement survey facts were taken for the study. Multi stage sampling design was used to collect the sample of 1075 students. ‘t’ test was the statistical technique used to analyze the data. Major findings were students studying in the states where non-detention policy is in practice performed better in mathematics than their counterparts studying in the states where detention policy is followed.(14)

Lim, Eng Leong (2002), in their study examines the extended effect of an instructional program designed to enhance Schema development by using goal specific problems. A multiline baseline across subject experimental design was used to compare the effect of this programme with another method of
teaching this subject. That is using worked examples. Result indicate that participant in the non-goal specific group showed greater improvement in solving problem faster, more efficiently, more accurately. (36:251-312)

Farkas, Rhonda Dawn (2002), Effect(s) of traditional versus learning-styles instructional methods on seventh-grade students' achievement, attitudes, empathy, and transfer of skills. This research examined the relationships among seventh-grade students' achievement scores, attitudes toward instructional approaches, empathy scales, and transfer of skills between traditional versus multisensory instruction. The dependent variables for this investigation were gain scores on achievement and empathy posttests, scores on an attitudinal survey, and weighted average scores obtained from transfer tasks. The independent variable was the instructional methodology employed. The sample consisted of 105 heterogeneously grouped, seventh-grade students. The Learning Style Inventory (LSI) (Dunn, Dunn, & Price, 2000) was administered to determine learning-style preferences. The Control Group was taught lessons about the Holocaust using a traditional teaching method and the Experimental Group was taught the same content using multisensory instructional resources. The Semantic Differential Scale (SDS) (Pizzo, 1981) was administered to reveal attitudinal differences. The Balanced Emotional Empathy Scale (BEES) (Mehrabian, 2000) was administered to reveal empathetic differences. Finally, Form A of the Moral Judgment Interview (Kohlberg, 1987) was administered to determine transfer of skills. The
traditional approach included reading from a textbook, graphic organizers, and responding to questions in small groups and independently. The multisensory approach included five instructional stations established in different sections of the classroom to permit students to learn by reading text; manipulating Flip Charts; assembling Task Cards; using Pic-A-Holes; using Electro boards; reading a Programmed Learning Sequence; using a Contract Activity Package; and engaging in a kinesthetic Floor Game activity. Audiotapes and scripts were provided at each station and students circulated among the stations in groups of four to six. The data subjected to statistical analyses supported the implementation of a multisensory rather than a traditional approach for teaching lessons of the Holocaust. t-tests revealed a positive and statistically significant impact on achievement scores (p < .001). Significance was revealed on students' gain scores on the empathy scale when taught through a multisensory approach (p < .001). More positive attitudes were revealed when students were instructed with a multisensory approach (p < .001) and significance was revealed on the transfer of skills when students were instructed through a multisensory instructional method (p < .001). Moderate to extremely strong effect sizes and correlation coefficients were revealed for each dependent variable. (21)

Wong (2002), studied the performance of a group of mathematics students trained to use a self explanatory procedure during study of a new theorem in Geometry was compared with that of students who used their usual
study procedures. The result showed that, the students showed evidence of making novel connection, either within the newly presented study material or between the part of that material with their existing Geometry knowledge.\(^{(76)}\)

**Paranjape V.G (2001)**, development of an instructional system for mathematics through content cum methodology approach. Main objective of the study is to analyse the traditional approach and content-cum-methodology approach of teaching mathematics. The sample of 120 student’s studies in class 8\(^{th}\), tools like questionnaire, achievement test for pupil. Student retention test, interview schedule and lesson observation rate scale are used for data collection. The major findings are instruction system for mathematics developed under the study was more effective than conventional instruction system for both student and pupil. \(^{(46)}\)

**Dhall G.B, et.al (2001)**, made a study on effect of using remedial materials in mathematics on achievement of slow learners. The main aim of research is to identify the topic in algebra for class VI students which the students feel difficult. And to prepare supplementary materials on the topic to teach the student which has material. Five schools were selected using stratified random sampling. Data was collects using diagnostic test and using remedial material. The collected data was analysed using mean, SD and ‘t’ test. Major finding was the teaching of student with low achievement between remedial materials prepared after diagnostic test increasing their achievement.\(^{(19)}\)
Chakravarti, Bhupal Prasad (2000), made a study to find performances of students in Mathematics through the use of Comprehension Type Test (CTT). Sample of 800 students from classes 4th to 5th were selected for the study. Comprehension test of Achievement cum Diagnostic Test in Mathematics (ADTM) was used for the collection of data. The collected data was analyzed using percentage. Major findings are the comprehension ability increases with the age and also it was revealed that the frequent use of CTT in mathematics could foster the ability of comprehension in mathematics. (13)

