A BRIEF REVIEW OF RELATED LITERATURE

Children with specific learning disabilities attained formal acceptance as a special group among the academic circles, in the sixth decade. From then on research on learning disabled gained its momentum. Investigators from various faculties like psychology, general medicine, psychiatry, education, special education, social work and sociology contributed splendidly to define, understand, identify and remedy the specific needs and problems of the learning disabled children.

Earlier researchers in the area, at least initially, had experienced certain ambiguities in defining the term “Learning Disability” (LD). It was mistaken for learning difficulties, mental retardation, slow learning, learned helplessness, etc. Combination of various organic, physical, psychological and environmental factors were identified in the causation of learning disabilities.

In view of the ambiguity in understanding the etiological factors and in the absence of clear and comprehensive definition of the learning disabilities, researchers and practitioners devised their own operational criteria for identification. Thus the early researchers stressed the presence of organic involvement in the manifestation of learning disabilities (Clements, 1966; Lanfer, 1962; Kirk, 1962; and Wender, 1971), while later investigators could recognise the significant influence of some of the psycho-social and environmental factors also in the causation of learning disabilities (Eisenberg, 1972; Engelmann, 1970; and Rourke, 1981).
Accordingly several remedial programmes were developed to check and control the psycho-social and environmental aspects contributing to learning disabilities.

An attempt is made in the following pages to give a brief account of some of the findings in the form of a review of related literature pertaining to gender and age differences, general personality characteristics, parents and teachers attitudes specific psychological test performance of the learning disabled and steps advanced in the remedy of learning disabilities.

Gender and Age Differences:

Significant gender differences were reported in the occurrence of certain types of learning disabilities. Writing disability and Arithmetic disability were found to be more and Reading disability to be less among girls when compared with boys (Algozzine and James, 1982; Tuddenhan, 1974).

Critchelay (1972) advanced an evidence of hereditary disposition, the sex difference, in the incidence of dyslexics. He reported higher incidence of dyslexia among boys than among girls and indeed in school samples it was usually inferior on average to that of girls. Though this findings might not be an universal one in clinical causes the ratio of boys to girls could be of the order of 4 to 5 to 1. Hence he suggested that the dyslexic disposition was a sex linked genetic characteristics.

Coleman and Sandhu (1973) studied 364 children with learning difficulties who had been referred to a clinic specializing in these problems. It was pointed out that 41% of these children were two or more years behind in their school work by the time they were brought to the clinic. It was also of interest to note in this group that boys out numbered girls 6 to 1. Similar ratios were reported from other sources also suggesting that either boys tended to encounter greater difficulty under the prevailing educational system or parents and teachers were readily concerned were a boy rather than a girl exhibited problems in learning.
Swift and Lewis (1975) studied the leisure preferences of 51 LD boys and 51 LD girls of 3rd, 4th and 5th grades. The subjects were asked to complete an Interest Schedule that consisted of 60 open ended questions. Results indicated that there were more similarities than differences in leisure choices between the two groups although a few minor differences surfaced. One difference was that a greater proportion of LD Boys preferred playing alone. However, both boys and girls preferred the same type of after school and weekend activities and the same sports, hobbies and Television shows.

Significant age differences in certain personality characteristics were also indicated among the LD children (Jackson, 1981).

Epstein, Culliman and Lloyd (1974) administered a behaviour problem checklist to 101 special education Teachers of 375 male and 205 female 8-10 years old LD children. Responses were factor analysed to identify characteristic behaviour problems of learning disabled students. Results indicated that younger learning disabled pupils demonstrated more attention deficit problems, whereas old learning disabled students were more likely to show pre-delinquent problems. Learning disabled boys tended to externalise and learning disabled girls to internalise problems.

Anne and Nadine (1981) examined the performance of younger and older LD and non-LD children on their selective attention and memory problems. LD children, particularly the younger ones, performed significantly more poorly than non-LD children on both attention and memory tasks.

**Personality Characteristics of the Learning Disabled Child:**

Learning problems are often reported to be accompanied by emotional stress and maladaptive behaviour patterns. In one of the first studies on LD children's general adjustment, Fabian (1955) found that 83% of problem readers showed serious maladjustment in social and or personal domains. Since then several studies have reported different types of emotional problems among LD children,
like feelings of insecurity (Adams, Fisher, Forest and Stolz, 1971); low self-confidence (Hunter. and Johnson, 1971) and depression (Klein and Seligman, 1976).

