CHAPTER – II

REVIEW OF RELATED LITERATURE
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Review of related literature is an essential pre-requisite for actual planning and execution of any research work. The search for reference material is a time consuming but fruitful phase. A familiarity with the literature in any problem area helps to discover what is already known, what others have attempted to find out, which methods of attack have been promising or disappointing and which problems remain to be solved (Best and Kahn, 1986). Careful review of available literature in the form of encyclopedias, journals, abstracts, books and other sources of information on the problems similar or related to one being investigated is one of the important steps in the planning of any research. In the present chapter, an attempt has been made to examine the existing literature relating to the present problem. The review of research studies has been divided into four sections as:

2.1 Review of research studies related to effectiveness of cooperative learning.

2.2 Review of research studies related to attitudes.

2.3 Review of research studies related to social skills.

2.4 Review of research studies related to cognitive style.

2.1 REVIEW OF RESEARCH STUDIES RELATED TO EFFECTIVENESS OF COOPERATIVE LEARNING

Devries and Edwards (1974) evaluated the effects of two teaching techniques – student teams and instructional games on the level of cross-race and cross-sex interaction in the classroom
of 108 seventh grade students and found that placing students on heterogeneous four-member student teams created significantly greater cross-race and cross-sex helping and friendship. Team success did not have the predicted positive effect on cross-race and cross-sex interaction. Playing the instructional game had a marginal effect on cross-race helping only; however, the game-team combination considerably increased the incidence of cross-race and cross-sex interaction over that of games alone.

Anderson, Johnson, Johnson and Johnson (1976) conducted studied research on 30 fifth graders and the effects of structuring classroom learning cooperatively and individualistically on student ability to take the affective perspective of others altruism, attitudes towards classroom life and achievement.

The students were matched on previous achievement in language arts. The even-numbered students were assigned to individualized condition while the other students were placed in the cooperative condition. No competition between groups or between persons was structured into the evaluation. The results indicated that cooperative learning compared to individualized learning resulted in greater ability to take the affective perspective of others more altruism, more positive attitudes towards classroom life and higher achievement.

Slavin (1978) investigated the independent effects of level of reward (recognition based on the performance of a four-to five-member cooperative learning team Vs. Comparison with entire class) on student achievement and attitudes on 205 seventh graders in English (grammar and punctuation) classes. Results indicated reward level effects in favour of team reward and comparison group effects in favour of the comparison with equals
on percentage of time on task, positive interpersonal perceptions. In case of attitudes, reward effects favouring team reward were supported for perceived probability of success, motivation, dependence of outcome on performance, liking of others, peer support for academic performance. Comparison group effect in favour of comparison with equals were supported for feeling of being liked, liking of others, peer support for academic performance and number of friends named. No academic achievement effects were found for either factor.

Skon (1979) compared the effects of cooperative, competitive and individualistic learning situations on student achievement and reasoning processes on the following tasks: categorization and retrieval, metaphor interpretation and story problems on 86 first-grade students. The findings revealed that on the categorization and retrieval and the metaphor interpretation tasks, subjects in the cooperative condition had higher achievement scores than did subjects in the competitive and individualistic conditions. High, medium and low ability subjects in the cooperative condition used higher quality reasoning processes than did high, medium and low ability subjects in the competitive and individualistic conditions on the three of the tasks. On the free recall measure of the categorization and retrieval task, cooperation and individualism did not affect the relative performances of high, medium and low ability students whereas in case of competitive condition, high ability students maintained high performance, but medium ability students performed slightly poorer than the low ability students. Subjects in the cooperative condition perceived greater peer support than did subjects in competitive and individualistic situations.
Sharan, Ackerman and Hertz-Lazarowitz (1979) compared the academic achievement of 198 pupils of two, through six grades taught in the small cooperative groups against that of 109 pupils taught in the traditional whole-class approach. The findings revealed that children of second, fourth and six grades who studied in cooperative small groups received significantly higher scores on high level questions than did pupils from traditional classrooms. Third and fifth grade pupils revealed a trend in favour of small group classrooms but the trend did not reach statistical significance. On low level questions pupils in second grade small group classrooms significantly excelled then their counterparts whereas in third through six grades, no significant difference was found between cooperative small groups learn found and whole class instruction.

Cooper, Johnson, Johnson and Wilderson (1980) studied the effects of cooperative, competitive and individualistic experiences on cross-ethnic, cross-sex and cross-ability interpersonal attraction on 60 seventh graders during English, geography and science classes and found that more students in the cooperative condition perceived themselves as giving help to and receiving help from peers of the other ethnic group and sex than in the competitive and individualistic conditions. More normal-progress students in the cooperative conditions perceived themselves as giving help to learning-disabled peers than in the competitive or individualistic conditions. More students in the cooperative and competitive conditions than in the individualistic condition chose friends from the other ethnic group and learning-disabled peers.

Slavin (1980) studied the separate effects on student achievement and time on-task of three components of the team
learning technique, STAD: Cooperative rewards, group tasks and a focused schedule of instruction. The sample comprised of 336 fourth and fifth grade students who studied language mechanics for nine weeks. Results revealed the following: (1) In case of academic achievement, reward and task interaction effects were found significant for curriculum-specific test. The reward effect was in favour of team reward and the task effect was in favour of the individual task. No effects were found for standardized effect (2) The experimental classes learned significantly more than the comparison classes due to focused schedule of instruction (3) Students in team reward conditions to be on-task significantly more than in the individual reward conditions. Students tutored significantly more in the team reward classes than they did in the individual reward classes.

Webb (1982) investigated the relationships among student and group characteristics, group interaction, and achievement in cooperative small groups (mixed on ability or uniform-ability) on 77 students of grades 7 and 8 in mathematics. The findings revealed that three categories of interaction were related to achievement: receiving no explanation in response to a question or error (receiving no response or receiving only the correct answer) was negatively related to achievement; giving explanations and receiving explanations were positively related to achievement. Achievement and interaction in the group were related to group composition, sex, ability and personality, medium-ability students in uniform-ability groups showed higher achievement and received more explanations than medium-ability students in mixed-ability groups. Boys showed higher achievement than girls. There was a curvilinear relationship between ability and achievement in mixed groups: Highs performed best, and mediums and lows showed similar achievement. High-ability students gave more explanations
than low-ability students. Introverted students outperformed extroverted students, but extroverted students received more explanations.

Webb (1982a) investigated interaction and achievement in cooperative small groups: mixed ability or uniform ability of 96 students in Grades 7, 8 and 9 of average and general ability in mathematics. The group interaction variables were: student gives help, student receives help, student asks a question (receives a response or receives no response), student works alone, students interacts with another student (task-related, nonspecific) and student is off-task. Results indicated that students who worked in mixed-ability groups tended to score higher on achievement test than students who worked in uniform-ability groups but the difference is not significant for group composition. The interaction variable that related most strongly to achievement was asking a question and receiving no response. The frequency of asking a question and receiving no response was higher among uniform ability groups than among mixed-ability groups. This interaction variable was negatively related to achievement. Students who received no answers to their questions obtained lower achievement test scores than students who did not experience this problem. Whereas when asking a question, receiving a response was taken into account, it did not predict achievement. The correlation between extroversion-introversion scale and the number of times students asked questions and received no response confirmed that extroverted students tended to be ignored less often than were introverted.

Lang (1983) investigated the use of a cooperative learning technique, Teams-Games-Tournament (TGT), on academic achievement and improve attitude towards economics among
college students in different ability levels. On 60 students of microeconomics class, 30 each in experimental (TGT) and control group and found that TGT had no statistically significant treatment effect on academic achievement nor were there are statistically significant distributional effects of TGT among students in three ability groups. TGT had no statistically significant treatment effects on attitude towards economics.

Webb (1984) investigated the effects of small group gender composition on interaction and achievement in classroom settings and found that in groups in which gender and ability were balanced (i.e. high-medium-low ability groups being compared to other high-medium-low ability groups), the males and females had similar interaction patterns and nearly identical achievement results. However, in groups in which gender was imbalanced (majority male or majority female but with similar ability means) the females’ experiences were detrimental to their achievement. In majority male groups, the females tended to be ignored as males focused their attention on other males and in the majority female groups, the females focused much of their attention on the males to whom they gave more help than they gave to other females.

Peterson and Swing (1985) Investigated student’s perceptions of helping behaviour during cooperative small-group activity as well as the relationship between help giving and achievement and found positive relationship between students’ perceptions of the nature of a good explanation and their likelihood and giving such an explanation. Positive relationship between giving and receiving help and achievement was found.

Baldwin (1986) investigated the development and implementation of a model for accommodation of preferences for alternative instructional environments. With respect to sex,
academic background, mathematics achievement, attitudes and communication apprehension. The three instructional modes were: individual mode (IM), small group mode (SGM) and large group mode (LGM). 55 college students of mathematics were selected. The investigation revealed that:

1. Females and students with weak academic backgrounds tended to prefer the SGM environment.
2. Students with higher level of communication apprehension tended to avoid the SGM environment.
3. New college students and students with negative attitudes towards mathematics tended to avoid the IM environment.
4. Students with higher grades in high school tended to prefer the LGM environment.

Nederhood (1986) investigated the effects of cooperative learning technique on achievement and attitude outcomes of 1145 seventh graders in five experimental teaching teams of maths, language arts and social studies and found significant, positive results linking a teacher's use of student team learning with positive classroom involvement, increased number of friends, higher academic expectations and increased self-confidence. No significant differences were found for academic achievement.

