Chapter – II

Review of Related Literature
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The review of related research literature is a very important aspect in the planning of a new study. It helps us to know what other researchers have reported and what problem areas need to be explored. It helps researchers to eliminate the duplication of what has already been done and it provides useful suggestions for further research. The review of research studies has been presented in two sections:

2.1 Research studies related to effectiveness of peer tutoring.
2.2 Research studies related to classroom learning environment.

2.1 RESEARCH STUDIES RELATED TO EFFECTIVENESS OF PEER TUTORING

Cloward (1967) evaluated the New York Homework Helper Program. He assessed the effect on both tutors and tutees taking part in a tutoring scheme designed to improve reading. Two hundred and forty 16-year-old children were paired with two hundred and forty-nine and 10-year-old children. The study was intended to analyse the effect of tutoring on both tutors and tutees in: (a) their reading achievement; (b) their school marks and behaviour and (c) their attitudes and aspirations. The 16-year-old tutors were given about 16 hours of training to familiarize them with the program. They also received two hours a week of training during the program. The first few tutoring sessions were used to establish rapport; the tutors and tutees played games or talked. Thereafter, the tutees took homework to the sessions and asked for help. A typical tutoring session involved some 30 minutes of homework, 30 minutes of reading, 15-30 minutes of games and recreation and 15 minutes of refreshments, role-taking etc.

Klosterman (1970) reported that tutoring is more effective than an equal amount of normal classroom instruction. Klosterman carried out a tutoring experiment using students of education as tutors and 9-year-old pupils as tutees. Four elementary schools in a district of low socio-economic classes were
selected for the study. One school was randomly selected as the control, and the three remaining were the experimental schools. In the three experimental schools, the pupils were (a) either tutored individually, (b) tutored in a small group, or (c) given normal classroom instruction. The tutors were students majoring in elementary education. The findings of this study are remarkably interesting and important. (1) Subjects receiving individual tuition made significantly greater gains than those having an equal amount of classroom instruction. (2) Pupils tutored in groups also made significantly greater gains than pupils receiving an equal amount of classroom instruction, and those being tutored in groups were as effective as being tutored one-to-one.

Willis, Morris and Crowder (1972) found similar results with disabled readers who read at least three grade levels behind their peers (although it is not stated if they were classified as learning disabled). The researchers stated that the simplicity, economy, and effectiveness of the technique supports broader application. Using peer tutoring as a method of instruction, therefore, can improve the achievement outcomes of lower-functioning students.

Swenson (1975) studied the effects of peer tutoring in regular elementary classrooms on socio-metric status, self-concept, and arithmetic-achievement of slow-learning tutors and learners in a special-education resource program. His measures showed no significant differences between experimental and control groups as a result of tutoring.

Watts & Cushion (1982) reported that peer tutoring with all students, but particularly learning disabled students, facilitates increase in self-esteem. Trained participants, both tutors and tutees assume the responsibility of teaching and learning for themselves. The participants become more self-reliant and with continued success acting in both roles, they begin to take control of their own learning. Learning disabled students, possessing lower self-esteem, than most children, have benefited greatly from this technique.

Yogev and Ronen (1982) studied the effects of cross-age tutoring in school on the tutor’s, empathy, altruism, and self-esteem. The sample consisted of 73 high school freshmen, who participated in a year-long program of tutor-training, and a comparison group of 98 other freshmen. Controlling the effects of
initial attribute scores, students' sex, and socio-economic status, it was found that program participation significantly increased the tutor's empathy, altruism, and self-esteem. The findings, interpreted according to cross-age tutoring may have some psychological benefits in addition to their already established influences on students' academic achievements. Since no interactions were found between the effects of program participation and students' social background on the increase in attribute scores, such program may perhaps be used for the integration of students from different socio-cultural backgrounds.

Harris and Aldridge (1983) developed an alternative to the traditional pairing of learning disabled students and "slow learners" for peer tutoring. Success was found with the peer trio-technique for students in Grade 4 through 6. In the peer trio-technique, students are selected in terms of a common need (remediation) and placed in groups of three. Harris and Aldridge claim that three students are better than two for the purposes of socialization, responsibility, cooperation, and tutoring. The technique is used when a group of students in a class require remediation for particular skills. The pattern has the same advantage as the traditional dyad model in terms of co-operation and increased responsibility levels, as well as one unique advantage; that is, it allows the teacher to continue instruction with students who have attained mastery on a skill.

The benefits of using peer tutoring as an instructional technique are numerous, and with proper introduction and training there are no apparent negative effects. Obtaining at least comparable academic achievement is of extreme importance when introducing an alternative to traditional, teacher-mediated instruction. Peer tutoring has been found to produce superior weekly achievement outcomes for inner-city students in comparison with typical teacher instruction (Greenwood, Dinwiddie, Terry, Wade, Stanely, Thibadeau, and Delquadri, 1984). In this study, the lowest achievers in the class improved to the largest extent, demonstrating greater amounts of academic responding and higher weekly test scores. The low achievers were often found to be performing at the level of their higher achieving classmates when peer tutoring with regular classmates occurred.
Delquadri et al. (1986) studied that regular-education and lower achieving students and found that students’ active engaged time in those groups increased from 28% in a regular reading period to 78% when peer tutoring was implemented during the same period. The achievement outcomes and student engaged time are obviously in support of this instructional technique with normal- and lower achieving students. Although one cannot derive direct empirical support for the benefits of peer tutoring and increased opportunities to respond for learning disabled students from these studies, positive effects are clearly postulated for all types of students.

Delquadri et al. (1986) and Greenwood, Carta, and Hall (1988) support the use of peer tutoring because it presents increased opportunities for all students to respond. Low achievers need the individualized instruction that peer tutoring in dyads or small groups can present.

Das (1986) investigated the peer influence and educational aspiration of secondary school students. The major findings of the study were: (1) peer influence was stronger among the students of rural schools in comparison with those of urban schools (2) Peer influence was strongest among students of boys school and least in the girls schools.

Although the peer tutoring technique has gained popular support as an instructional technique only during the past 20 years, its roots delve as far back as 1797 with Andrew Bell’s system of education based on cross-aged tutoring (Osguthorpe & Scruggs, 1986). Since that time, the traditional educational setting has become the self-contained, age-separated classroom that substantially impedes the efforts of cross-aged tutoring. Tutoring using regular classroom peer has been proved to increase the achievement of both regular and learning-disabled students and is a solution to the separation problem (Ehly, 1987; Scruggs & Osguthorpe, 1986). Achievement increases occur largely because of the individualization of instruction and the increased chances to respond (Delquadri, Greenwood, Whorton, Carta & Hall, 1986). Several empirical studies have found that the positive effects of tutoring using learning disabled tutors, as well as learning disabled tutees, are equally convincing (Christoplos, 1973; Osguthorpe & Scruggs, 1986). Acting as a leader—even in a
dyad-leads to increased awareness toward the teacher position and the development of responsible study habits (Osguthorpe & Scruggs, 1986).