Molia.M.S (1999), made a study of the effectiveness of Inductive Thinking Model of retentional indices in Mathematics of class VIII. The main objective of the study to find the effectiveness of inductive thinking model with respect of mathematical achievement scores of the students of Class VIII. A sample consisted of 120 students, forming 2 groups of 60 each. Mathematical achievement test on retentional indices was used to collect data. The collected data was subject with t test. Major findings were inductive thinking models improve the performance of the students in mathematics, as the achievement of mathematics of ITM group was higher than that of the group not using ITM.(42)

Elashfei, Donna Lymne (1999), studied the achievement and attitudinal differences between traditional and problem based teaching methods of curve fitting unit with high school students, 342 students within five schools. 15
different classes using Quasi experimental techniques. 8 classes were taught via traditional method and other seven by problem based method. The results indicated that students prefer a more constructivist form of instruction and when taught using problem based techniques, students solving problem in groups performed better more plausible solutions than traditionally taught students. (20)

**Feld berg, Suzanne (1999),** study indicates whether any of four Mathematical hint types are more attractive or helpful to students as the concrete and formal operational levels of cognitive development. The four hint types 'pictorial', 'numerical', 'structural' and referential were chosen. The treatment program was administered in two parts during class hours to 60 students of 7th and 8th standard. The result was a low correlation between students performance on the cognitive skills talks and their performance on the problem solving tasks.

**Muchlinski, Thomas E.(1996),** Using cognitive coaching to model metacognition during instruction. The purpose of the study was to investigate the effect of embedding the cognitive coaching process in instruction on students' ability to solve geometry problems, their self-concept of their thinking ability, and their metacognitive behavior. Two geometry classes at a suburban high school in the upper Midwest were involved in the study. One group, the observation group, consisted of 31 students. They viewed video
tapes of the teacher, who was also the investigator, being coached by an assistant principal of the high school twice a week for six weeks. During the coaching sessions the teacher modeled metacognition by answering and clarifying answers to questions regarding lesson objectives, success indicators, and evaluations of previous lessons. The other group, the non-observation group, consisted of 28 students. They also viewed video tapes on the same days as the observation group. However, their tapes showed the teacher only presenting a summary of the coaching sessions. Problem solving ability was measured with a pretest and a posttest using teacher designed problem solving tests. Self-concept was measured with a pretest and a posttest using the Self-Concept as a Thinker Scale designed by Dr. John Edwards, for both tests. Metacognitive skill was measured using protocol analysis, a method of analyzing verbal data. Twenty students from each group were audio taped solving two geometry problems at the beginning and the end of the study. The protocol analysis used a checklist of 17 behaviors identified by Shotsberger based on Garofalo and Lester's framework of metacognitive behavior. Each behavior was marked as being present or absent for each student. Analysis of covariance results showed no significant difference between the groups at the end of the study in their ability to solve geometry problems or their self-concept of their thinking ability. Test results showed no significant difference between the groups in their use of metacognition while solving problems.
Singh R.D (1992), in his study aims to compare the results of Computer Assisted Instruction (CAI) with the results of the conventional method of instruction of teaching mathematics. The study was conducted in four higher secondary school having facility of 5 micro computers. The results reveals that the group taught through CAI in all the schools showed a substance program and the change in attitude towards mathematics was independent of gender.(52:15-34)

Shankaranarayana B.L (1990) in his study he addressed the problem of achievement in mathematics under guided discovery learning and reception learning condition in relation to intelligence and anxiety. A sample consists of 128 girls students of 9th standard were selected from seven randomly selected high schools in Mangalore city. ANOVA was used to analyse the data. The major findings were student taught by the guided discovery method were better compared to reception method.(58)

REVIEW OF STUDIES IN THE AREA OF PROBLEM SOLVING ABILITY

Ayodhya P. (2007), the study aimed at finding the impact of problem solving instruction through Polya’s heuristic approach on the achievement in mathematics. The sample consists of 378 students of 9th standard enrolled in five government schools. Idhoo Direct Mathematics Assessment (DMA) test was adopted to measure the problem solving skills of the students. Bothe pre test and post test consists of six items each and students achievement was
measured by the tests prepared by the district common examinations conducted by the board. The group was tried with polya’s heuristic approach as treatment. t-tests and correlation were the statistical techniques used to analyze the data. Results showed that there is no significant improvement in the problem solving skills of students exposed to Polya’s heuristic approach.(5)

**Clonan Shaila (2007),** the researcher studies the problem solving approaches incorporation and interventions at multiple level have gained in popularity in recent years. Positive behavioural interventions and support (PBIS) was developed to assists school to act more effectively. Preliminary data from a case-study were reviewed and decision making model was used to promote positive student behavior. (15)

**Rani Swaroopa T. (2006),** the main aim of the study is to bring the relative effectiveness of two methods of teaching i.e. synthetic method and polya’s heuristic approach in the acquisition of problem solving skills in mathematics. The sample consists of 94 girl students selected from two different schools from the same location. Non randomized intact experiment – control groups pre test and post test design was used. t-test and ANOVA were used to analyse the data. The result showed that the polya’s method is successful in inculcating the required problem solving skills and also it is more appropriate to the children.(51)
M.T.V. Nagaraju (2006), in his study he tried to find the problems in 10th standard mathematics perceived by the residential and non-residential school students. Sample of 100 boys and 100 girls were selected by multi stage stratified random sampling and cluster sampling. The following tools were used to collect the data i.e. check list of problems faced by the students with regard to the subject and personal data sheet.