Davis (1988) investigated the effect of using group process skills of “think aloud” and oral summaries in a series of Cooperating learning lessons on attitude and achievement of 104 seventh grade mathematics students of average ability in treatment and control groups using cooperative learning. Results indicated that there were no significant differences in student achievement or student attitude between the two conditions. The
observational data revealed differences in students’ interaction patterns between the treatment and control groups. Students using the specified group process skills were more verbal, interacted more with other group members, demonstrated more concern for other group members, and had more process-oriented explanations for word problems being solved during group work than the other students functioning without the specified teacher-directed group process-skills.

Scanlan (1988) examined the patterns of student talk in one fifth grade mathematics class. Cooperating Learning groups provide an alternative means for structuring classroom activities and five students further opportunities to use language to learn. Although research has reported compelling evidence that use of cooperative groups promotes academic achievement, positive attitudes towards school, higher levels of collaboration, positive relationships among students and increases self-esteem, little is known about how students actually talk with one another in these settings. Results indicated that student talk in cooperative groups was significantly different from the typical patterns of classroom discourse. Students used talk in the following ways: 61% was related to the mathematics they had been assigned to do; 30% was used to regulate their group processes; and 7% was for social/personal purposes. Only 2% of the students’ talk was uncodeable. Group assignment, that is who is working with whom and the kind of tasks assigned influenced the ways in which the students used oral language.

Williams (1988) investigated the effect of cooperative learning strategies on student achievement in algebra I, and on student attitudes towards self and others, and student attitudes on Algebra. The sample consisted of 165 Algebra students at two
senior high schools and one junior high school. The experimental classes were taught by combining STAD and TGT strategies. Results showed that there was a significant difference between experimental students and control students in the average gain scores on the Algebra I content test but no significant changes in attitudes were found.

Mulryan (1989) investigated the behaviour and perceptions of high and low-achieving fifth and sixth-grade girls and boys. Student behaviour was observed in cooperative small-group mathematics, whole-class mathematics and reading-group settings. Comparisons were made across settings. Interviews with students and teachers were also conducted. The findings revealed that students manifested more time-on-task in the cooperative small-group setting than in the whole-class mathematics and reading group settings. High achievers manifested more time-on-task and also more quality involvement than did low achievers in cooperative small groups. Student and teachers perceptions were related to student behaviour in cooperative small groups. High achievers were more active participants than low achievers were in the groups. The interview responses of low achievers indicated that these students had less complex and less differentiated understanding of the nature of cooperative small-group work.

Good, Reys, Grows and Mulryan (1989) studied the cooperative small-group process and found that students working in cooperative small groups in mathematics tended to be more active learners and were more highly motivated than students working in whole-class settings. However, many students tended to work independently and individually instead of cooperatively and needed particular kinds of tasks if cooperation was to take place. There was a tendency for some students to dominate group
interaction or to manifest passive withdrawing behaviour in this setting.

Sheng (1990) investigated the effect of cooperative learning (with training and organized) and cooperative learning (without training and unorganized) on 117 sixth graders in science in three ability levels (high, middle and low). Results showed that cooperative learning (trained and organized) displayed a statistically significant difference when compared with the significant difference when compared with the other two conditions (cooperative learning without training and organization and traditional teaching) in a test of process skill. No significant difference between scores obtained by students engaged in cooperative learning with no training and organisation and scores obtained by students participating in traditional teaching was found. Significant difference between ability levels was found. High ability students achieved higher than mixed ability students and mixed ability students achieved high than low ability students.

Peck (1991) compared differences in spelling achievement among group of students who were high, average and low achievers. The study attempted to determine any treatment effects resulting from students being cooperatively grouped for spelling instruction on 135 intermediate grade elementary children. Normal curve equivalent scores from an existing standardized achievement test were used to classify students as high, average or low achievers. STAD was implemented. The sessions provided activities designed to encourage the development of collaborate skills prior to initiating treatment. A bonus point system was used to reinforce the collaborative skills. The results indicated that intermediate children achieved equally
well regardless of how they are grouped for spelling instruction. High, average and low achieving students achieve equally well regardless of how they are grouped for spelling instruction. Low achieving students achieved significantly different from high and average achieving students.

Berg (1992) studied the effectiveness of structures cooperative learning technique in 11th grade mathematics class. The newly-devised paired-learning script was used as the primary instructional technique for 8 weeks, during which peer interaction and achievement were monitored. Results of Analyses of short and long-term effectiveness of paired learning indicated that operative learners achieved more than comparable students taught using conventional methods in three or four comparisons; in one comparison there was not statistically significant difference the program was at least as effective as a more conventional one, as measured by chapter test scores, and there was evidence of long-term effects. Qualitative and quantitative analysis of tapes, field notes, student questionnaires, and student characteristic measures (prior mathematics achievement, study skills, mathematics anxiety, and learning preference) reflected an overwhelmingly positive reaction to the paired learning experience.

Cook (1993) examined verbal student interactions as a product of varying motivational patterns in small cooperative learning groups in physics classes. Groups were classified by number of learned-helpless and mastery-oriented individuals who were identified by means of Intellectual Achievement Responsibility Scale (IAR). Each group was observed by means of video taping and assessed by a coding system for four variables on or off task, sender or receiver of the message, positive or negative nature of communication, attributions for effort or ability. Results
Review of Related Literature

showed significant relationship between scores on the positive half of IAR and the Attitude towards science in School Assessment (ATSSA) scale but not between the negative half of the IAR and the ATSSA. Significant difference were found for the main effects of sending and receiving, on and off task messages. No significant relationship were found for being learned helpless and sending or receiving positive/negative comments or making attributions for effort or ability.

Ahuja (1994) studied the effectiveness of the use of a cooperative learning instructional strategy on academic achievement, attitudes towards science class, and process skills of seventh graders. The sample consisted of 116 students (48 in control group and 68 in experimental group). Findings from the ANCOVA on post-test scores indicated that the use of cooperative learning instructional strategy results in greater academic achievement and better attitudes towards science class. The process skills were not influenced by the instructional strategy. Responses from the interview of six students (who were purposefully selected on the basis of their responses on the attitudes checklist). Corroborated the findings that a cooperative learning experience was looked upon more favorably by seventh class science students, who found that it improved their perceptions of science, made science learning more fun and improved their learning.

Coston (1994) studied the effect of cooperative learning, graphics calculator enhanced instruction, and a combination of these approaches on students' understanding of the function concept, mathematics achievement of algebraic skills, and mathematics attitude of college algebra students. Results indicated that cooperative learning significantly affected students'
understanding of functions and related topics, while the treatment that combined cooperative learning and calculator enhancement significantly affected students' attitudes towards mathematics.

Hopp (1994) examined the influence of task on time spent in cooperative episodes and on cognitive and metacognitive behaviours of 32 eighth graders as they worked cooperatively in groups of four on two routine and two non routine mathematics tasks over a three-week period. Data was collected by audio and video-taping all student interactions as they completed the tasks. Findings suggested that time spent in cooperative episodes was related to the type of task and task may influence the quality of interactions as evidenced by problem solving behaviours. Differences time spent in cooperative episodes and in metacognitive and cognitive behaviours were found between routine and non routine tasks and there were differences within the two task types. Results offered strong support that for a task to be truly desirable as a group task, it needs to be non routine for everyone in the group. Also, group members must need each other in order to complete it. Differences among groups may have occurred because of the ability composition of the group, the gender of the student, or the routineness or non-routineness of the task for individuals in each group. Tasks which required multiple abilities resulted in more and longer cooperative episodes.

Morgan (1994) studied the effects of cooperative learning with process oriented individual accountability, cooperative learning without individual accountability and traditional instruction on pre-instructional achievement, post-instructional achievement, retention, and attitudes towards school and mathematics on three third grade classroom. It was reported that
there was a significant difference between traditional group and cooperative learning with individual accountability in post-test results, students of low ability experienced greater success in the cooperative learning with process oriented individual accountability than the students of low ability in the traditional group, cooperative learning without individual accountability did not reveal a significant difference when compared to the traditional group, cooperative learning with individual accountability had a significant effect on the achievement results, whereas, cooperative learning without individual accountability had a significant effect on attitudes towards Mathematics.

Nichols (1994) explored the effectiveness of a cooperative group learning structure (STAD) on achievement, goal orientation, self-efficacy, intrinsic and extrinsic valuing of the learning task and the use of cognitive strategies of 81 students in high school geometry classes. STAD was used in 2 treatment situations: (1) as instruction for the first new weeks of school (2) as instruction for the second nine weeks of the school. Results indicated that both treatment groups experienced significantly higher achievement scores and increases in learning goal orientation, self-efficacy, instrinsic valuing and reported uses of deep processing cognitive strategies than did the control group. A decline in these effects was also noted when cooperative group instruction was replaced by traditional lecture instruction.

Adams (1995) investigated the effectiveness of specific cooperative learning method, student Teams Achievement Divisions (STAD), on achievement and self-esteem levels of mildly handicapped and normal progressing learners. The sample consisted of 44 mildly handicapped and 64 normal progressing learners of sixth grade. Findings revealed that treatment group
had significantly higher levels of academic achievement in reading comprehension. Whereas self-esteem of the students in the two groups did not differ significantly. The mildly handicapped students in the treatment group had significantly higher achievement levels in vocabulary, but not in reading comprehension, had significantly higher levels of general self-esteem, but did not differ in school and academic self-esteem.