Several studies have investigated the success of the classwide peer tutoring (CWPT) model (Delquadri et al., 1986; Maheady, Harper, & Sacca, 1988; Maheady, Sacca & Harper, 1988). The positive effect of the model has been demonstrated with learning-disabled, secondary resource-room students (Maheady, Sacca & Harper, 1988), mildly handicapped students receiving consultative services within regular high school classes (Maheady, Harper, & Sacca, 1988), as well as elementary-aged students (Greenwood et al., 1984). The CWPT approach has proved to be a powerful intervention resulting in reading, mathematics, and spelling improvement in learning disabled students.

Similar investigation was conducted by Maheady et al. (1988) in a slightly different setting. Fifty mildly handicapped high school students, placed in three regular-education social studies classes and receiving consultation from special educators, served as subjects in evaluating the effectiveness of the CWPT program. Classroom teachers identified critical social studies content and developed weekly study guides and quizzes. The training of teachers and students occurred during two 30-minute role-play sessions followed by in-class supervision by one of the investigators. Point were earned for good behaviors as well as for correct responses and were summed at the end of each 36-minute tutoring period and posted in class.

Assessing the attitudes of the learning disabled, as well as regular education, children shows a degree of acceptance from the consumers of peer tutoring. Eiserman (1988) investigated the attitudes of learning disabled students and their regular class peers towards three types of peer tutoring: (a) regular-class students as tutors for handicapped students, (b) handicapped students as tutors for handicapped students, and (c) handicapped students as tutors for regular-class students. When students with learning disabilities acted as tutors for regular-class students in learning sign language, both groups gained the greatest effects. Initially, extremely negative attitudes existed towards tutoring in groups with learning disabled peers, but post test results indicated an increase in positive attitudes towards learning disabled peers, school and learning.
Webb (1991) examined specific task-related verbal interactions that occur during small-group activities. Two verbal processes were observed—giving help and receiving help. Giving help ranged from offering detailed elaborations to simply providing the answer to a problem. Webb found that when students did not understand a teacher’s explanation, peers were often able to provide explanations in words that were more easily understood. Webb also found, however, that the effectiveness of receiving explanations from peers depended on several factors, including the relevance of the explanation given, whether the explanation was understood, and whether students had an opportunity to apply the explanation to their work.

Pahuja (1992) assessed the effectiveness of peer-tutoring on verbal and spatial abilities and the academic achievement of the secondary stage students in geography. Major findings were: (1) The peer-tutoring strategy had a significant role in increasing the verbal and spatial abilities as well as in raising the level of the entire academic achievement of the students in the subject. (2) the teaching strategy was found to be more useful for low and average achievers and learning disabled students. (3) Peer tutoring was helpful in developing a sense of accomplishment. (4) In peer-tutoring, the learners received feedback to their performance and got motivated for better comprehension. (5) the peer-tutors made progress in mastering the subject. (6) The classroom climate was found to improve.

An investigation was conducted by McMohan and Goatley (1995) to determine how fifth graders with prior experience in student-led literature discussions acted as “knowledgeable others” for peers whose prior discussion experiences had been teacher-led and grounded in a basal reading program. All of the students were participating in book club, a literature-based reading program designed to support student-led discussions. Analysis, conducted inductively with categories emerging from the data, revealed that even within the 1st month of working together, students adopted leadership roles, participated in discussions exhibiting various interactional patterns, and help one another conduct their discussions. On the basis of the inquiry, it appears that students can facilitate one another’s learning, but the teacher has an important role in
monitoring student discourse and planning instruction that meets emerging needs.

Gyanani (1996) assessed the usefulness of peer-tutoring as a technique in improving the achievement levels of children in the promotion of spelling in the language other than the mother language. The major findings were: (1) It was found that spelling performances, during peer-tutoring, were found to be better than that during independent study. (2) Average performance in peer-tutoring situation was found to be significantly higher than that in the independent study.

Sletta, Valas, Skaalvik and Sobstad (1996) reported that recent studies have suggested that certain behavioural characteristics in children are closely associated with peer acceptance, and that children who are not accepted by peers are more lonely than other children. They examined a more comprehensive pattern of relationships in addition to behavioural characteristics, peer acceptance, and feelings of loneliness and social dissatisfaction. The study included self-perceptions of social competence, self-esteem, and goal orientation (defensive ego-involvement). A theoretical model was presented to analyze predictive relations. The model was tested on a sample of 8th grade children (N=96). Teacher and peer assessment of behavioural characteristics (humour, externalizing, internalizing and pro-social behaviour) were applied. In general, results were consistent with the proposed model. Loneliness was predicted by behavioural characteristics and low peer acceptance, and strong negative paths were found from loneliness to self-esteem and perceived social competence. Self perceptions were not predicted by peer acceptance, and few direct paths were found from behavioural characteristics to self-perceptions. Thus loneliness has a mediating position between behavioural and peer acceptance on the one hand and self perceptions on the other hand. This indicates that children's self-perceptions are affected by their socio-emotional reactions to peer difficulties and not directly by low peer acceptance. Strong negative paths were found from self-esteem and perceived social competence to defensive ego-involvement, which suggests that negative self-perceptions may have adverse consequences for children's goal orientations.
Nath (1997) in this study showed that, in general, students receiving tutoring skills training had significantly better communication and collaborative skills when compared to students not receiving training. In particular, students in grades 2-3 showed substantially more improvement than the students in grades 4-6. The research also indicated that students with average or below-average reading levels required more time to acquire these skills than did students with above-average reading levels. An analysis of the qualitative data further substantiated these findings. Further examination of the qualitative data revealed that a large variation in cooperative integrated reading and composition (CIRC) implementation practices existed among teachers. Finally, end of the year interviews with teachers revealed a positive attitude towards cooperative learning and peer tutoring.