The study reveals that there is significant difference between the residential and non-residential students in perceiving mathematical problem. And residential girl students have the Mean scores of on mathematical problems. (43)

Harskamp (2006), found that mathematics teachers often experience difficulties in teaching students to become skilled problem solvers. Researcher evaluated the effectiveness of two interactive computer programs for high school mathematics problem solving. The effectiveness of both computer programs was evaluated by means of an experiment. Four classes worked with the constructivist based computer program and the four with direct instructional program. The result showed that both computer programs improved the problem solving ability more strongly than the traditional method of mathematics instruction. Specifically the programs helped the students to improve the quality of their analysis and verification skills during problem solving. (25)
Seo, Mikiko (2005), the main purpose of the study was to investigate the effect of strategies for checking failures in problem solving on question generating and academic help seeking, 313 high school juniors students were participated in the experiment. The result suggests that strategy training improve the quality of questions generated, regardless of differences in student’s achievement in mathematics. (56)

Susai Mary (2005), made a study on problem solving: an assessment of students attitudes, expectations and beliefs. The main reason for learning all about Mathematics, to become better problem solvers in all aspects of life. The study consist sample from 9th to 11th standard students. The sixteen item inventory was administered to 140 students of higher secondary schools. Four point scales was used. The results of the study were solving word problems require deeper thinking than executing calculations and using formulas. It seems reasonable that students who enjoyed solving word problems would be more likely to spend considerable amount of time with drill problems and examples and more time learning the concepts and principles. It confirms a common sense intuition that there would be relationship between liking mathematics and enjoying word problems. (65)

Freeman, Gregory D.; Sullivan, Kathleen; Fulton, C. Ray (2003), made a study on effects of creative drama on self-concept, social skills, and problem behavior. They examined the effects of creative drama activities on
self-concept, problem behavior, and social skills. A sample of 237 students from Grades 3 and 4 were selected randomly to participate in the study and assigned randomly to groups. A Solomon 4-group design was used. Students in the treatment group participated in creative drama activities 1 day a week for 18 weeks. The authors analyzed data using a 2 x 2 factorial analysis of variance. Significant treatment effects were not found for any of the dependent variables. Results did not differ by gender. The main and interactive effects of pretesting were negligible. The specific variables to be measured and the potential for skewed distributions on pretest measures are factors to be considered in studies with creative drama as the treatment.(22)

**Sri Raman, Bharath(2003),** in their paper they discussed the complex mathematical tasks such as problem solving are an ideal way to provide students an opportunity to develop the higher order mathematical process such as representation abstraction and generalization. In the study 9 students of 9th standard were taken and the result showed that there is a relationship between mathematical giftedness, problem solving ability and the formulation of abstract and generalized of the gifted children.(59)

**Mason, Lucia (2003),** made a cross sectional study for sample of 599 students of age group 13 to 19 years were asked to fill the 36 item (6 scale) self report questionnaire. The study was aimed that analyzing possible significant differences in believes related to grade and gender regarding PSA. MANOVA
revealed that differences 3 scales, ability to solve the consuming problems, problems which cannot be solved by routine procedure, the usefulness of mathematics. (40)

**Kota Saraswathi (2001),** this semi longitudinal study wanted to investigate whether any relationship between secondary school student algebra problem solving ability and affective factors exists or not. 195 boys and girls aged 13-15 years from two different academic levels belonging to specific coeducational schools formed the subject group. Standardized questionnaires using 5 point likert response format were used to measure the student’s affective factor levels. An analysis of the data from the test and interviews was than used to explore the existence and description between the variables.