Karnasih (1995) investigated the effects of small-cooperative group learning on 160 tenth grade students’ achievement and affective behaviours in mathematics and developing a descriptive model of grouping patterns based on students’ interactions and interviews providing information concerning their feelings and reactions to the method and the group membership in small group cooperative learning. To develop the grouping patterns, small heterogeneous and homogenous groups were formed by recording students’ mathematical ability, gender and field-dependency.

The findings revealed that small group cooperative learning opportunities in mathematics classrooms showed significant impacts on students’ achievement and mathematics anxiety. Most students preferred small group learning, but some high achieving field-independent males did not prefer small group cooperative learning when the group members did not fit their will most students felt that they had more opportunity for learning mathematics through small groups. With respect to grouping patterns, this study found that either homogenous or heterogeneous groups could be interactive but the most interactive groups were those in which there were no social and cognitive difference problems in group members.

McManus and Gettinger (1996) examined the teachers’ use and evaluation of cooperative group learning along with students’
reactions to working in groups and their verbal interactive behaviours during group activities and found positive academic, social and attitude outcomes in the classrooms. Majority of student interactions were directly related to teaching and learning. Behaviours such as listening to another student or watching a student demonstrate how to complete a task occurred most frequently during group activities.

Nowak (1996) explored the effects of a cooperative learning program on academic performance, cooperative interactions during lessons, and pro-social behaviours during play activities in integrated kindergarten classrooms. Scores on curriculum based mathematics probes and direct observations of cooperative interactions during the intervention served as primary dependent measures. Pro-social behaviours were assessed by direct observation in a free play outside the classroom. Results indicated that the cooperative learning procedures lead to improved academic growth as measured by both the curriculum-based mathematics probes and the mathematics section of the standardized group readiness test. Levels of cooperative behaviours increased during the instructional period when cooperative learning was in effect. Pro-social skills learned and practiced during the intervention generalized to the free play settings in and outside of the classroom environments. An increase in interactive play behaviours was observed for all participants during these time periods. For cooperative behaviours, the generality of effects with respect to maintenance over time was not supported. Social validity data suggested that teachers, students and parents found the cooperative learning procedure to be effective and acceptable.
Watson (1996) investigated the use of cooperative learning and small-group instruction on sixty-four remedial college students in beginning algebra and found an increase in achievement, attitude, and attribution. Remedial students in cooperative learning groups stayed in school longer, took more courses, and succeeded more frequently than students in traditional remediation groups.

Armstrong (1997) studied the effect of Student Team Achievement Divisions (STAD) cooperative learning strategy on academic achievement and attitude towards social studies class on a sample of 47 twelfth-grade social studies students in two advanced progress American classes and found that the application of STAD in the upper secondary social studies classroom exhibited no statistically significant difference in academic achievement or student attitude towards social studies class.

Lin (1997) studied the effects of classroom goal structure (competitive, cooperative, and individualistic) on beliefs about success/failure in mathematics environments on two hundred forty-fifth-grade Chinese children and found significant differences in goal structure effects on mastery goal orientation, mathematics achievement, intrinsic motivation and beliefs about success. Children in the cooperative and individualistic goal structures had higher mastery goal orientations than children in the competitive goal structure and scored higher in mathematics achievement and intrinsic motivation.

Whicker, Bol, and Nunnery (1997) investigated the effects of cooperative learning on student achievement and attitudes on the mathematics students of secondary class. One group studied in cooperative learning groups and the another group studied the material independently. Results revealed that students in the
cooperative learning group had increasingly higher test scores than students in the comparison group and survey results revealed primarily favourable responses towards the cooperative learning procedure. Most students indicated that they liked working in groups and appreciated getting help from other students, especially for learning difficult concepts.

Chang (1998) investigated the acquisition and development of self-efficacy through cooperative learning on the sample of one hundred twenty-three sixth grade students from two traditional classes and two cooperative classes found that there was no relationship between the self-efficacy measure and the requisite skill (i.e. mathematics aptitude), the cooperative learning method yielded higher perceived efficacy, students in cooperative method exerted more effort in solving word problems and showed higher self-appraisal of their performance.

Prinz (1998) studied the conditions in college students of various ability levels learn best when they are assigned randomly to one of three cooperative learning conditions: homogenous (where all students in a small group were of same ability level); heterogeneous (where high, medium and low ability students were placed into small groups together); and narrow-range groups (where high/medium ability students were placed in small groups and medium/low ability students were placed in small groups). Findings revealed: (i) No significant difference in performance outcomes for students in the three grouping conditions (narrow-range, heterogeneous and homogenous), (ii) No significant differences for attitude towards learning and students perception that the presence of others in the group enhanced their learning, was found (iii) A significant interaction effect was noted for students preference for learning alone, with low and high ability
students in the narrow-range grouping condition less interested in working individually. (iv) students in the narrow-range grouping condition who perceived the group process to be helpful experienced higher post test scores than did those students in the narrow-range grouping condition who did not believe the group process to be helpful.

Stewart (1998) investigated the effects of cooperative learning on the social self-esteem and peer ratings on the sample of 70 children in grades 4-6, 31 with mental retardation and 39 without mental retardation, found that at post-test those children with and without mental retardation who participated cooperative learning received significantly fewer unknown and not a friend ratings and more neutral ratings than their peers in the individual group.

Suyanto (1998) investigated the impact of the Student Teams-Achievement Division (STAD) cooperative learning model on students' mathematics achievement and their perceptions of classroom environments in rural primary schools. The sample consisted of 664 third, fourth and fifth-grade students and their teachers who were trained in the use of STAD. The findings indicated that the STAD classes in third grade and fifth-grade performed significantly higher on tests of mathematics knowledge than the traditionally instructed classes. No significant differences in mathematics achievement were found between the fourth-grade students in the STAD group and those who were in the control group. Students in STAD group had significantly higher attitudes towards classroom environment.

Wilson (1998) investigated the ability of general education middle school students to prompt and reinforce the functional academic skill acquisition of peers with moderate to severe
disabilities in the context of content area cooperative learning instructional settings and found that the general education students learned to provide the identified opportunities, prompt sequences and reinforcement to their peer with disabilities after a brief training session and ongoing in classroom feedback. Analysis of the grades achieved by the tutors indicated that the tutoring responsibilities had little or no negative impact on their attainment of classroom skills.

Ali (1999) studied the effect of cooperative mastery learning strategy on learning languages (English, Hindi and Assamese) and self-esteem on the sample of 200 tribal and non-tribal fifth graders. It was reported that

(i) Cooperative mastery learning strategy yielded higher achievement gain scores than conventional group learning in English, Hindi and Assamese languages.

(ii) Cooperative mastery learning yielded almost similar achievement gain scores in English, Hindi and Assamese languages for Tribal and Non-Tribal fifth graders.

(iii) Cooperative mastery learning strategy yielded higher self-esteem gain scores of fifth grade students than through conventional group learning.

(iv) No interaction was found among the instructional mode (cooperative mastery learning and conventional group learning), Habitations (Tribal/Non-Tribal) and family Background (Educated/Uneducated) with regard to achievement gain scores in English, Hindi and Assamese languages.

(v) No interaction was found among instructional treatment (cooperative mastery learning and conventional group
Review of Related Literature

learning), Habitations (Tribal and Non-Tribal) and Family Background (Educated/Uneducated) for gain scores in self-esteem of fifth graders.

Earley (1999) investigated the effect of cooperative learning on the group work and social skills interaction of 64 social studies students from grade 9 to 11 during a twelve-week period. The self report group function survey was used to assess the significance of whether instruction of social skills is important in the cooperative learning setting. The student choice form was used to establish the significance of social skills being taught and to determine the effects on increasing friendships among group members. Results of the survey indicated social skills taught through cooperative learning methodology increases group effectiveness and increases interpersonal interaction.

Williamson (1999) studied whether the presence of embedded metacognitive cues facilitate learner interactions and improve attitudes towards cooperative learning during a cooperative computer based lesson and studied the effects of ability grouping and group interactions on the sample of 120 sixth grade students assigned by ability to one of three group compositions: homogenous high-ability, low-ability or heterogeneous verbal interactions were audio taped, while social and management interactions were recorded MANOVA and univariate ANOVA revealed that learners in the cued treatment had significantly different achievement post-test scores, exhibited more on task behaviour, and socialized less than learners in the non-cued treatment. Significant differences for ability groups were found only on the achievement post test and for management interactions. Homogenously grouped low-ability learners tended to have lower achievement post-test scores. In addition
homogenously grouped low ability learners and the heterogeneously high ability group. There was no significant difference in attitude towards cooperative computer based instruction for either treatment or group composition.

Gillies (1999) conducted a 1-year investigation of whether children, who had been trained in the previous year to cooperate, were able to use the skills they had been taught in reconstituted groups without additional training on 64 4th graders, who had participated in training in cooperative group behaviours in the previous year, were assigned to the trained condition, 84 4th graders, who had not received any training, were assigned to the untrained condition. Results indicated that the children in the trained groups were consistently more cooperative and helpful than their peers in the untrained groups, although they had not received ‘refresher’ training in cooperative group behaviours.