Antil (1997) conducted a year-long study and examined teachers’ receptivity to peer tutoring (PT), an instructional practice designed to promote achievement for students with disabilities in inclusive settings. The purpose of the inquiry was to assess: 1) teacher receptivity to the practice (from introduction to the idea to its implementation); 2) the relationship between teacher receptivity to PT and support for learning about the practice; and 3) the extent to which teachers’ receptivity is affected by features of the practice itself, and by factors extrinsic to the practice. The findings of the study were (i) receptivity to PT varied depending on the stage at which it was measured: results indicated that 84% (67) of the teachers expressed an interest in learning more about PT after an introductory one-hour overview of the practice. When offered one of the two types of implementation assistance, 75% of teachers acted on their initial expression of interest by independent study of the manual or attendance at a one-day training session. Of the original 80 teachers, 40% instituted PT in their classrooms, (ii) type of learning support did not affect the number of teachers who acted to learn more about or apply PT, (iii) intrinsic factors were more predictive of interest in learning about PT and application of the practice than extrinsic factors, (iv) a majority of teachers who did not apply PT indicated that factors intrinsic to PT outweighed factors extrinsic to the practice in their decisions not to learn more about or apply the practice.
Othman (1997) conducted the study to gain understanding of significant mechanisms of PT with respect to the balance between enhancing tutees’ learning, while maintaining tutors’ own achievement. The second goal was to propose a model of elementary PT which balanced the role of being a tutor with the role of being a student. Data analysis revealed that enhancing tutees’ learning required tutors and tutees each to perform roles that were individually relevant. For example, at a cognitive level, tutees had to think aloud, verbalize what they learn, and pay attention. On a behavioural level, students had for example, to listen, cooperate, and compromise explaining, repeating and providing cues. At the affective level, tutors had to reinforce, praise, and encourage successful responses from the tutees. These two roles were mediated by a variety of tutoring techniques gained from training as well as from intuition. Maintaining the tutors’ academic achievement required some effort by tutors and some support from others. Tutors had to spend additional time and effort to compensate for the tutoring activity. Teachers, parents and community members had to provide tutors with assistance and help. The balanced model of PT derived from this study consists of three stages: Pre-tutoring, within tutoring and post-tutoring. In the first stage, tutors are selected, trained, and matched with tutees. In the second stage, tutoring is performed within a supportive system including monitoring, supervision, support, and adaptations. This stage is intertwined with a sub-stage built on a system of meetings and accompanying feedback. In the final stage, tutoring is evaluated, and modified if necessary.

Slaughter (1997) reported that PT incorporates several variables which have been shown to be positively correlated with student achievement, including active student participation, high rates of academic engaged time, monitoring of student performance to ensure all errors are corrected, and effective time management. The study compared the relative effectiveness of four error correction procedures used by third-grade students in PT of multiplication facts. The following error correction procedures were compared: (a) single immediate practice; (b) multiple immediate practice; (c) single immediate practice with two delayed practice trials; and (d) multiple immediate practice with two delayed practice trials. Student performance improved under all conditions, but correct
responses on probes and post-test were consistently highest under the multiple immediate practice with two delayed practice trials error correction procedures. This procedure is recommended for PT of basic multiplication facts.

Carroll (1998) determined the effect of PT on the mathematical achievement of ninth grade students enrolled in Algebra I as well as to examine the relationship of the tutors and tutees by conducting and observing a cross-age tutoring program. Statistical analysis of the relationship between the variables indicated that there were statistically significant differences in the post-test pre-Algebra I mathematics achievement results of low achieving ninth grade students. Statistical analyses also indicated that there was a significant statistical difference between the post-test pre-Algebra I mathematical achievement results of males and the posttest pre-Algebra I mathematical achievement results of females. There was no significant relationship between the economic status and the post-test mathematical achievement results. Interaction of the peer tutors indicated that students who participated in the PT treatment produced a significantly higher gain of mastery.

Early (1998) determined the impact of participation of 134 students in a 2-week session of PT on students' achievement and self-concept on the exit-level Texas Assessment of Academic Skills (TAAS). The study included 155 students in control groups who did not participate in PT. This study revealed the following: (1) The eighth-grade TAAS mathematics Texas Learning Index (TLI) is a predictor of a student’s exit-level TAAS mathematics TLI; (2) Receiving PT is a predictor of academic achievement, especially on the exit-level TAAS mathematics examination; (3) Serving as a peer tutor in preparation for the exit-level TAAS mathematics examination has a predictive effect of increasing the tutors' scores; (4) Participating in PT as either a tutor or tutoring recipient raises the students' self-concept scores; and (5) Peer tutors assist the tutoring recipients toward higher scores and increased self-esteem.

Ginsburg-Block (1998) examined the effects of Reciprocal Peer Problem Solving intervention (RPPS) and the contribution of reciprocal PT and problem solving components on the mathematics performance, motivation, and self-concept of at-risk urban elementary school students. Participants of the study
were assigned randomly to 1 of the 4 conditions: RPPS, problem solving only (PS), Reciprocal Peer Tutoring only (RPT) and control. Students in all conditions met twice weekly for 30 minute mathematics session over a 7 week period, which was preceded and followed by testing. Results indicated that RPPS students performed significantly higher than students in the control condition on measures of computation and problem solving, and reported higher levels of academic motivation and academic competence. Students in the RPPS and PS conditions scored higher on measures of social competence than students in the RPT and control conditions.

Koh’s (1998) study revealed that more than half of the respondents perceived small group discussion, case study, student presentation, cooperative learning, PT and role play to be useful active learning strategies for helping students to attain all the higher levels of Benjamin Bloom’s taxonomy of cognitive learning outcomes. Blackmore (1999) indicated that the participants view the PT programme as a valuable service offered by the college. While the programme contains many of the components recommended for effective tutoring, a key recommendation is that training for tutors and a programme evaluation procedure be designed and implemented.

The study by Bevington and Wishart (1999) explored the association between poor academic achievement and behavioural problems by examining the direct effects of peer presence on classroom performance in children with identified behavioural difficulties. Specially, it was hypothesized that independent performance on a cognitive task would decrease as number of classroom peers present increased. A total of 24 children attending two special schools for children with emotional and behavioural difficulties participated in the study. Age range was 9-14 years. A within-subjects design was used in which performance on a set of perceptual/conceptual matching tasks was assessed under three conditions: The child works alone, alongside one other peer, or within a group of six. Measures of non-verbal intelligence and academic attainment were collected, along with teacher ratings of the severity of each child’s problem behaviour. Performance was found to be significantly influenced by peer presence, both in terms of number of correct responses and time taken to
complete the matching tasks. Direction of effects on these two performance indicators differed according to number of peers present.

Nelson (1999) investigated how being a peer tutor in a cross-aged peer reading program affected the behaviour and academic self-concept of upper elementary students who experienced difficulty in reading and were described as having low academic self-concept by their parents and teachers. Findings suggest that academic self-concept as measured by the self-perception profile for children showed no significant change as a result of the PT experience. However, changes in the participants behaviour, attitude and self-perceptions were observed by teachers and parents. Specially, teachers reported a slight improvement in their class participation. Teachers and parents both reported improvements in the participants attitude towards school, their acceptance of praise and criticism, their work completion and independent reading. Differences were noted between the home and school setting, with parents reporting improved confidence in social situations and increased independence with homework, whereas, teachers reported seeing minimal or no improvement in these areas.