Statistical analysis revealed resonance between lower or impeded problem solving ability and lower and or decreasing affective factors, and between stable or increasing problem solving ability and higher and or increasing affective factors.(35)

**Pichat, Michal (2001),** discusses mathematical reasoning during problem solving in a didactic institution as a complex system of interfering constraints. An empirical example is provided to 121 secondary students found that there is a interaction effect between the students, teacher and the knowledge itself. (47)
Dermitzaki Irini (2001), studies with Meta Cognitive Experience that is the feeling, judgment or estimate evoked during problem solving. The study with junior and high school students on Meta cognitive experiences in mathematical problem solving highlights how it had relationship with the self concept. MCE’s and performance change with increasing age in adolescent which suggests that students interpret their internal context in light of their already formed self concept, of their growing expertise in the domain and of the learning context. (17)

Sheela.G (2000), made a study on the effectiveness of synetics model of teaching science on creativity, on problem solving ability of secondary school students with a specific objective of finding the effectiveness of synetics model and conventional mode of teaching science with their creativity and problem solving ability. Pre-test, post-test parallel group experiment design was followed. The tools used were verbal test of creative thinking and PSAT. Samples were taken by multi-stage purposive sampling technique. ‘t’ test and ANOVA were the statistical techniques used to analyze the data. The major findings were synetics model was more effective in fostering enhance the creativity and PSAT. (61)

Tapaswini Sahu Nee Das (2000), made a study of role of object play in problem-solving. The major objective is to find the playful action with objects formed a resource in the development of ability to produce a wide range of
object uses which form the basis for subsequent problem solving. The sample comprised of 60 children within the age range of 4-6 years. Five subgroups of 60 children formed. The observation extended over the whole academic year and each school was visited alternately. Parent’s scale was used to observe play categories. The major finding of this research implies that if situations could be created which were personally meaningful to children and activities were organized to enable learners to progress at their own pace, this would encourage independent thinking (69).

Maccini, Paula (2000), Researcher investigates the effect of an instructional strategy with in a graduated teaching sequence on the representation and solution of problem solving skills. The sample was 6 secondary students with learning disabilities. A multiple probe design across participants was used. Results showed problem solving skills involving integer numbers dramatically improved following instruction at the concrete, semi concrete and abstract levels. (38)

Leighton, et al (1999) the study check 170, students of 9th and 10th standard in their problem solving in mathematics by constructing an informal performance task. The task for students was to evaluate others students solutions to 2 questions in mathematics. Results indicate that higher achieving students generally preferred responses reflecting multiple approaches to
problem solving an indicate that students found multiple approaches to problem solving desirable, while at the same time exhibiting problem solving biases.

Stacey Kaye (1999), found from a study that, students attempts to formulate and solve algebra word problems which show that the logic underlying algebraic problem solving methods is little understood. Data was collected from 900 students (aged 13 to 16 years). Result showed that students prior experience with solving problems in arithmetic gives them a compulsion to calculate which is manifested in the meaning they give to the unknown and how they use methods they choose to solve problems.

Schneider, Alfred Franz; (1997), made a study on the influence of affect on participation in problem-solving activities. An investigation of the influence of affect on participation of high school students in mathematical problem solving activities was conducted over a period of two school years. During the first year the focus of the study was on mathematics problems 51 algebra students selected on their own from given problem sets. These problem sets consisted of 22 problems with three different degrees of difficulty. Students were not told which problems to do, but were only required to earn a minimum number of points that were associated with each problem. The focus during the second year of the study was on participation in problem solving activities that were mandatory. Observations about and questionnaires of 119 students were used for finding out what factors caused students to engage or
disengage in mandatory problem solving activities. Of the three categories of problems that were offered students selected primarily the easiest type of problem to earn the minimum number of required points. More difficult problems were clearly avoided. The more difficult problems were also immediately rejected or eventually abandoned when they were mandatory, unless the teacher intervened with strategies that reduced the emotional arousal experienced by students. Since predominant beliefs, attitudes, and emotions of many students revolved around aspects that were not school or mathematics related, problem solving activities were perceived only as low-level plans and were therefore abandoned when a major emotional arousal occurred, unless external interventions counteracted these pre-existing trends. The teacher became the primary intervention agent in the dynamic interplay between students and problem solving activities. Although the teacher did not have any direct control over reaction patterns of students about problem solving activities, indirectly he had an impact on participation in problem solving activities by responding in certain ways to students' emotional status. The response patterns of the teacher evolved out of events that were repeatedly experienced when interacting with students. A variety of arousal patterns were found and appropriate intervention strategies were suggested and compared with objectives and goals of NCTM publications about problem solving. (55)

Studied the effectiveness of intensive problem-solving skills training designed to help college students cope with stress. 32 normal male and female Japanese adults (aged 18-25 yrs) (undergraduate students). 17 Students received intensive group problem-solving skills training consisting of lectures on problem-solving strategies and role play. These Students learned to use metacognitive behaviors for social problem-solving, to identify and monitor stress-promoting knowledge, to restructure this knowledge into adaptive thoughts, and to prepare adaptive stress-coping behaviors for stress-promoting situations. The levels of depression and anxiety and the types and effectiveness of problem-solving abilities were compared in the treatment and non treatment groups. Tests used: The State-Trait Anxiety Inventory, the Self-Rating Depression Scale and the Problem-Solving Inventory.