Lucas (1999) studied the effects of the use of cooperative learning on the academic performance and self-efficacy of students enrolled in college algebra, at large mid-western university with gender as a cofactor 307 students were taught with formal of cooperative learning and 427 students were taught using the traditional lecture format when grades were used as the measure of academic achievement, students in the cooperative learning sections performed significantly better than those in the traditional sections. There was no significant difference in student self efficacy scores between the cooperative and traditional sections and the effects of using cooperative learning did not significantly differ when gender was considered.

Sparks (1999) studied the effectiveness of a short-term remediation/cooperative learning program on the sample of 450 first semester general chemistry course. Increase in achievement
on examination 2 was found which was over topics discussed in the sessions. The session participants also increased their achievement on later examinations over material that was not discussed in the sessions.

Stepka (1999) examined the difference in academic achievement among students under two teaching strategies: Jigsaw cooperative learning method and the lecture method at a rural community college, found that overall, the figsaw cooperative and section scored higher than the lecture section when compared academically.

Barett (2000) investigated the effects of two cooperative learning strategies, performer and Coach Earn Rewards (PACER) and Jigsaw-II-PE on academic learning time in physical education (ALT-PE), the percentage of correct trials, and social behaviour of eight sixth graders (2 males and 2 females in each study) in physical education. The study revealed the following: (i) No functional relationship was found between the independent variable and ALT-PE, therefore neither PACER and Jigsaw II-PE was more time consuming than traditional instruction. (ii) PACER and Jigsaw III-PE each showed gender effects, in that low skilled students performed as well as their average and high skilled counterparts. (iii) A functional relationship was found for both strategies with social duration, but not frequency of social interaction.

Karsch (2001) studied the effect of group training on cooperative learning terms of 105 ninth-graders in four heterogeneously mixed social-studies classes in a suburban high school. Results showed that students in the trained condition did feel more personally supported in their groups than did their counterparts in the untrained condition. In general, students in
the trained condition had a more positive experience engaging in cooperative learning activities, and a more positive attitude towards their particular group. No significant difference was shown between the two conditions in the area of student achievement.

Neyshabour (2001) studied the effect of individual and cooperative learning in computer education on performance at knowledge, skill and application categories in relation to cognitive styles on the sample of 124 class X students. The following findings were reported.

(i) No difference was found between knowledge mean scores, application mean scores and skill mean scores yielded through individual and cooperative learning mode. Both modes were found to be equally effective.

(ii) No difference was found between the total performance mean scores yielded through individual and cooperative learning mode.

(iii) Mode of learning was found to interact with cognitive style in respect of knowledge scores. Performance of field-independent group was higher with cooperative learning than that of field-independent group with individual learning.

(iv) Mode of learning was not found to interact with cognitive style in respect of application and skill scores.

(v) There was no differences between the mean scores attained on knowledge, application and skill categories in respect of the interaction among learning mode and cognitive style.

Gillies (2002) investigated the effect of training in small-group and interpersonal behaviours on children’s behaviour and
interactions as they worked in small groups 2 years later. 52 fifth graders who had been trained 2 years previously in cooperative group behaviours were assigned to the trained condition and 36 fifth graders, who had not previously been trained were assigned to the untrained condition. The results showed a residual training effect, with the children in the trained groups being more cooperative and helpful than their untrained peers.

Vaughan (2002) examined the effects cooperative learning on the achievement and attitudes toward mathematics of a group of 5th-grade students of color in a culture different from the United States (i.e. Bermuda) and found significant differences among the pre and post-test scores. This suggested that there were positive gains in attitudes and achievement levels of students of color.

Onwuegbuzie, Ccollins and Elbedour (2003) investigated the role of group composition ranging on in size from 2 to 7 cooperative learning groups. The sample consisted of 275 graduate students of introductory level education research course. The analysis revealed: (1) Positive relationship was found between degree of group heterogeneity at the mid term level and scores on the research proposed. (2) Relationship was found between group size and performance on the article critique; however, no relationship emerged involving scores on the research proposal. (3) Significant interaction was found between treatment (group heterogeneity level) and aptitude interaction was found between treatment (group heterogeneity level) and Aptitude (mean midterm group performance) with respect to the article critiques although no interaction emerged for research proposal scores.

Geed, Passi and Dube (2003) compared the overall achievement of the students of cooperative learning environmental
group with those of traditional learning environment group in English. The samples comprised of 70 students of class IX (35 in each group).

The achievement test included four sections namely – reading, writing, grammar and literature. Result indicated the following:

1. Experimental group scored better in the Reading section than the control group.
2. No significant difference was found between experimental and control group in writing section.
3. No significant difference was found between experimental and control group in Grammar section.
4. Experimental group showed better understanding and retaining in literature when compared to the control group.
5. Presentation of group-work was better in experimental group when compared to control group who were assigned groups only for the project.
6. Overall achievement of experimental group was significantly higher than that of control group.

Rondinaro (2004) studied the relationship between interpersonal multiple intelligence and the usage of cooperative learning teaching methods on the sample of 103 teachers and revealed the following:

i. No significant relationship between interpersonal multiple intelligence and the usage of cooperative learning teaching methods was found.
Elementary School teachers had a significantly more positive attitude towards cooperative learning than high school teachers.

The longer one teaches the more negative he/she is regarding cooperative learning and less he/she uses this teaching method.

Chen (2004) investigated the effectiveness of cooperative learning strategies in teaching English as a foreign language to a group of 110 college students (34 males and 76 females). Two cooperative learning strategies, Jigsaw and student teams – achievement Divisions (STAD) were implemented in the experimental group and control group was instructed through traditional Grammar-translation method. The study revealed that the experimental group outperformed the control group and males perform better in a cooperative structure than in the traditional competitive structure.

Bosfield (2004) investigated mathematical computation (i.e. addition, subtraction, multiplication, division, algebraic algorithm, decimals and fractions) skills between students instructed through the traditional learning method compared to the students instructed through the cooperative learning method on 53 subjects, 29 boys and 24 girls, from two fifth grade classrooms. Subjects were randomly assigned to the traditional mathematics learning and the cooperative mathematics learning conditions. Subjects were given the Math 65 Test Masters assessment as the pretest and post-test, which was used to assess the learning skills. Analysis of results revealed that students in the cooperative classroom had significantly higher growth skills in mathematical computation than students in the traditional classroom.
Siegel (2005) used qualitative research methods to explore an 8th-grade mathematics teacher's personal definition of cooperative learning and the enactment of cooperative learning in his classroom according to that definition. Data collection involved interviews and classroom observations. The researcher used coded schemes and descriptive statistics for data reduction and analysis. Results revealed that while the teacher implemented a research-based model of cooperative-learning instruction, her adopted the model for use in his classroom. Results also identified the teacher's prior experience and teaching context as factors that influenced his implementation of cooperative-learning instruction.

Yaibua (2005) studied the effect of multimedia CAI through cooperative and Individualistic learning conditions on the sample of 50 students of Diploma Course in electronics in relation to Persistence. The following conclusions were made:

(i) The multimedia CAI in individualistic learning situation yielded lower achievement gain means than multimedia CAI in cooperative learning situations.

(ii) The multimedia CAI in cooperative learning situation yielded higher achievement gain means than in conventional group learning.

(iii) Through multimedia CAI in cooperative Learning, the High, Average or Low persistence students did not differ in their achievement gain means.

A perusal research studies reveals that in cooperative learning settings students have shown increase in academic achievement in mathematics at different levels. This is supported by various studies. Webb (1982) conducted study on seventh and eighth graders, Williams (1988) with senior high school students
Review of Related Literature


Neyashbour (2001) reported no significant increase in performance in computer education. Yaibua (2005) reported significant increase in achievement scores in electronics of Diploma course students.

Research studies showed increase of favourable attitudes towards different subjects, cooperative learning and towards classroom environment.


Students in cooperative learning groups showed more altruism (Anderson, Johnson, Johnson and Johnson, 1976), increased self-confidence (Nederhood, 1986), higher self-esteem (Ali, 1999), increased in intrinsic motivation and beliefs about success (Lin, 1997; Good, Reys, Grows and Mulryan, 1989), higher self-appraisal of their performance and higher perceived efficacy (Chang, 1998). More students in cooperative condition perceived themselves as giving help to and receiving help from peers (Cooper, Johnson, Johnson and Wilderson, 1980; Gillies (1999) and Gillies (2002).

Students in cooperative learning groups showed increased number of friends, liking of others (Slavin, 1980 and Nederhood, 1986), increased interactive behaviours (Nowak, 1996; McManus
and Gettinger, 1996), increased group effectiveness and interpersonal interactions (Earley, 1997).

2.2 REVIEW OF RELATED LITERATURE IN ATTITUDES

Dennis (1983) determined the relationship among attitudes towards mathematics, mathematics background and transfer vs. non-transfer status upon competency in elementary mathematics on 77 subjects. Multiple linear regression was used and found a significant relationship (i) between attitudes towards mathematics and mathematics competency (ii) between mathematics background and mathematics competency but no significance was found to exist between junior college transfer status and mathematics.