Wilson (1999) 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 area of cooperative learning instructional setting. Results indicated 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 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. Although the students with disabilities did not master the majority of the skills taught during the brief intervention and maintenance phases, the skills selected were more complex, and were taught for a shorter period of time, than those selected for instruction in many PT studies. Results of the social validity surveys completed by all participants indicated that the tutors and tutees felt positively about their participation in the project, although teacher opinion was mixed.
Bergeron (1999) compared the effects of class-wide cross age peer tutoring (CAPT) and same-age peer tutoring (SAPT) second-grade student at-risk for reading feature. The specific goals were to determine if, after 12 weeks of PT using PALS, there were statistically significant differences in reading achievement, attitude towards reading, and satisfaction measures for: (a) treatment and control group; (b) the CAPT tutees and SAPT tutees; and (c) the CAPT and SAPT tutors. Additionally, teachers' perceptions of the efficacy and feasibility of PT as a model for accommodating at-risk-students in general education classrooms were examined. Using a quasi-experimental non-equivalent three-group pre-test/post-test design and linear regresional procedures to transform achievement and attitude data into studentized residuals as the measure of gain for the between group analysis (ANOVAs and t-tests). It was found that the students who participated in PT (n=46) had statistically significantly higher scores than the control group (n=12) on reading achievement measures (P<.05). On the satisfaction measure students indicated that (a) PT helped them learn; (b) they enjoyed PT; and (c) they would like to continue with PT. On teacher questionnaires and interview, SAPT was rated as more effective and feasible than CAPT. It was concluded that PT is a strategy teachers can use to provide effective individualized reading instruction to children in general education classes. CAPT and SAPT seemed equally effective for improving reading achievement regardless of risk status on designation as tutor or tutee. This gives teachers a choice in selecting the model that best fits the needs of their students and is compatible with their classroom structure.

Menikoff (1999) examined the effects of a cross-age tutoring program upon both the tutors and the tutees on the following dependent variables: decoding skills, attitude towards reading, teacher perceptions of reading improvement, and the global and academic self-concept of participating students. The tutors were recruited from the sixth grade, and the tutees were recruited from the second grade. Both groups were chosen from those students considered by their teachers to be among the bottom half of their class in terms of reading ability. The tutors were systematically trained in explicit and indirect
strategies to address decoding skills. As hypothesized, both the tutor and tutee groups demonstrated significant gains in terms of decoding skills. There was no measured effect for group in terms of either improved attitudes towards reading or global self-concept. Although it was noted that the involved classroom teachers indicated a greater number of the participating students as having made observable improvement in reading than among the control group participants, the group differences were not statistically significant. However, the classroom teachers made qualitative comments indicating that the project participants had demonstrated observable improvement in many aspects of reading performance. A post-intervention feedback survey of the tutor and tutee members suggested very positive perceptions of their involvement as helpers and learners and the use of cross-age peer remediated instruction as a viable supplement to large group classroom teaching techniques.

Mumford (2000) investigated the effects of student support service PT on rural community college students’ success in an Anatomy and Physiology class as measured by changes in self-reported learning and study strategies, the final grade in Anatomy and Physiology class, and persistence retention in the following semester. A secondary goal was to assess the relative merits of two training methods: standard PT and standard PT plus introduction to attribution theory. The results support PT as an effective method of increasing student success. The findings support the use of attribution training for tutors as a theoretical base of intervention, students tutored by attribution trained tutors scored significantly higher on LASSI, had higher Anatomy and Physiology grades, and returned to college at a higher rate than their yoked controls. Standard trained tutors scored significantly higher on the LASSI test taking subscale and returned to college at a higher rate than their yoked controls. A comparison of the two tutored groups did not find a significant difference between the two groups. The findings of this study have implications for the use of PT, training of tutors, and types of intervention strategies used to provide support to students.

Lee (2000) employed meta-analysis methodology to synthesize maths intervention studies published during the last 28 years for students identified with
learning disabilities (LD) and students identified as low achieving (LA). For teaching computation, interventions that included peer tutoring strategies with two people or strategies using mastery level criterion were more effective than other interventions.

Jenkins (2000) sought information on teaching strategies from teachers in block scheduled schools, which have operated on a block-schedule for at least four years, and teachers from traditionally scheduled high schools. Teachers were asked to respond to three areas related to eleven instructional strategies: level of use, appropriateness of selected strategies for their classrooms, and level of training. Opinions were compared for cooperative learning, small groups/structured pairs, discovery learning, direct instruction/lecture, simulation/games/role-playing, peer-coaching/peer-tutoring, audiovisual experiences, technology, projects, Socratic seminars, and integrated/thematic teaching. Descriptive statistics and tests illustrated few differences between responses of teachers currently teaching under the two scheduling patterns. Teachers from block schedules reported using peer coaching/peer tutoring more than traditional teachers, but traditional teachers reported projects and Socratic seminars were more appropriate for their classrooms than did block teachers. Traditional teachers also reported more training in Socratic seminars than did block teachers.

White (2000) examined the effectiveness of a developmental tutoring intervention known as deliberate psychological education (DPE). DPE refers to a developmental intervention that incorporates peer tutoring to promote the academic achievement and psychological development of youth. The results indicated that the DPE intervention is effective at promoting mathematics achievement and academic efficacy in the tutees at risk of dropping out of school. In fact, the effect size for these results revealed that 51% of the variance in the academic efficacy and mathematics achievement was attributable to the treatment effect between the tutees and non-tutees. At the eighth-grade level, the DPE intervention was effective at promoting the mathematics achievement of the tutors.
Gray (2000) investigated the effects of cross-age peer writing response groups on the writing and reading achievement of third and fourth grade students. Students’ attitudes about writing and their perceptions of themselves as writers were also measured at the end of the study. Analysis of the data revealed that there was no evidence that the tutoring (EC) groups made more progress than the non-tutoring (CC) groups in writing and reading. There was evidence of growth in writing, especially by the fourth graders. Most importantly, the fourth grade tutors, the experimental group, had the most positive feelings about writing and themselves as writers.

Nazzal (2000) examined how peer-tutoring affected other factors that may put students at-risk for dropping out of school: perceptions of the relevance of school, perceptions of success in school, and feelings of alienation in school. When at-risk middle school students who participated in a six-week tutoring project were compared to at-risk students who did not participate as a peer tutor, significant differences were found in academic performance in maths class and on the state standardized test of mathematical performance. The qualitative data indicated that during the tutoring period the tutors were both internally and externally motivated to attend school. Qualitative data from the study indicted that peer-tutoring reinforced the tutors’ perceptions of the importance of school, improved their perceptions of how well they thought they were doing in school, and decreased feelings of alienation. Both the qualitative and quantitative data of this study supported the use of peer tutoring as an alternative means of lessening the potential effects of several factors that put low socio-economic students at risk for dropping out of school.