Santos-Trigo, Manuel (1996), an exploration of strategies used by students to solve problems with multiple ways of solution. Studied how students solve specific problems and related this information to mathematical instruction. 35 10th graders were asked to think aloud while solving 5 previously studied problems having multiple ways of solution. Some clarification questions were asked or hints in solving the problems were given occasionally by the interviewer while taking notes on the main steps the students followed. Results showed that some students had difficulties in identifying the key information, and were not organized in presenting them. The students believed that the most efficient way for problem-solving was the
algebraic approach, though they often struggled in representing the information. The Ss used guess and test as the last resort and failed to use simpler problems as a means to solve the problems. Recommendations and instructional implications are discussed.

Randhawa, Bikkar S (1994), Describes theoretical and research issues in mathematical problem solving, such as the nature of problem solving, problem solving approaches, situated and context-independent cognition, externalization of internal representation and its role in the emergence of genius solutions, and the development of competence. Identified research issues concern the assessment of mathematical problem solving by students so that meaningful and contextually relevant analysis of the problem solving process can take place. A study on 40 12th graders is described that illustrates this approach as well as differences between male and female students. Differences in cognitive and metacognitive processes of student abilities for solving mathematics problems are related to literature on the development of expertise. Results suggest that competence is characterized by a knowledge base and knowledge of metacognitive strategies.

Vijay Prathap Singh (1993), made a study on predictive efficiency of intellectual and mathematical creative thinking abilities for mathematical problem solving performance of high school students.
The study consists of 750 high school students for both urban and rural students with male and females. Ravan’s standard progression matrices tool, mathematics creative test and problem solving performance test and academic achievement test were the tools used to collect the data. Multiple correlation and beta coefficient were computed. Major findings were intellectual contributes much for the problem solving ability in mathematics much are urban than the rural.

**Dutt.Sunil (1993),** made a study on problem solving ability in science of high school students in relation to their anxiety level, cognitive style and intelligence and effects of problem solving ability. Found that problem solving strategy applied on the students help them to develop ability to solve the new problems.

**Jain S.C (1992),** studies the problem solving behavior in physics among adolescents pupils. The sample consists of 180, 9th standard students selected randomly. The method followed is 10 problems in physics based on different reasoning patterns were arbitrary frame to measure problem solving ability. The result was there was no significant difference of problem solving ability was observed among the three groups with difference in their creativity.

**Akpan, asquo Asquo(1991),** purpose of their study is to develop a valid path analysis model of problem solving in mathematics and to determine
the hierarchy of the total effect of the factors on mathematical problem solving. The sample consists of 820 secondary school student's randomly taken from 20 schools in Nigeria. Results reveal that home background factors exerted positive and significant direct effect on student mental abilities and affective behaviors which inurns help in mathematical language.

**Krishana Navaneetha J (1990)**, the study attempts to identify the problem solving strategies in mathematics. A sample consists of 370 students from 120 schools was randomly selected by using the cluster sampling techniques. Identification of problem solving strategies (IPSS), Achievement of Problem Solving in Mathematics (APSM) and Application of Problem Solving Strategies (APSS) result showed that all other factors are put indirect effect on Achievement of problem solving in mathematics.

**Think S.K (1990)**, the study attempted to study the impact of SES on the mathematical problem solving ability of school students and also their parental education and occupation. Sample consists of 204 students. The major findings are the education of the father had no effect on problem solving ability; father and mother occupation will not put any impact on Problem solving ability of both rural and urban student.

**Tarmizi, Rohani A.; Sweller, John (1988)**, made a study on Guidance during mathematical problem solving. Researchers have suggested that often,
having students study worked examples may be superior to active problem solving. The guidance provided by such examples reduces cognitive load compared with that imposed by the means-ends strategy used by most novice problem-solvers. This may facilitate schema acquisition. The guidance provided by worked examples or other sources of information, such as subgoals, must not themselves require significant cognitive resources for effective processing. In many areas of mathematics, conventional methods of presentation may result in a splitting of attention between multiple sources of information that must be mentally integrated. The cognitive load imposed may eliminate any benefit of a worked example or other form of guidance. A series of 5 geometry experiments provided evidence for this hypothesis. When guidance in the form of subgoals or worked examples was provided using a conventional format requiring attention to 2 sources of information, Ss' performance was no better and possibly worse than when solving conventional problems. Presenting information using a format that did not split attention resulted in a superiority of worked examples over conventional problems.

REVIEW OF STUDIES IN THE AREA OF LIFE SKILLS EDUCATION

Buhler, Amen.Schroder (2007), they conducted a study regarding the life skills programmes to show the most effective single activity in school based substance abuse prevention. The study which is Quasi-experimental, the data was collected from 753 students and analyzed the interviews of randomised subgroup of 52 students.
Results illustrated how to evaluate life skill programmes in a way which is more sensitive to change, focusing on the behavior process and considering information content. Suggestions are made how to include life skills in mediating analysis of life skills programme in order to further optimize the effective prevention approach. (11)

Shimamab, Kohai (2006), made a study with a purpose in developing a multidimensional self rating scale that would enable the measurement of the level of life skills, including social skills in college students. The items were developed based on items and descriptions from previous studies on life skills and social skills. The questionnaire comprised of 42 items on 729 college students and scale was moderate reliable and valid.