Carbo (1984) examined the relationship of three variables, sex, grade level and mathematics achievement with attitudes towards mathematics in 600 students in grades 5 through 7. Test of Basic skills was administered and A semantic differential attitude scale was administered. The scale measured student attitudes towards mathematics in general and six of its subunits: addition, fractions, cecimals, metrics, geometry and word problems. The finding revealed the following : low positive correlation coefficients were found for mathematics and three of its subunits. No correlation coefficient of statistical significance was found for fractions and word problems. Gender was not a significant factor in the development of attitude towards mathematics of the attitude-achievement relationship for students in grades 5 through 7. Attitude in general is slightly related to achievement. The grade-level of the students is a significant factor in both the development of student attitudes and the strength of the attitude achievement relationship.
Kolhe (1985) studied the influence of sex and urban-rural location on the attitudes of students of 2000 grade X towards algebra, geometry and mathematics as a whole. The major findings of the study were: (1) The students had favourable attitudes towards algebra, geometry and mathematics as a whole (2) There were significant differences between the attitudes of urban and rural students towards mathematics and algebra, irrespective of sex. Urban students had more favourable attitudes than rural students. (3) There were no significant differences between the attitudes of urban girls and rural girls regarding algebra and geometry. (4) There were significant differences between the attitudes of boys and girls. Boys had more favourable attitudes towards mathematics as a whole, algebra and geometry than girls, irrespective of the area they lived in.

Krampf (1988) studied the effects of cooperative, competitive and individualistic goal structures on attitudes and achievement of 60 children aged 7-11 who participated in five-week sport and physical activity program. Results yielded significant improvement for the cooperative goal structured group for the following: attitudes towards teachers; attitudes towards peers; attitude towards goal interdependence; attitudes towards cooperation; attitudes towards self-esteem and attitudes towards cooperative goal structuring were significantly different for the competitive and individualistic goal structured groups. Results yielded significant improvement in physical achievement rating for subjects in the cooperative and individualistic goals structured groups.

Vogel (1990) studied the differences between accelerated and non accelerated students on affective variables (viz. confidence, perception of mother, father, teacher, math as a male domain,
usefulness and anxiety) in mathematics. The sample consisted of 920 students in grades seven through 12.

Results indicated: 1. Non accelerated students significantly reported a more positive attitude towards mathematics, Non accelerated students and female students reported higher anxiety towards mathematics.(2) Females accelerated, non accelerated reported higher achievement in maths. Males, accelerated / non accelerated) reported choosing careers in math / science at double the rate as other careers.

Moss (1991) studied the attitudes of high and low-achieving seventh and eighth-grade students towards mathematics. The variables to assess attitude towards mathematics were students perceptions of the value of mathematics in society, self-concept in mathematics, anxiety towards mathematics, students perceptions of the teacher and enjoyment in mathematics. Results indicated that students placed in gifted classes had more positive attitude towards mathematics, scoring significantly higher when compared to all others and to those in chapter I classes. The gifted students reported more enjoyment in mathematics and better self-concepts. Chapter I students (Low achievers) reported higher degree of mathematics anxiety, but reported more positive perceptions of the teacher and more enjoyment of the subject. They had significantly lower perceptions of the value of mathematics in society. Two extremes of mathematics achievement reported more positive attitude than all others, attitude towards mathematics were not directly related to achievement level. No significant differences were found between males and females.

Hariharan (1992) studied the attitudes of high school students towards homework and their achievement in mathematics on the sample of 250 students of class IX. The
findings revealed the following: (1) Girls were higher than boys in their attitude towards homework. (2) Urban students were higher than rural students in their attitude towards homework. (3) Private school students were higher than the government school students in their attitude towards homework. (4) The attitudes of high school students towards homework were related to their achievement level in mathematics.

Singh and Verma (1992) studied the attitudes towards mathematics as a function of intelligence sex and age or the sample of 220 students (140 male and 80 female) of class IX. Findings revealed the following: (1) The students of high intelligence and average intelligence had more favorable attitude towards mathematics than the students of low intelligence (2) Attitude towards mathematics was independent of sex (3) Students of the age 13+ showed a more favourable attitude towards mathematics in comparison of students of the ages 14+ and 15+, but the students of 14+ did not have more favourable attitude towards mathematics than the students of 15+.

Kelly (1992) compared the acquisition of basic mathematical skills and changes in attitudes towards cooperation and competition over a 6 week period among three treatment groups. (a) collaborative / competitive (b) competitive (c) collaborative. The combined treatment participated in collaborative activities during the first 2 weeks, collaborative and competitive activities during the following 3 weeks and competitive activities during the last week. Results indicated that students in the competitive treatment had higher gain scores in achievement than the other 2 treatments. The combined treatment had significantly higher gain score in attitudes towards cooperation than the other 2
treatments. There were no significant differences in attitudes towards competition.

Rosaly (1992) studied the relationship between attitude and achievement in mathematics on the sample of 200 class X students and found that attitude of high school students towards learning mathematics and their achievement in mathematics were related. Urban students had a more positive attitude towards mathematics than rural students and urban girls were higher on achievement than rural girls in mathematics.

Lato (1993) investigated a group intervention designed to lessen math anxiety, improve attitude towards math and enhance math performance among male grade 9 high school students. The group intervention included effective study habits, exploratory math topics, anxiety-relieving exercises using cognitive behavioural modification and math remediation. ANCOVA found a statistically significant decline in math anxiety and improvement in the attitudinal subscale Motivation among the Primary Group Participants. Although standardized Achievement test failed to demonstrate significant improvement, class marks indicated a trend towards performance by the Primary Group. Interviews were used to explore the nature of influences of learning maths (a) Parental attitude (b) elementary school experiences (c) anxiety (d) motivation. Post intervention interviews examined group differences involving parental influences, motivation and performance.

Butler and Neuman (1995) investigated help-seeking perceptions and behaviours under salient task goals relative to ego achievement goals on 159 2nd and 6th graders in solving geometrical puzzles. In task-focus (to develop proficiency) condition, children were more likely to request help and to explain
help avoidance in terms of striving for independent mastery whereas in ego focus condition, children explained help avoidance in terms of masking incompetence. In ego focus condition both high and low skill participants were less likely to explain help avoidance in terms of striving for independent mastery and more likely to explain it in terms of masking incapacity than were intermediate skill participants.

Godfrey (1998) determined if there were gender differences in attitudes and achievement in mathematics at college level. The first study involved 384 college students and found a significant interaction between attitude towards mathematics, between genders based upon the fathers' level of education and the mothers' level of education. No significant differences between the genders in their attitude towards mathematics were found. Study II involved 604 college students and found significant differences between males and females in mathematics achievement in favour of females. Study III involved 79 Statistics students and found a significant correlation between attitudes towards mathematics and course grade. It was also reported that attitudes towards mathematics for females were improving and females appeared to have basically the same attitudes as males.

Owens (1999) investigated relationship of cognitive learning styles and mathematics attitudes on the sample of 46 students who were taught in traditional manner plus one-third of the class time devoted to problem posing activities. Results indicated that mathematics pre-attitudes of students showed no significant effect on mathematics achievement gain. For attitude domains of anxiety and confidence in learners in general found mathematics more useful than did concrete learners.
Le (1999) investigated students' behaviours in cooperative learning environment, students' beliefs about cooperative learning and their attitudes towards this teaching learning method on the sample of 27 students in Chemistry Department of the National Science University at Vietnam. Findings indicated that students believed that cooperative learning approaches were a valuable method for promoting their learning, students believed that their reasoning ability was developed and their understanding of the subject matter increased when they were studying together in small groups. Students liked cooperative learning and exhibited positive behaviours when studying in a cooperative learning environment.

Broyles (1999) examined the impact of cooperative learning instruction on attitudes and the relationship between attitudes and success (as defined by course grades and retention) of physics, engineering and mathematics students and found that cooperative learning does not result in better retention than traditional instruction. However, cooperative learning does result in better attitudes towards learning particularly relating to the basic cooperative learning objectives.

Hamtini (2000) compared the computer facilitated instruction using the Interactive maths program with traditional instruction on students' developmental algebra course. Analysis of pre-test and post-test scores within each group demonstrated that the attitudes of traditional group did not change significantly in the course of instruction but the attitudes of the computer-facilitated did become more positive in the course of instruction.

Liu (2000) compared the effects of performance-based assessment and multiple-choice tests on students' achievements and attitudes of eighth-graders. Analysis indicated that the group
using performance-based assessments as intervening assessments had significantly higher scores than group using multiple-choice tests as intervening tests on the post-test. The students' attitudes toward mathematics did not significantly differ by group but positive relationship was found between the use of performance-based assessments and increased levels of students' attitudes, interests and motivation towards mathematics.

    Rose (2001) investigated the effect of selected computer software on the mathematics achievement and attitude on low-achieving 28 ninth-grade students. The results showed that students who used computer software in mathematics instruction did not score higher on post tests than students who did not use computer software. There was no change in mathematics attitude of the students who used computers whereas teachers reported changes (generally positive) in student mathematics and attitude.

    Townsend and Wilton (2003) investigated the effect of traditional pre-test post-test procedures on mathematics attitude during a program of cooperative learning and whether an examination of any attitudinal change using the 'then-now' procedure would indicated bias in the results due to a shift in the internal standards for expressing attitude. The sample consisted of 141 students divided into retrospective and pre-post groups with mathematics background (Low, Medium and High). Analyses revealed that mathematics self-concept was higher at post-test than at pre-test and mathematics anxiety was lower at post-test than at pre-test. Self-concept increased across students with low, medium and high mathematics background and anxiety decreased across students with low, medium and high mathematics background.
Review of Related Literature

Bruun (2004) studied the effect of literature enhanced mathematics instruction on student achievement and attitudes about mathematics on the sample of 247 students for achievement results and 146 students for attitudinal results and found no significant improvement in students’ achievement but significant improvement in mathematics attitudes scores.