Drew (2000) investigated the effect of direct instruction and peer tutoring on the learning of multiplication facts by students with Attention Deficit Disorder (ADD) / Attention Deficite Hyperactivity Disorder (ADHD). Part of this inquiry researched the characteristics, causes, the treatment of ADD/ADHD. As a result of this research, a list of effective instructional and classroom management strategies was developed. The strategies of direct instruction and peer tutoring were then applied to the teaching of multiplication facts. Data was collected from ten special education students with emphasis placed on one particular student.
who was diagnosed with ADD/ADHD. Results indicated that direct instruction is an effective procedure for introducing the concept of multiplication. Peer tutoring proved to be an effective strategy for providing students with the practice needed in order to memorize their facts.

Hansen (2000) investigated that the social benefits of peer tutoring at the secondary level examines how to create a peer tutoring program at the secondary level where the focus is social skills building and friendship formation. This study specially addressed how to involve general and special education teachers and parents in the process and also looked at ways to maintain friendships and peer relationships between disabled and non-disabled students outside school.

Sanders (2000) evaluated a peer support program at three universities, which provides peer tutoring to academically at-risk minority freshmen. Program implementation was evaluated, along with the original program outcome objectives. Additional outcome hypotheses were shaped by Tinto’s integration model, and centered around the notion that peer support programs enhance perceived social support, which in turn enhances social integration, commitment to the institution and ultimately retention. Findings suggest that participants had stronger perceived college support, social integration and retention rates than their qualified counterparts.

Kang (2000) conducted a qualitative study with corollary quantitative comparisons to test the hypothesis whether a cross-age/grade peer tutoring elementary reading program will increase the literacy growth of first and fifth/sixth-grade low reading achievement students. The results indicated that on early intervention program in literacy, using cross-age tutors, low reading achievement students had a more positive attitude towards reading and helped them read closer to grade-level expectations. This program also had very positive social-emotional gains for both tutors and tutees.

Ismail (2000) tried to understand the effects of the manipulation of inquiry based scripts with structured peer tutoring sessions on different learning outcomes among Malaysian students. Malaysian children have very little experience with cooperative learning in the classroom. Thus, this seems the
ideal situation to uncover aspects of cooperative learning that contribute most to learning. The results showed that the students in group sequence-questioning-explanation (SQE) outperformed the students in groups questioning-explanation (QE), which in turn outperformed the students in group questioning (Q) in the written comprehension tests. Additionally, the students in group SQE also constructed significantly more high-level thought-provoking questions and provided more elaborate or high-level explanations to their partners during their peer tutoring sessions than the students in groups QE and Q. No significant difference, however, was found between these two groups.

The purpose of Li’s (2000) study was to demonstrate the effects of different numbers of opportunities to respond on spelling performance of third grade students participating in a cooperative learning program (classwide peer tutoring) referred to as “together we can!” Classwide peer tutoring to improve basic academic skills. The results of the study demonstrated that different numbers of opportunities to respond played an important role in mastering and retaining spelling accuracy for students with different spelling abilities. The findings also indicated that for low-achieving students, six opportunities to practice each spelling word each day were necessary, but moderate and high-achieving students needed fewer opportunities, sometimes only one per day. The number of response opportunities necessary for successful learning varied by students.

Hammond (2000) determined the effectiveness of watching a motivational videotape on completing one semester of peer tutoring on changing high school students’ attitudes toward their peers with disabilities. After participating in the videotape treatment, the percentage of students willing to peer tutor increased, the number of students who were not willing to peer tutor decreased, while the students who were ambivalent stayed about the same. Females were found to be more accepting of people with disabilities, scoring higher than males on positive attitudinal measures and lower on most negative measures. The peer tutor journals provided a more in-depth examination of student attitudes. Peer tutoring increased comfort levels around people with disabilities for some students. Some students felt better about themselves. Several tutors reported
that they became friends with the people they were tutoring. A few students expressed frustration with the person they were tutoring. Others wrote comments about how their perceptions of what people with disabilities can do, changed positively.

Eason (2001) examined the following aspects of the fourth grade students perspectives on the reciprocal effects of cross-age peer tutoring using Paired Reading: (a) the interactions of the fourth grade tutor with the kindergarten tutee during tutoring sessions, (b) the tutor’s perception of the effectiveness of her role as a teacher using cross-age peer tutors, and (c) the students’ attitudes about and perceptions of themselves as readers. The investigation provided valuable insights into the important impact Paired Reading using cross-age peer tutors, had on student’s perceptions and attitudes about reading. The study data indicated themes and patterns such as explicit instruction, modelled reading behaviors, feedback/reinforcement, and practice as factors which impact the effectiveness of Paired Reading using cross-age peer tutors. Identifying the plausible relationships which shape this social interaction provided insight into how beliefs and attitudes impact the tutoring relationship.

Jenson (2001) conducted an intervention project that was implemented from 1997 to 1998 in a suburban elementary school. It involved a year-long, girls'-only instructional program in which a broad spectrum of computer-based competencies and peer-tutoring experiences were provided a positive and greatly needed model for their peers and younger students. This project suggests that localized interventions can and do work to increase girls’ technological competence and skills, in this case, creating for the first time within that school a community of female computer experts. As this group of girls became more competent using computers they began, more importantly to resist and to work to restructure what they saw as other inequities within the broader social environment of the school.

Arquette (2001) investigated the impact a peer tutoring program had on the English language skills of a group of sixth grade second language learners. These students tutored younger peers who came from a similar language and cultural background. The participant tutors all spoke Spanish as their first
language, and had been attending school in the United States from two to seven years. At the end of the five month qualitative study, all the tutors had shown improvement in at least one language skills area. Fifteen out of sixteen made reading comprehension improvements of one to four levels.

Langor (2001) conducted a study to gain insight into the senior nursing students' perceptions of benefits accrued as a result of their experience of becoming and being peer tutors to junior students. Four major themes revealed through data analysis were: role perception, peer tutoring as a mechanism for self-discovery, peer tutoring and mastery learning and peer tutoring as preparation for independent practice. The exploratory nature of the study indicated that peer tutors did indeed reap many benefits from the experience. The results showed that peer tutoring in nursing education fostered personal and professional growth for all participants. Specific outcomes such as development of a sense of community through engendering respect, caring and friendship among students across varying levels of nursing, belief in one’s own abilities and potentials, enhanced reasoning and problem solving skills, and enhanced articulation skills.