Vashista K & Shweta Bhardwaj (2006), in their study they identified the life skills relevant to science and technology as per the preference of boys and girls of secondary school and also they analyze the achievement of science and technology.

The sample consists of 100 students which comprises 64 boys and 36 girls from class VIII of various schools. Self constructed tool has been employed. Chi Square was the statistical technique used to analyse the data. The outcome is problem solving skills is the dominated sill compare to other skills where as interpersonal skill weighs the least. Researcher stresses of
including the LSE approach in the curriculum framing and also in the classroom. (73)

Weerts, Sally (2005), made a study on critical thinking skills across the curriculum through the films. Two films provide the context of thinking critically about real world problems were used. Then they provided the questionnaire to the students to answer. The result is the critical thinking group project link the need for teaching of critical thinking skills with the desire outcome of improved knowledge of the content area. (77)

Elias, Maurice (2005), in their report they said social decision making/social problem solving provide students with basic school survival skills. The author thoroughly tested the effective approach of working with the broad variety of learners including those with learning disorders. They provide the strategies for supporting academic achievement through skills.

Schechtman, Zipara (2005), the author’s evaluated outcomes and implementation process of teacher training in the life skill training programme. The sample consists of 214 teachers taken in three groups. Intensive training was given to the group for 2 years. Results indicated that teachers with two years of training course significantly very high on work environment and self efficacy. So there is a need for educators to allow enough time for training teachers in this programme. (55(1))
Curry, Lewis A. Maniar, Sameep D. (2003), made a study on Academic Course Combining Psychological Skills Training and Life Skills Education for University Students and Student-Athletes. Three studies conducted for the purpose of determining possible influences of the peak performance course on participant perceptions and sport performance are presented. Three initial sets of data were gathered: (a) pre-post changes in psychological trait indices of course-taking student athletes as compared to control athletes; (b) behavior change applications specific to taking cognitive-behavioral homework completed as reported by course-taking athletes; (c) sport performance behaviors of course-taking athletes as compared to control athletes as rated by coaches. Results substantially support, with noted limitations, the premise for offering an academic peak performance course in a university setting. Post-intervention sport and more general psychological inventories scores consistent to athlete achievement and well-being were enhanced as compared to a control group of athletes. Two out of three course-taking athletes commented on the meaningfulness of a specific behavioral change intervention they implemented. Coach-rated sport achievement was higher for course-taking athletes; in addition, coaches rated these athletes as exhibiting enhanced psychological skills specific to leadership, confidence, peaking under pressure, and coping with performance adversity. (16)

Farkas, Rhonda Downj (2002), made a research about the relationships among 7th standard student achievement scores, attitudes towards instructional
approaches, empathy scale and transfer of skills between traditional versus multi sensory instruction. The dependent variables for this investigation were gain scores in achievement and empathy post test scores.

The sample consisted of 105 heterogeneous grouped, the learning style inventory was administered to determine learning style preferences. The semantic distension scale was administered to reveal attitudinal differences. The balanced emotional empathy scale was administered to reveal empathetic distance. The data was subjected to statistical analysis, reveals that, multisensory implemented support the good achievement compare to traditional method of teaching.

Students gain scenes empathy scale when taught through a multisensory approach. And showed were positive attitude and transfer of skills when students were instructed through multisensory instruction method. (21)

**REVIEW OF STUDIES IN THE AREA OF SELF CONCEPT**

**Annie K. Jacob (2006)**, the main objective of the study was to find the relationship between creativity and self concept. Research shows that the self concept is perhaps the basis for all motivated behavior. It is the self concept that gives rise to possible selves, and it is possible selves that create the motivation for behavior. The study found that the self concept of an individual is dependent on various factors in and around. The outcome of the study
suggests enhancing the self concept of the students teachers should not hesitate to congratulate the students whenever it is appropriate. They should recognize the abilities and qualities of the students as it would be great help in developing a positive self concept that will cultivate creativity. (4)

Brijesh Kumar Sharma et.al (2006), found the relationship between self concept, achievement motivation and achievement in Mathematics with reference to gender comparison. The main objective of the study was to find out the relation between self concept, achievement motivation and achievement in Mathematics. The sample consists of history students from 8th standard. Self concept scale was used to collect data (Harmohan Singh & Smt.Saraswathi Singh-1977) was used. The major finding is there is no relationship between self concept and achievement motivation among boys but in case of girls there is a positive relationship between above two. (9)

Mary, R.S. and Paul, J. (2005),. The main objectives of the study To find out the self-concept of the students studying in integrated course; and (ii) to find out the difference between the self-concept of boys and girls, type of family and size of the family, hostellers and day-scholars, arts and science students and on the basis of parental income.