Hodges (2004) studied the contribution of teacher characteristics to attitudes a teacher formed about a student, the 42 fourth-grade teacher who rated students in the areas of academics, behaviour, social skills and attitude and found that student characteristics remain the major contributor to classifying and predicting attitudes of teachers. Although teacher characteristics did contribute to attitude differences, they did not have an influence on prediction.

Research studies showed that urban students had more favourable attitudes towards mathematics (Kolhe, 1985; Rosaly, 1992). Attitudes towards mathematics is independent of gender differences (Corbo, 1984; Moss, 1991; Singh and Verma, 1992; Godfrey, 1998).

Non-accelerated students reported more positive attitudes (Vogel, 1990). High Intelligence and Average Intelligence students had a more favourable attitude towards mathematics than students of low intelligence (Singh and Verma, 1992).

Significant interaction was found between attitudes towards mathematics and achievement (Dennis, 1983; Carbo, 1984; Godfrey, 1998). Whereas Owens (1999) reported that mathematics pre-attitudes show no significant effects on mathematics gain.

Group intervention program resulted in improved attitudes towards mathematics (Lato, 1993). With cooperative learning
approaches students exhibited positive behaviours (Li, 1999), better attitude towards learning (Broyles, 1999) and increase in attitude towards mathematics (Townsend and Wilton, 2003). Computer facilitated instruction (Hamtini, 2000), literature enhanced mathematics instruction (Brunn, 2004) increases attitudes towards mathematics. Whereas (Rose, 2001), reported non-significant change in attitudes towards mathematics by using computer software program. Using performance based assignment as intervening assessments, attitudes towards mathematics did not significantly differ from group using multiple-choice test as intervening assessments (Liu, 2000)

2.3 REVIEW OF RELATED LITERATURE IN SOCIAL SKILLS

Williams (1983) examined the effectiveness of the Human Resource Development Model of Classroom social skills with intermediate elementary learning disabled students. The sample consisted of 40 fourth-, fifth-and sixth grades, learning disabled pupils, who scored in the bottom fourth of their classes in peer acceptance. The treatment consisted of 6 training sessions of 1 hour covering five skills viz. physically attending, psychologically attending, greeting, making polite requests and complying with requests. Fear acceptance, locus of control, teacher expectation and five social skills were assessed. Results indicated that the treatment led to significant improvements in all social skills and the use of the skills in interaction with teachers and peers. The secondary measures of locus of control, teacher expectation and peer status were not significantly affected.

Barlieb (1985) investigated the effects of participation in a social skills training program on a non-clinical population of pre-adolescent children of sixth grade. Scores on teacher reactions,
behavioural observations and self-reports by the children were used to determine if training was effective in improving communication skills. Findings indicated treatment affects. Students who participated in the social skills training programs evidenced more frequent verbal interactions both immediately following treatment and at 5 week follow up.

Searcy (1986) investigated the use of cooperative learning groups and training a subset of social skills to improve group behaviour in classrooms for 51 adolescents with behavioural disorders. Teacher in experimental classroom taught student skills related to supporting and accomplishing a of task. Skills taught were: encouraging; complimenting; agreeing; smiling; sharing; asking questions; asking for help; negotiating compromises; discussing ideas and helping; Following daily skills training, experimental groups worked in cooperative learning groups for 30 minutes to complete an academic assignment. They were taught to observe, record and provide feedback on the use of social skills no significant difference were found between experimental & control groups. In one activity, the experimental group exhibited a significantly higher increase in task related behaviour them did the control group. There were no significant differences between experimental and control students in the number of negative behaviours observed. Both groups significantly increased in number of negative behaviour exhibited over time.

Ryan (1988) compared the effectiveness of interactive technology and counselor-led groups for enhancing social skills, self-esteem and locus of control of 52 6th graders deficits. Four weeks of social skills training was conducted ANOVA indicated that students in the two treatment groups did not demonstrate
significant changes, when compared to the control group and no significant differences were found between the two treatment groups.

Newman (1989) studied the effectiveness of two social skills training models, coaching and adapted coaching vs a no treatment control group on 48 subjects with emotional behaviour disorder from grades three through six who demonstrated social skills deficits in participation and cooperation. Analysis of the results of the study indicated that training was effective in decreasing teacher ratings of deviance on one measure and increasing the accuracy of subjects' prediction of their peers' likeable ratings of them. There were no differential effects for the two training models.

Imao (1990) investigated the relative effectiveness of social skills training program and a problem solving skills training program for 8 weeks in the prevention of stress of 60 fifth and sixth graders. Results indicted no significant treatment, gender or treatment by gender effects in elementary school children exposed to the social skills training, problem solving skill training and control condition on responses to stress, peer relations, behaviour problems and interpersonal-cognitive problem-solving skills.

Mondzelewski (1991) investigated the relationship between self perceived goal orientation, teacher perceived social skills, and academic achievement of 166 sixth grade students in the areas reading mathematics, language and total battery. Analyses revealed significant five relationships between aspects of goals orientation social skills and academic achievement, relationship although significant, were low to moderate in strength, however, were supported by significant differences by significant differences
between high and low achievers in those areas. These differences reinforces the notion that relationships, although not strong, do exist.

De La Cruz (1995) determined the effectiveness of creative drama program with an emphasis on specific social and oral language usage on social and oral expressive and receptive language skills of 35 children with learning disabilities. The experimental group participated in a 12-week creative drama program whereas the contrast group did not. Results of ANOVA indicated the significant difference between the mean gains of the experimental and contrast groups for social skills and oral expressive language. Interviews demonstrated that the experimental group enjoyed the experience of learning through creative drama lessons.

Zapatero (1995) determined the effectiveness of a social skills training program designed to improve the social status of 91 isolated and rejected children of fourth and fifth graders. The students in the control group were exposed to the same guidance program, educational curriculum and school activities as the experimental group, the only exception was the treatment intervention which was delivered to the experimental group in 6 weekly session of thirty minutes. Results of this study indicated that students in the experimental group improved their social status when compared with the children from the control group. The intervention program was effective in decreasing the level of rejection in the identified students. The scale of social problems was higher indication an increase of identified social difficulties by the classroom teachers of the students in the experimental group.
The treatment program was not effective in the improvement of level of happiness, popularity and self-concept.

Choi and Heckenlaible-Gotto (1998) investigated the effectiveness of regular classroom-based social skills training that was co-facilitated by the classroom teacher and a school psychologist. The treatment group consisted of 7 girls and 6 boys of first with grade mean age of 7 years 3 months and the control group consisted of 5 girls and 7 boys with mean age of 7 years 2 months. Results indicated that the treatment group scores increased significantly between the pre-test and post-test measures in peer acceptance in work with in peer rating scale but did not exhibit significant increase or decrease between pre-test and post-test measures on the play with peer rating scale or the play with peer rating scale.

Blake (1999) investigated the effects of social skills training on the social interaction skills of students with challenging behaviours and examined the effects of teacher directed and peer-directed instruction on the 12 middle grade students with serious emotional disorders (SED) in a small group setting. Results indicated that the student exhibited increases in frequency of appropriate behaviours, and terminations of games during informal play sessions compared to base line conditions during teacher directed and peer-directed instruction for initiations and statements. These increases indicated that the curriculum-based teacher-directed, and peer-directed social skills instruction was an effective strategy for students with SED. The change in behaviour was replicated at each level in the multiple baseline design.
Hinson (2000) compared the effects of cooperative competitive and individual physical activities on the development of social skills of 56 third grade suburban children. Participants were pre-tested and after the 12 weeks of instruction each group was post-tested for social skills. ANOVA revealed no significant difference between males and females in cooperative, competitive and individual physical activities in regards to self-ratings of social skills. Females rate themselves with better social skills when they are involved in cooperative activities, whereas males rate themselves with better social skills when they are involved in competition physical activities.

Laura (2000) studied whether participation in the social decision making and Problem solving Program would promote the acquisition of pro-social skills for student with and without disabilities, and studied the relationship student academic achievement levels, Locus of control (LC) and self-concept (SC) with the ability to develop pro-social abilities. For students with disabilities, intelligence was studied to determining interaction with the development of pro-social skills. The sample composed of 51 students in grades 3 to 8. Results indicated that there was not significant growth in pro-social ability over a 4 month period. A trend towards growth was noted for students in grades 7 and 8. A strong relationship between Locus of control, high achieving students, and the social skills was found for grade 7 and 8. There was significant relationship between self concept and social skills for grades 3 and 6; and trend towards significant for grades 7 and 8. There was little to no relationship found between Intelligence quotient and the social skills for students with disabilities.
Al-Halal (2001) studied the effects of individualistic learning and cooperative learning strategies and use of social skills on the sample of 102 (56 boys and 46 girls) fourth-grade mathematics students and found the improvement of fourth-grade students' achievement use of social skills in cooperative learning.