Brown (2001) reported that mathematics teachers were adopting new teaching strategies such as cooperative learnings, hands-on activities, computer labs, one-to-one teaching, lecturing, peer-tutoring, and guided practice in Alabama High Schools. Mathematics teachers' major concerns were student retention, covering all of the course material, student concentration and student attendance. Their major challenges were maintaining students' interest, covering all of the course material, and finding creative methods to teach.

A perusal of the research studies reveals that peer tutoring has been found to be more effective than traditional instruction for improving reading skills, attitudes and aspirations of 16-year-old New York School Children (Cloward, 1967); achievement outcomes of disabled readers (Willis, Morris and Crowder, 1972); self-esteem and self-reliance of LD students (Watts and Cushion, 1982); the high school freshman tutors' empathy, altruism and self-esteem in a cross-age tutoring program (Yoge & Ronen, 1982); active engaged time of lower-achieving students (Elliot, Hughes and Delquadri, 1984); learning of sign

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language among handicapped students (Eiserman, 1988); verbal interactions among students (Webb, 1991); verbal and spatial abilities and achievement of class IX and X students in geography (Pahuja, 1992); reading skills of fifth graders (McMohan & Goatley, 1995); spelling performance of class IX students (Gyanani, 1996); communication and collaborative skills among students of 2-3 grades (Nath, 1997); student participation and student achievement in maths, academic engaged time and effective time management (Slaughter, 1997); mathematics achievement of low achieving students (Carroll, 1998); scores in maths and increased self-esteem (Early, 1998); maths performance, motivation, problem-solving and self-concept of at-risk urban elementary school students (Ginsburg-Block, 1998); all the higher levels of Bloom’s taxonomy of cognitive learning outcomes (Koh, 1998); non-verbal intelligence and academic attainment of 9-14 years special school children with emotional and behavioural difficulties (Bevington and Wishart, 1999); Classroom participation (Nelson, 1999 and Wilson, 1999); reading achievement measures of second-grade at risk students (Bergeron, 1999); reading ability of second grade students (Menikoff, 1999); college students performance in Anatomy & Physiology and their study strategies (Mumford, 2000); maths performance of learning disabled and low achieving students (Lee, 2000); mathematics achievement and psychological development of at-risk of dropping out of school youth (White, 2000 and Nazzal, 2000); writing achievement of fourth graders (Gray, 2000); multiplication facts to special education students (Drew, 2000); social skills building and friendship formation of secondary school students (Hansen, 2000); social support and social integration among at-risk minority University freshmen (Sanders, 2000); reading achievement scores of first grade students (Kang, 2000); learning outcomes of Malaysian students (Ismail, 2000); 3rd grade students’ spelling performance (Li, 2000); technological competence and skills of elementary girls students (Jenson, 2001); English language skills of sixth grade second language learners (Arquette, 2001); personal and professional growth of nursing students (Langor, 2001). However, Swenson (1975) reported no significant effects of peer tutoring for slow learning elementary students.
Klosterman (1970) found peer tutoring effective both individually or in groups for 9 year olds. In an interesting study, Antil (1977) examined teachers' receptivity to peer tutoring and reported that 84% of the teachers expressed an interest in learning more about peer tutoring and 40% instituted peer tutoring in their classrooms.

According to Othman (1997), teachers, parents and community members had to provide tutors with assistance and help. Also Kang (2000) reported that the peer tutoring program had very positive social-emotional gains for both tutors and tutees.

Peer influence was found to be stronger among rural school students in comparison with those among urban school students. Peer influence was strongest among students of boy's schools and least in the girls schools (Das, 1986).

2.2 RESEARCH STUDIES RELATED TO CLASSROOM LEARNING ENVIRONMENT

Perkins (1950) found that the quality of teacher-pupils interactions was a major determinant of group climate. The group climate appeared to determine the amount of learning that took place.

De Sales (1978) investigated the factors affecting classroom climate in relation to pupils' development. The major findings of her study were: (i) Every classroom had a distinctive and unique climate. (ii) Classroom having the same climate score have different authenticity, legitimacy and productivity scores. (iii) Pupils from a higher-class climate were better adjusted than the pupils from a lower class climate. (iv) More classroom trust was generated among pupil in classrooms having a high climate. (v) Pupils in high class climate were more independent than those in low climates. (vi) The climate of a class did not depend on the pupil's trust, dependency and independency between the mean climate score and these variables. (vii) The less direct the behaviour of teachers, the greater was the classroom climate. (viii) A classroom with a better climate had fewer stars and isolates and consequently a lower class integration index. (ix) The better the social relationship in a class, the higher was the class climate.
There was no significant correlation between class climate and academic performance of the pupils. The class climate of the schools managed by the Apostolic Carmel did not differ significantly from that of the school managed by the sisters of the Convent of Jesus and Mary. Pupils from a better classroom climate were found to be better adjusted and more independent. A classroom with a better climate had fewer stars and isolates and better social relationship. The socio-economic status of pupils did not affect the climate of a class. The climate in the schools run by convents (religious Nuns) was better than that in other private schools.

Desai (1979) found that (i) the level of classroom climate was positively related to pupil's motivation and their achievements; (ii) Socio-economic status had no relationship with pupil's classroom climate or pupil's motivation or with academic achievement; (iii) Pupils of Gujarati medium schools were higher than those of English medium schools in the scores on classroom climate, pupil's academic motivation and pupil's academic achievement; (iv) Boys schools had higher mean scores on classroom climate, pupil's motivation and academic achievement than mixed and girls' schools.

Hirunval (1980) reported that: classroom climate in urban schools was better than that in rural schools. Haerta! et al. (1981) conducted a meta analysis involving 734 correlations from 12 studies studying 823 classes in eight subject areas containing 17,805 students in four nations. Learning post-test scores and gains were found consistently and strongly associated with student perceptions of their classrooms, although correlations were generally higher in samples of older students and in studies employing collectivities such as classes and schools (in contrast to individual students) as the units of statistical analysis. In particular, higher achievement on a variety of measures was found in classes perceived by students as having greater cohesiveness, satisfaction, and goal direction, and less disorganization and friction.

Sundralakshmi (1981) investigated the effects of instructional strategies on classroom climate and pupil growth. The major findings of the investigation were: Both the instructional strategies namely, the teacher – initiator and the teacher facilitator, tended to have positive influence on certain attributes of the
classroom climate and the pupil's growth such as academic performance, initiative, classroom cohesiveness and acceptability and classroom trust, though in varying degree.