Methodology: The sample consisted of 170 students of which 50 were boys and 120 were girls selected randomly from the four year integrated B.Ed course
of a training college located at Pondicherry. Tools used to collect the data included a personal data sheet constructed by the investigator and self-concept inventory by Saraswat (1984). The data was analysed using mean and S.D.

**Findings:** (1) The student self-concept is above average. (2) Boys and girls differ significantly in their self-concept. (3) Day-scholars and resident scholars differ significantly in their self-concept. (4) Students from joint and nuclear families, and large and small families don’t differ with each other. The same result was also found in the case of the comparison between the science and arts students. (5) There is a significant difference among income groups in their self-concepts. The study cites ten references.

Kaukiainen, Ari; Salmivalli, Christina; Lagerspetz, Kirsti (2002), Learning difficulties, social intelligence and self-concept: Connections to bully-victim problems. Learning skills, social intelligence, and self-concept were related to each other and to bully-victim problems among fifth-grade children (79 boys and 62 girls, aged 11-12 yrs). In addition to exploring connections between single variables, a person-oriented approach was applied in order to analyze children's value patterns with respect to learning skills, self-concept, and social intelligence, as well as how these value patterns are related to bully-victim problems. Social intelligence was found to be positively correlated with learning skills, but negatively related to victimization. Bullying was positively correlated with self-concept scores.
However, this was true only of boys. According to data, there were significantly more bullies among children with learning difficulties (LD) than would have been expected by chance. A group of children with LD emerged, who not only scored high on bullying, but also tended to be victimized by others. In addition, two groups of bullies appeared: one whose members could be interpreted as socially unskilled and another as socially skilled. This finding is in line with recent theoretical reasoning, which calls into question the idea of bullies as a unified group, lacking in social skills.

**Vamadevappa H.V (2000),** made a study on investigation into factors causing under-achievement in Biology among pre-university students. The main objective of the study is to find the under achievement in Biology among PU students. For data collection, group test of intelligence, achievement test in Biology, achievement motivation test, study habits inventory were used. The collection of data was subjected to the regression, co-efficient of correlation, ANOVA, multi-range test. The major findings were low achievement motivation, poor study habit, poor adjustment; low Self Concept and low SES were the causes of under achievement. (72)

**Malaties, Claire (1998),** the goal of this investigation was to verify the relationship between the types of social self concept of 9-12 year old school children and their interpersonal relationship. The methodology consisted of evaluating the children’s social self concept and their sociometric status and
along with the teacher evaluation of the children. The result suggested that the type of social self concept influence the behavior of the person towards other persons. (39)

Clark, Tennifer J, et.al,(1997), researcher intension was to find the exploratory outcome of the social self concept of four gifted high school students participated in a social skills workshop. Marsh self description questionnaire was used to measure the self concept. The outcomes were contrary to the hypotheses, the students did not demonstrate and increase in their social self concept.

Rangappa K.T.(1992) studied the self concept and reading ability in relation to achievement in mathematics of the students. The sample consists of 1000 students. Self concept inventory, reading ability of students and mathematics achievement test was used to collect the data. Multiple classification ANOVA and t-test were used to analyze the data. The outcomes are self concept and reading ability affected the achievement of the students in mathematics. And self concept and locality of school affects the achievement in mathematics.(50)

Bhurwani, Rupa G (1991), made a study with the problem of self concept and tries to make s comprehensive study of a particular dimension of self concept viz the dimension of competence and its relationship with mental
health and academic achievement. Self Concept Inventory and Mental Ill Health Inventory were tools used. The major findings of the study perceived themselves to be highly competent were relatively free from mental ill health symptoms.

**Jain Jayanthi (1990)** made a study to find out the relationship between the self concept and academic goals of adolescent girls and identify them with parents or parent substitutes. The data collected from 600 girls from 41 schools of Nagpur city. The major findings were girls having high self concept tended to select high academic goals and positive self concept and superior cognition ability went together significantly.

**Vaidya S. (1990)**, made attempt to study the effect of mastery learning strategy on pupils achievement, self concept and their attitude towards Hindi. Experiment – control group pre and post test design was used for 144 students on the basis of IQ and SES. The collected data was analyzed using t-test, one way ANOVA and correlation. The results were the mastery learning strategy was more effective compare to traditional method and also develops the positive attitude towards Hindi.

**REVIEW OF STUDIES IN THE AREA OF STUDENTS ATTITUDE TOWARDS MATHEMATICS.**

**Subratha Saha (2007)**, Study of academic achievement in mathematics in relation to cognitive style and attitude towards mathematics. In their study
they made an attempt to analyse the more discrete cognitive and affective abilities and their influence on the academic achievement of primary school children in a specific subject like mathematics. The major objective of the study is to study the significance in the cognitive style and attitude towards mathematics.