Freeman, Sullivan and Fulton (2003) examined the effects of creative drama activities on problem behaviour and social skills on the sample of 237 third and fourth graders. Students in the treatment group participated in creative drama activities 1 day a week for 18 weeks and the ratings of social skills and frequency of problem behaviour were made by the classroom teachers. Though, the data indicated that a high percentage of students exhibited acceptable social skills and appropriate behaviour at the outset of the study but factorial analyses of variance showed that the effect of creative drama on frequency of problem behaviour and social skills scores was not statistically significant.

Amlund Hagen (2004) examined the effects of stress and emotion regulation on children's social competence on one hundred and four children who were recruited via a residential summer-camp and also through an after-school program. Results suggested that frustration mediated the relationship between stress and appropriate social skills. Further findings indicate that high risk children who are less socially skilled may benefit more from guidance that focuses at reducing negative social behaviour rather than teaching them specific pro-social skills.

Brewer (2004) investigated the effect of positive interdependence and affiliation motive in an asynchronous, collaborative learning environment. Adult reentry students received instruction and communicated with each other in small
discussion groups in a fully online setting. Each small group included participants with both high and low application motives and was assigned to a treatment condition where positive interdependence was structured by providing roles, rewards or roles-plus rewards or to a control group with no structured interdependence. The following results were found.

(i) Correlation analysis revealed a significant positive correlation, indicating that the participants with higher numbers of interactions attained higher post test scores.

(ii) Participants in reward groups had significantly higher agreement with several attitude statements that reflected benefit from working with others and being able to generate better ideas in groups.

(iii) Participants in all three types of structured interdependence, compared to groups with no interdependence, had significantly higher agreement with being able to learn more because team members knew it was their job to contribute to work.

(iv) Participants with role-plus-reward interdependence had significantly more total interactions than did those in either the reward or no interdependence conditions.

(v) Appropriately structured group work results in improved attitudes about learning with the contribution of team members.

The study concludes that structured positive interdependence may be less necessary when other demands of cooperative learning are present.
Kelly (2004) investigated the relations between teachers attitudes towards general education setting known as inclusion for children with autism with their perceptions of the progress made by the students in 30 elementary schools and found that students made no significant change either positively or negatively in their social skills and suggested that teacher's favourable or unfavourable attitude towards inclusion does not have effect on a teachers ability to accurately rate children's social skills.

Williams (2005) investigated the relationships between behavioural and social skills as they related to academic achievement on a sample of 263 third grade students and confirmed positive significant relationships among behavioural, social and academic competencies.

Moore (2005) studied the existence of problem behaviours in students with higher social skills and academic competences and who have been involved to the Responsive classroom RTM approach. The participants were 126 parents and 14 teachers who were asked to rate the social skills, academic competence and problem behaviours of students, along with self-rating from the 126 students. The analysis revealed no significant difference between experimental and control group but showed a high negative correlation between social skills and problem behaviours.

A perusal of above research studies reveals that social skills training programmes led to significant improvement in social skills (Williams, 1983; Barlieb, 1985; Zapatero, 1995).

Social skills training decreases teacher ratings of deviance on one measure and increases the accuracy of subjects' prediction of their peer's likeable ratings of them (Newman, 1989) and peer acceptance in work (Choi and Heckenlaible-Gotto, 1998).
drama program results in increased social skills and oral expressive language (De La Cruz, 1995).

Students with serious emotional disorders (SED) exhibited increase in frequency of appropriate behaviours after social skills training interaction (Blake, 1999).

High risk children who are less socially skilled may benefit more from guidance that focuses at reducing negative social behaviour rather than teaching them specific pro-social skills (Amlund Hagen, 2004).

Social skills training (Imao, 1990) in combination with cooperative learning (Searcy, 1986), interactive technology and counselor led groups (Ryan, 1988), participating in social decision making and problem solving program (Laura, 2000), effect of creative drama (Freeman, Sullivan and Fulton, 2003), responsive classroom exhibited RTM approach (Moore, 2005) no significant growth in social skills.

There existed positive relationship between aspects of goal-orientation, social skills and academic achievement (Mond zelewski, 1991; Williams, 2005). Participants with higher number of interactions attained higher post test scores (Brewer, 2004).

2.4 REVIEW OF RELATED LITERATURE IN COGNITIVE STYLE

Cheek (1979) investigated the relation to the pupils’ achievement in mathematics of student teacher match or mismatch in the field-dependent/independent dimension of cognitive style on 8 six grade teachers and their 146 pupils. Results revealed that field-dependent pupils showed significant negative correlation between the two variables i.e., for field-
dependent pupils being placed with a teacher of similar level of field-dependency was significantly related to the increased gains in mathematics. It is usually the field-dependent pupils, moreover, who are experiencing difficulties in learning mathematics and who are most in need of strategies for increasing their achievement. Only the scores of the pupils at the extreme level of field-dependence/independence continuum showed significant correlations.

McLeod and Adams (1979) investigated the hypothesis that students with a field-independent cognitive style would learn most about numeration systems if they had minimum guidance and maximum opportunity for discovery through the use of manipulative materials and the field-dependent students were expected to perform best with maximum guidance and a symbolic treatment. The sample consisted of 46 students, 21 in discovery group and 25 in expository group. Results indicated that one post-test of symbolic test, significant interaction between field-independence/dependence and treatments was found. Field-dependent students did significantly better in the expository treatment than the discovery treatment. No significant interaction between field-independents/dependent and treatments was found for posttest of manipulative materials test. It was reported that treatment covers geometric topics that used abilities that are similar to the cognitive restricting part of field-independence. As a result, field-independent students regardless of treatment, did better and seemed stronger in terms of general ability. It may be that interactions with field independence are unlikely to occur in studies that cover geometric content.
Maher (1982) investigated the influence of locus of control and field-dependence-independence of hearing impaired freshman college learners on achievement while learning rule using skills in either a discovery or an expository instructional method. Two measure of locus of control (one referred to academic situations, one referred to general expectancies of control) and one measure of field-dependence-independence were administered to 210 hearing impaired learners. The studied revealed that math ability, reading ability, field dependence-independence were significant predictors of achievement. Average post-test performance of field-independent learners was significantly higher than that of field intermediate learners in both methods. In the expository method, the average performance of field dependent learners was significantly higher than that of field-intermediate learners. No relationship existed between the locus of control scales and the Group Embedded Figures Test.

Carrozza (1984) examined the effects of cognitive style on intentional- incidental learning on 150 10th graders in biology. The cognitive style of en industrial is an attribute which plays a role in the educational process. Examining the explicitness of the directions to a task as it relates to an individual's cognitive style, may provide insights into the role and effect of explicitness on the learning process. Further, the use of the intentional-incidental learning paradigm in conjunction with cognitive style and explicitness to task directions may provide a deeper understanding into the function of style in terms of amounts of learning and the role of intentional and incidental learning as factors in the learning process itself. The findings revealed that explicitness of directions had no effect on cognitive style across both the intentional and incidental learning tasks. Field-
independent males out performed all other groupings in both conditions of directions.

Green (1984) investigated the joint influence of background music (either baroque or popular music) and cognitive style predispositions for field-dependence/independence on learning achievement at knowledge, comprehension and application levels of college students. Results indicated that there was significant interaction between level of field-dependence/independence and type of music for knowledge level. Field-independent subjects scored significantly better while listening to either type of music. For comprehension and application no significant interactions were found.

Wilson (1984) studied the relationship of Field-independence/field-dependence and prior knowledge of passage content to recognition of main ideas and details in illustrated and non-illustrated expository test written for sixth grade children. 80 subjects were grouped for field-independence/field-dependence and high or low prior knowledge. Findings indicated that field-independent subjects recognized significantly more main ideas and details than did field-dependent subjects.

Canino (1986) investigated the differential effects of algorithmic and discovery computerized instruction on students mathematics achievement and their reactions to these treatments, the effect of field-dependent and field-independent cognitive styles on students’ mathematics achievement and their reactions to these treatments, the effect of field-dependent and field-independent cognitive styles on students’ mathematics achievement and differential effects of sex on students’ mathematics achievement on remedial algebra students enrolled.
in a 4 year college. Results revealed the following: (a) No significant differences between effectiveness of treatments on students' achievement and their reactions were found. (b) No significant interaction between treatments and cognitive styles on students' achievement and reactions data was found. (c) No significant difference was found between sexes on students' achievement and reactions data, (d) No significant difference was found between cognitive styles on students' mathematics achievement, (e) Field-independent students scored higher than field-dependent on students' reactions data.

Hadfield (1986) investigated the occurrence of mathematics anxiety among students with different cognitive learning styles, achievement levels or sexes on the sample of 481 high school mathematics students. Results indicated that field dependent group showed higher mathematics anxiety. Field-independent persons tended to have lower mathematics anxiety in the higher achiever group, but not in the low achiever group. Field-independent persons also tended to have lower mathematics anxiety in the male group, but not in the female group.

Garlinger (1987) investigated free recall memory performance and the spontaneous memory strategy usage of field-independent and field-dependent 227 undergraduate students of Introductory Psychology Course under conditions of high and low inherent word lists organization (high vs. low) and the presence or absence of instruction in a memory strategy. Results revealed that field-independent individuals' performance on a free recall memory task is superior to the performance of field dependent individuals regardless of inherent organization of the list.
No statistically significant evidence was found to suggest that differences in performance were attributable to differences in the information processing strategies used by field-independent and field-dependent subjects. Both field-independent and field-dependent subjects benefited from the instruction, but the instruction did not narrow the gap between the performance of field-independent and field-dependent subjects.