Saxena (1983) studied the influence of some selected aspects of school learning environment on student characteristics. He found that (i) The environment variables of co-curricular activities provided (CCAP), educational facilities provided (EFP), coherence, environment, democratic climate, satisfaction, competitiveness and speed correlated significantly at 0.01 level with student characteristics of GMA. (ii) The student-characteristics of CCAP is mainly predicted by pupil's participation in co-curricular activities, learning environment variables of satisfaction, democratic climate, competitiveness, speed disorganization competitiveness, speed and disorganization (negatively correlated) (iii) The learning environment variables were categorized into four components by factor analyzing the data. The four learning environment variables included: Class organization (comprising the variables of cohesiveness, diversity, speed, environment, friction, goal direction); 'democratic principles' (comprising the variables of democratic climate, satisfaction); and 'group functioning' (Cliqueness, difficulty). While these three components contributed to the growth of specified students characteristics, the fourth component, that is, 'alienation from school' (favouritism, apathy, disorganization, competitiveness) appeared to be affecting adversely the development of the student characteristics which were studied.

Singh (1984) studied the learning environment of 15 high achieving and 15 low achieving higher secondary schools of Rajasthan. The main findings of the study were: (i) Female teachers had a greater impact in the creation of a motivating classroom learning environment. (ii) Learning environment significantly affected pupil's academic achievement. (iii) Though rural schools had a more conducive learning environment most poor achieving schools were rural schools. (iv) Classroom learning environment affected pupil's classroom behaviour. The main educational implication of the study is that it is necessary to see that a motivating learning environment is generated in the classroom by
maximum human interactions i.e. interaction between pupils and pupils and
teachers and pupils.

Kumar (1984) conducted a study of perception of classroom social climate
with reference to prediction of dimensions of academic motivation of 1251
students of class X. He found that: (1) there was significant correlation between
total classroom social climate and total academic motivation scores (2) Rule
clarity, Competition, Task orientation, Teacher Control, Involvement, Innovation,
and Order and Organization contributed positively to achieving motive.

Mistry (1986) investigated the classroom climate of secondary schools in
the context of cognitive, attitudinal and behavioural characteristics of pupils. The
findings of the study were: (i) The low intelligence group of students scored
higher than the high intelligence group of students on cohesiveness, diversity,
friction, favouritism, cliqueness, organization and apathy. (ii) The high
intelligence group scored higher than the low intelligence group on the
dimensions of formality, speed, environment, goal direction, satisfaction,
difficulty, democracy and competitiveness. (iii) Extroverts and the highly
motivated group scored higher on the dimensions of cohesiveness, formality,
speed and environment than the introverts and low motivated groups. (iv) The
introverts group scored more on the dimensions of diversity and cliqueness than
the extrovert group. (v) Extroverts and the low intelligence group scored more on
the dimensions of the friction and favouritism. (vi) The highly intelligent group,
introverts and the highly motivated group perceived democracy to a greater
extent as contributing to healthier climate than the low intelligent, extroverts and
the low motivated group.

Fraser’s (1986) study involving an evaluation of the Australian Science
Education Project (ASEP) revealed that, in comparison with a control group,
students in ASEP classes perceived their classrooms as being more satisfying
and individualized and having a better material environment. Tobin et al. (1990)
conducted a study on problems associated with higher-level cognitive learning in
grade 10 science classes of two teachers over a 10 week period. Each lesson
was observed by several researchers, interviewing of students and teachers took
place on a daily basis, and students’ written work was examined. The study also
involved quantitative information from questionnaires assessing student perceptions of their classroom environments. An important finding was that students perceptions of the environment within each classroom were consistent with the observer's file records of the patterns of learning activities and engagements in each classroom. For instance, the high level of personalization perceived in one teacher's classroom matched the large proportion of time that she spent in small group activities during which she constantly moved about the classroom interacting with students.

In a study by Wubbels et al. (1992) in the Netherlands, the majority of teachers (70%) perceived the classroom environment more favourably than their students. However the perceptions of another group of teachers (30%) were more negative than those of their students. Overall, this study suggested that teacher perceptions are shaped partly by their ideals about the learning environment (i.e., teachers' ideals can distort their perceptions of the actual learning environment).

Wong (1996) explored students' perceptions of the learning environment in ninth grade mathematics classrooms in Hong Kong in the form of open ended questions. The study reported that many students identified the teacher as the most crucial element in a positive classroom environment. Those teachers kept order and discipline while creating an atmosphere that was not boring or solemn. They interacted with students in ways that could be considered friendly and showed concern for the student.

Ramana's (1997) study centered upon the classroom learning environment and its effect on the academic achievement of the pupils. He found that: (1) out of 15 dimensions of classroom learning environment, only 5 dimensions contribute to better learning. (2) The relationship between students' opinion and marks, and teachers' opinion and marks were found positively correlated. (3) It was also found that the performance of the students depends upon the classroom learning environment. If the classroom learning environment was high, the performance of the students was also high.

Fraser (1998), in a study of science laboratory classes in Nigeria, Israel, the U.K., Canada, the U.S.A. & Australia found that students' perceptions were
more positive in settings in which integration between theory and laboratory classes was perceived to be greater. Aldridge, Fraser and Huang (1999) further highlighted that the degree of respect that students held for their teacher appeared to influence classroom environment. In the rowdier environment in Australia, students appeared to be more disruptive in class; that was in contrast to the classes in Taiwan, which were comparatively quiet and free of students’ disruptions. There were points, good and bad, to be said for both learning environments, students in Taiwan were less inclined to ask the teacher questions than their Australian counterparts, but the Australian students were more likely to encounter occasions when learning was interrupted by the disruptive behaviour of others.

Mucherah, (1999) reported the study of dimensions of classroom climate in social studies classroom where technology is available and this study examined dimensions of classroom climate in social studies classrooms using technology as measured by the Classroom Climate Questionnaire (CCQ), classroom observations, and teacher interviews. Exploratory factor analysis conducted on the student data revealed six classroom climate dimensions. Teacher support and Structure, Rule Clarity and Teacher Control, Involvement in Teacher Structured Activities, Innovation, Involvement with computers, and Competition with Computers. Analyses of variance permitted subscales based on these dimensions to be examined by school or class, and gender. There were significant differences between schools in the subscale mean scores of Involvement in Teacher Structured Activities, Innovation, and Involvement with Computers. Significant class differences were found in the subscale mean scores of Involvement in Teacher Structured Activities, and Rule Clarity and Teacher Control. There were also significant gender differences in the subscale mean scores of Involvement with Computers, and Competition with Computers, with boys scoring higher on both subscales.