The total of 200 subject were taken randomly from 6 government, aided Bengali medium primary schools. Academic achievement test in mathematics (AATM), Children’s embedded kignen test and scale of meatury attitude towards mathematics were used.

The outcome of the study was “Independent thinking and analytical perception if accompanied by positive attitude may produce. Very good mathematics skills in individual even in his elementary stage of education. Developing positive attitude and analytical thinking in solving mathematical problems rather than providing. (63)

R. Ravanana A. Blessing Mary Julie(2006), made a study on attitude towards mathematics of XI standard students in Trichy district, the main aim. The study was limited to only 10 schools District. four Government schools, three Aided and three Unaided school from both Rural and Urban areas in Trichy. The sample was limited to 450 students of XI only. Standardized test materials alone were used in this investigation. . Random sampling was used
to select the sample. The tools used for the present study was Mathematics attitude scale prepared and standardized by Dr. C. Dandapani. The methods of analysis were used students’ t test, ANOVA, Chi-square test and Karl Pearson’s product Moment. There is no significant difference in Attitude towards Mathematics of XI standard students in Trichy District, owing to differences in their Gender, Region and Medium of Instruction. There is significant difference in Attitude towards Mathematics of XI standard students in Trichy District, owing to differences in their Stream of Study, Types of School Management and Socio Economic Status. There is no significant association between Attitudes towards Mathematics of XI standards students in Trichy. District regarding their Gender and Medium of Instruction. There is significant association between Attitudes towards Mathematics of XI standards students in Trichy District with their Region, Stream of Study, Types of School Management and Socio Economic Status.(60)

Thomas (2006), conducted a study to determine the Attitude towards Mathematics and achievement by combining co-operative learning strategies with instruction delivered using an Integrated Learning System (ILS). Sixty five fifth grade students were randomly divided in two groups, co-operative and individual. Result revealed that students using on ILS for mathematics instruction performed better on standardised tests and were more positive towards math and they worked in co-operative groups than when they worked on the same individually.(71)
Xin Ma and Jianymin (2004), conducted a study to determine the casual ordering between Attitude towards Mathematics and Achievement in Mathematics of secondary school students. Results showed the achievement demonstrated casual predominance over attitude across the entire secondary school. Gender difference in this casual relationship was not found but elite status in mathematics moderated this casual relationship. (78)

Roasly (1992) the study attempts to find out whether high school students have a favorable attitude towards learning mathematics and whether the favorable and un favorable attitudes of the students affect their achievement in mathematics. Sample consists of 200 students of class 10th in 8 schools. Mathematical Attitude scale (MAS) and Achievement Test in Mathematics were constructed and used in the study. Major findings were the attitude of high school students towards learning mathematics and their achievement in mathematics were related and urban girls has more positive attitude towards Mathematics compare to rural girls.

Viney (1992) studied the problem s of the effectiveness of different models of teaching on concept and attitude. Sample consists of 200 students selected randomly. The outcomes are computer model of teaching was found to be superior to the concept attainment model for teaching concepts in mathematics and develops the positive attitude towards mathematics.
Rodriguez Feijoo (1984), the study determines the contributions of Attitude towards Mathematics and Mathematical ability in solving Mathematical problems. The sample consists of 100 students of age group 17 years were considered. Attitude towards mathematics scale developed by researcher and numerical ability was measured by differential aptitude scale. Problem solving ability was measured the scale developed by H.J Rimoldi were administered. It was found that the mathematical scale questionnaire were the best predictor of achievement in Mathematics.

Discussion:

Educational research in general and researches in the field of models of teaching in particular are of recent origin. It is hopeful sign that research on model of teaching is generally receive due importance and especially in teaching mathematics. Different approaches were tried to make the teaching and learning process mere effective.

The overview of the researches related to different approaches of teaching; problem solving ability, attitude towards mathematics and self concept of the students. Crystallizes some of the issues and observations, were helped the researcher in framing hypotheses, selection of tools for collecting data, sampling techniques, adopting experimental design and employing statistical techniques for analyzing of data for the present study.
It was observed that studies and models of teaching were by and large based on experimental designs. Most of the experiments have been carried out in actual classroom settings and are Quasi experimental designing of such studies in the classroom situation has an advantage of assessing the effectiveness of teaching strategy in real conditions.

It was also observed that attitude towards mathematics and ability to solve problem could be enhanced by disciplined procedures like by conducting life skill education systems in classes.

From the review it is found that there were very few studies conducted on life skill education. Those which are available adopted to majority regarding adolescent and health education and awareness about HIV & AIDS. But the effectiveness of life skill education was not tested on any other curricular subject.