Smith (1987) studied the effect of cooperative learning group strategy in the teaching of problem-solving on the attitudes towards mathematics of 72 preschool elementary education teachers of different ages and of various levels of mathematical ability. Results indicated that being a member of cooperative learning group strategy had a negative effect upon the attitudes towards mathematics of the preschool elementary education teachers. Age level had a negligible effect upon the mathematics attitudes. Mathematics ability and mathematics attitudes were positively and highly correlated.

Carment (1988) explored the effects of field-independence/dependence, two and three dimensional spatial visualization and cerebral dominance and their interactions on mathematics achievement scores of 240 10th grade students after the effects of the covariates, race and gender, has been statistically eliminated. Findings revealed three dimensional spatial visualization, accounted for 7% of variance and field-independence/dependence accounted for 4% of variance.

Jun (1989) studied the relationship between field-independent and field-dependent cognitive styles and social behaviours during free-play of pre-school children in a school setting. The sample consisted of 36 children of 3 and 4 years of
Finding revealed; correlation between field-independent and field-dependent cognitive styles and social behaviours indicated that field-independence/field-dependence was related to social orientations in pre-school children and also related to the choice of play activity. Field-dependent children tended to engage in conversations with teachers more often than field-independent children. Four years old children who were field-independent tended to spend more time in solitary play than 4 years old children who were field-dependent. Four year old boys who were field-independent tended to play more often in the manipulative learning centre than 4-year-old boys who were field-dependent.

Pandey (1989) studied the relationship of scholastic achievement, cognitive style, self-concept and interest pattern with divergent thinking on the sample of 349 class X students. The findings revealed that significant relationship was found between Divergent thinking and cognitive style, self-concept, interest pattern and scholastic pattern and significant difference was found between field-independent and field-dependent cognitive style on the criterion of divergent thinking.

Devaki and Ramaswamy (1990) studied the relationship between cognitive style and errors in second language learning on the sample of 8 male adults attending the advanced course in Tamil and found that higher the degree of field-independence, the lower was the tendency to make global errors, the high the degree of field independences the lower was the tendency to over-or under-generalize, higher level of field-independence was directly related to ambiguity recognition and lower level of field-independence to ambiguity non-recognition. The higher the level
of FI, the lower was the progress to interference and the lower the level of FI, the greater was the proneness to errors.

Amador Campos (1992) studied the relationship of cognitive style (Field Dependence /Independence) with intelligence, learning tasks of the (field independence/dependence) fourth year primary school pupils. Results revealed that intelligence correlated moderately and significantly with field Dependence/Independence cognitive style. Field independent (FI) subjects scored significantly higher than field-dependent (FD) subjects on learning tasks in which the material: (1) contained graphic-visual or spatial contents (2) meant an overload for the processing and storing capacity or (3) was susceptible to recodification. There were no significant differences between FI and FD subjects in the speed with which they processed information. The differences encountered between FI and FD subjects in learning may be attributed to different processes of codification and to the FI subjects' greater skills in dealing with visual-spatial type material.

Vyas (1992) studied the effect of students’ cognitive style on their concept learning and studied the interactive effect of learning strategies (exemplar and attributable) and cognitive style on concept learning. The sample comprised 300 girls students of class VIII. it was reported that FI cognitive style appeared to be more effective them FD style for concept learning at all stages. The interactive effects of concept learning strategies and cognitive styles were significant only for “on-task” and “retention” test-conditions, whereas the interactive effect was not significant for the post-test-condition.

Shrivastava (1992) studied the relationship between cognitive style (FI/FD), educational interest, learning style and
Review of Related Literature

academic achievement on the sample of 600 class X students and found that field-independent subjects showed high interest in science and arts than the FD subjects, FI students showed high deep processing learning style, and achieved high in literature, mathematics, science, social studies and an overall achievement than FD subjects. No significant difference was found between FI and FD when students displaying methodical study, fact retention and elaborative processing learning style.

Viney (1992) studied the effectiveness of models of teaching (Concept Attainment Model (CAM) and computer model) as regard to achievement in mathematical concepts and attitude in relation to intelligence and cognitive style. The sample comprised 200 students of class XI. The findings revealed the following: (1) The Computer Model of teaching was found to be superior to the concept attainment Model for teaching concepts in mathematics and for inculcating positive attitude (2) High ability students required better mathematical concepts and a more positive attitude than average and low-ability students (3) FI students attained more concepts than FD students, (4) Cognitive style and level of intelligence were found to be interacting, (5) High ability FI students developed high attitude and achieved significantly higher scores on mathematical concepts than average and below-average ability FI students, (6) High ability and FI students scored higher and showed better attitude towards mathematics than high average and low-ability FD students.

Tyler (1993) studied the effects of individuals level of field independence and prior computer experience on application task performance in a graphical user interface and investigated Aptitude and Treatment interaction effects between computer
users’ cognitive style (field dependence-independence) of 38 university business college students. The results showed that subjects with higher field independence had significantly higher task performance scores than subjects with lower field independence.

Robinson (1995) studied the interaction between the cognitive styles, field-dependent and field-independent, and programming instruction on achievement in a BASIC programming class of 118 middle school students. Results indicated no significant difference on BASIC programming achievement when considering the interaction of either cognitive style and treatment. No significant difference was found between field-dependent and field-independent students on the attitudes towards computers.

Bosacki (1995) investigated the relationships between field independence-dependence (FI-FD), self-concept and playfulness in 63 sixth grade students (33 girls, 30 boys). Results indicated significant negative correlations found between field independence and self-concept, and field independence and playfulness among girls. Among boys, partial positive correlation was found between field independence and self-concept whereas field-independence and playfulness was not found to be related FI girls and FD boys reported lower feelings of self-worth and rated a less playful by their teachers as compared to FD girls and FI boys.

Paciorek (1995) studied the effect of visuals pertained to formats: (1) text only, (2) text and ‘still’ pictures (3) text and ‘motion’ pictures on the learning of field dependent or field independent adults. The sample consisted of 180 females and 232 males from the Air Force Institute of Technology. Findings
revealed that there was no significant difference between the field independent and mixed field groups on the post-test. The text and still pictures treatment was most effective in helping adults to learn at the knowledge and comprehension level. The second most effective method was text and motion visuals followed by the text only method.

Luk (1998) studied the relationship between field-independence/field-dependence and academic learning in the context of distance learning in Bachelor of Health Nursing. For study 1, the sample consisted of 51 students who had been in the program for one year, and in study two, there were 113 students who had completed it. Results indicated, in both the studies, a positive correlation between academic achievement scores and Group Embedded Figures Test (GEFT) scores, Field-dependent students had a higher incidence of fail scores. In contrast, field-independent students achieved were high pass scores.

Mehra and Rathae (2004) compared the effect of different instructional strategies, viz., Inquiry Training Model (ITM), Mastery Learning Model (MLM) and traditional instruction on achievement and retention in mathematics on the sample of 108 class V students. The findings of the study was: (i) students taught through ITM and MLM yielded comparable mean gain on achievement scores and retention scores as compared to those thought through traditional instruction (ii) Field independent students yielded better mean gain on achievement scores and retention scores as compared to their field-dependent counterparts, (iii) comparable mean gain on achievement scores was yielded by the students at knowledge and comprehension
category of objectives but they exhibited more retention scores at knowledge category then at comprehension category.

Chau (2005) examined the style of anger (anger in/anger out) and the cognitive style of individuals (positive/negative view of self, world and future) and effect of two styles on the outcome of aggressive and hostile behaviours on 66 adolescents (29 males and 37 females), found that style of anger and cognitive style of individuals did not have a significant interaction with the outcome of aggressive and hostile behaviours but the results showed a significant difference between cognitive style (positive and negative view) and the outcome of hostile behaviours.

A review of the research studied revealed that field independent students did better on mathematics achievement than Field-dependent students (Cheek, 1979, McLeod and Adams, 1979; Mehra and Neeru, 2004). Field independent subjects scored significantly better while listening of other type of music (Green, 1984). Field independent subjects recognised significantly more main ideas and details in illustrated and non-illustrated expository test (Wilson, 1984), are more effective for concept learning (Vyas, 1992), showed high deep processing learning style, achieved high on literature mathematics, social studies and overall achievement (Shrivastava, 1992), Scored significantly higher on learning tasks in when the material (1) contained graphic-visual or spatial contents (2) meant an overload for the processing and storing capacity (Amador Campos, 1992), Showed higher task performance scores (Tyler, 1993)achieved more high pass marks than field dependent students (Luk, 1998). Whereas Canino (1986), Robinson (1995), Paciorek (1995) reported
significant difference between cognitive styles (field-independent / Field-dependent) on student’s achievement.

Field-independent students tended to have lower mathematics anxiety in the high achiever group but not in lower achiever group (Hadfield. 1986). Cognitive style and level of intelligence was found to be interacting. High ability field-independent students developed high attitude towards mathematics than average and below average ability field-independent students (Viney, 1992) Negative correlation was found between field-independent and self-concept among girls whereas partial correlation was found between field-independent and self-concept among boys (Bosacki, 1995) Field-dependent children tended to engage in conversations with teachers more often than field-independent children. 4year old field independent children tended to spend more time in solitary play than 4year old who were field-dependent (Jun, 1989). No interaction was reported between cognitive style (positive / negative view of self) with the outcome of aggressive and hostile behaviours (Chau, 2005).