Chu-Ju-chun (2000) investigated the class size effects in the perceptions of adult students of classroom social environments. Results suggested that class size had effects on Student Affiliation, Student Involvement and Task Orientation. Influence and organization revealed U-shape relationships between
class size and these two variables. Student affiliation and students involvement factors on the other hand, had linear relations with class size. The larger the classes, the lower ratings the adult students granted. Subject-matter effect was showed on student centeredness dimension. Adult students perceived different degrees of curriculum centeredness in different types of classes (social science, humanities and natural science). Gender and age were also discussed in this research. The issue of class size is essential to increasing our understanding of adult learning needs. Information about the social climate can be used to effect changes in program planning to make the classroom environment more supportive for adult learners. This could influence not only learning outcomes but also participation and satisfaction in educative activities.

Li (2000) investigated an assessment of technology classroom environment in Chinese universities. The results of data analysis showed that there were significant differences in graduate students' perceptions of the actual and ideal classroom environment. Perceptions of teachers and graduate students in each class differed in their views of the actual classroom environment. Students felt that courses were well-organized, clearly-delivered, and task-focused. Students felt they needed more influence in the classroom, and that instructions should focus on individual development. Teachers perceived Organization and Clarity and Teacher Support as more characteristic of their classrooms but did not see Student Influence and Personal Goal Attainment as important. There were few significant differences on most of dimensions of the actual classroom environment, when contrasted according to age, major, and work experience. Males and females did, however, see Organization and Clarity, Personal Goal Attainment, Affiliation and Involvement differently. When contrasted with the results of other studies conducted with American studies, ratings of the Chinese students were consistently lower. These findings indicate that graduate technology classrooms in Chinese universities are still quite teacher-centered.

Ruland (2000) reviewed relationship of classroom environment to growth in critical thinking ability of first year college students. This study demonstrated that classroom environmental elements suggested by the literature are strong
predictors of growth in critical thinking and provides an instrument to assess classroom environments in relation to critical thinking enhancement potential.

Dart et al. (2000) examined the teachers' and students' perceptions of classroom learning environments (both in secondary schools and universities) which have received attention from educators. However, there have been few attempts to relate approaches to learning to perceptions of the learning environment of secondary schools classrooms.

Carlson (2001) explored the relationship between student academic performance and classroom environment in an introductory, college-level accounting course using a cross-sectional correlation research design. The study focused on the influence of two sets of factors: (a) fit between the preferred and actual classroom environment as perceived by the students and (b) demographics characteristics. Overall, the tests revealed no correlation between classroom environmental fit and academic success using Spearman's rho correlation coefficient and stepwise multiple regression analysis. The results of this study are not generalizable beyond these two community colleges.

Osborne (2001) examined students' perceptions of classroom environment in a school in which block scheduling has been implemented. Senior class students responded to perceptions of classroom environments through the learning environment inventory. The students perceived three of the fifteen variables as positively evident within their classroom environments; diversity, cohesiveness and satisfaction.

McCormick (2001) indicated that the results of the learning environment survey found that two sections of the control-class used some active learning within the context of the traditional lecture. These sections were analyzed as a modified lecture and the other control-section as the traditional lecture. The experimental sections were the integrated sections. Subjects in the traditional and integrated sections scored higher on the content knowledge. Subjects in the integrated course and the modified lecture course scored higher on the attitude toward science survey than those in the traditional course. This suggests that learner-centred environments are important in determining positive attitudes
toward science. The integrated course was the most effective in content acquisition and positive attitude toward science.

Rowlett (2001) reported that school climate research revealed that school environment affects academic achievement. An important aspect of the school environment is classroom climate, which has been found to influence achievement, attitude, behavior, self-concept, and future aspirations. Students’ perceptions have been found to be reliable indicators of classroom climate and predictors of both academic and attitudinal outcomes. There is research evidence that tracking, a widespread and controversial practice in American Schools, influences classroom climate. Although some research literature shows for some students small benefits from tracking, most show negative effects. The study found that perceptions of classroom climate were not significantly influenced by curriculum path, either technical or university, although they did appear to be influenced by teachers, schools, race, age and grade. It was concluded that Tennessee’s two-path curriculum appeared to be producing beneficial results evidenced in classroom climates that were perceived to be similarly supportive for both technical and university path students. It was also concluded that the possible influence by teachers, schools, age, and grade should be viewed with caution because of limitations of the study. Further study of relationships between students’ perceptions of their classroom experiences and their positions in technical path or university path is recommended. It is recommended that the study be conducted with a larger number of schools, classrooms, teachers, and participants.

Moore (2001) indicated that all of the participants perceived themselves responsible for their own mathematics learning. They perceived group work as beneficial to promoting communication and thereby increasing their understanding. They viewed inquiries for understanding as the most appropriate form of student discourse in class, whether teacher-student discourse or student-student discourse. They stated that explaining solutions to fellow classmates improved their own understanding of mathematics concepts. Findings informed pedagogy in three areas of consideration, classroom environment, curriculum,
and influential factors that students bring to the classroom from outside the school context.

An overview of the research studies indicates that perceptions of classroom learning environment is determined by: teacher pupil interactions (Perkins, 1950 and Singh, 1984); social relationship (DeSales, 1978); pupil’s motivation and their achievements (Desai, 1979); instructional strategies (Sundralakshmi, 1981) and has positive influence on pupils academic performance, initiative, classroom cohesiveness and classroom trust (Sundralakshmi, 1981); greater cohesiveness, satisfaction and goal direction and less disorganization and friction in the classrooms (Haertal et al., 1981); class organization, democracy and functioning in groups (Saxena, 1983); classroom social climate (Kumar, 1984); intelligence of students (Mistry, 1986); high level of personalization by teachers (Tobin et al., 1990); discipline and order kept by teachers (Wong, 1996); integration between theory and laboratory classes (Fraser et al., 1998); curriculum (Aldridge & Fraser, 1999); degree of respect that students had for their teacher (Aldridge, Fraser & Huang, 1999) more student participation and teacher support for the student (Jones, 2000), quality of interpersonal relationships, instructional strategies and physical environment of the classroom (Davidson, 2000); academic performance (Carlson, 2000); class-size (Chu-Ju-Chun, 2000); academic performance (Carlson, 2000); cohesiveness and satisfaction (Osborne, 2001); teachers, race, age, grade and curriculum (Rowlett, 2001); learner-centred environments (McCormick, 2001).

Further, learning environment of the classroom influences: pupil’s learning (Upadhyaya, 1984); rule clarity, competition, task-orientation, teacher control, involvement, innovation, order and organization which contributes positively to achieving motive (Kumar, 1984); academic achievement of students (Ramana, 1997); positive attitudes towards science (Aldridge and Fraser, 1999) growth in critical thinking (Ruland, 2000); achievement, attitudes, behaviour, self-concept and future aspirations of students (Rowlett, 2001). Peer tutoring helped to improve the classroom climate of class IX and X students (Pahuja, 1992).