Studies on behavioural problems had also shown that compared to normal children that LD Children were less adaptive and flexible/less sociable (Pilk, McLarnon and Rosenberg, 1984) and less popular (Bruininks., 1978; Bryan, 1974; Gaier, 1977; Perlin and Rosenberg, 1977).

Learning disabilities are due to some of the personality problems that the children undergo at their School and Home environments (Owen, 1971). McKinney and Speee (1986) also examined 47 learning disabled children aged 6 and 8 years and found the social emotional sequelae to be associated with school failure.

Reeves (1980) in a study of children with auditory learning disabilities remarked that the difficulties with auditory language processing tend to be viewed as symptoms of poor attitudes, lack of motivation or emotional disturbance.

Bryan and Bryan (1977) found that social and personal problems of the learning disabled were reflections of rejection by others, insensitivity to others and expressive language deficits. They proposed simultaneous intervention in social/emotional areas by learning disability teachers.

Bender (1985) compared 35 learning disabled 3rd, 6th graders with 35 age, sex and race matched normal controls by using teachers' ratings of temperament, problem behaviour and observed class room behaviour. Results showed significant differences in temperament and problem behaviour between LD and non-LD children.

Swift and Lewis (1985) in their study of leisure preferences among 51 learning disabled and 51 normal 4th-6th grade male subjects found more similarities than differences in leisure choices between the two groups. They suggested that instructional materials designed to be of interest to regular students would also
appear to LD students, and structured free time activities might enhance the social acceptance and social interaction skills of the LD students.

Epstein, Cullinan and Nieminen (1984) examined the emotional and behavioural problems of the 150 learning disabled and non-learning disabled girls in 7 to 14 years (7-8, 10-11, 13-14 years) using a behaviour problems check list. They observed that personality problem (anxiety, withdrawal) was the only factor dimension that differentiated the learning disabled from the non-learning disabled subjects and these difference were not found apparent at every age level. Results showed that the number of problems increased with age for normal subjects but older and younger LD subjects showed higher levels of problem behaviours than the LD subjects in the middle age group.

Cullinan and Epstein (1965) by using a behaviour problem check list to be completed by teachers examined the adjustment problems of 360 students aged 6-16 years identified as educable mentally retarded, behaviourally disordered learning disabled and non-handicapped subjects of both sex. Results showed that the handicapped subjects generally displayed more adjustment problems like social withdrawal, inferiority feelings, fears, anxieties and other personal disturbances than the other group.

Wendy and Annette's (1990) report of a study on social status of children with the LD and the non-LD children revealed that children with LD obtained significantly lower sociometric scores relative to their non-disabled peers.

Breen and Barkley (1984) studied certain personality factors of 15 learning disabled, 15 hyperactive and 15 hyperactive learning disabled 6-13 years old boys using a personality inventory for children. Actuarial analysis of scores revealed that hyperactive learning disabled subjects had a higher percentage of clinical elevations on the scales of achievement, intellectual screening and development than the purely hyperactive or the purely learning disabled groups. Both groups of hyperactive subjects had significantly greater percentage of clinical elevations on the hyperactivity scale than did the purely learning disabled group.
Parents' and teachers' attitude toward the learning disabled children:

It is universally true that parent-child relationship plays an important role in the personality development of the child. The quality of parent-child interactions gained prominence in view of the marked impression it has on the child's further development. Personality disposition of the child is moulded by his reaction to the parental behaviour (Hampe, 1975; Pearl, 1982; Shaffer and Shafer, 1975). According to Omizo (1986) children whose parents nag, criticise, punish severely and supervise their outside activities very strictly or not at all, were found to be quarrelsome, disobedient, trouble making in school, tense, nervous and quick-tempered. Blanchard (1936) found that the children of authoritarian and over strict parents would become either too much dependent on their parents or defiant and aggressive.

Several researches in the field of learning disabilities suggested that maternal attitudes (Drews and Teahan, 1957), home discipline (Kramer, David, Flemming, 1966) and parental involvement (Babuch, Dorothy, 1937) were related to the child's academic achievement.

Reviewing the studies on the role that central processing deficits may play in the etiology of socio-emotional disturbances among the learning disabled, Rourke and Fisk (1981) commented that as emotional disturbances would lead to learning disabilities, learning disabilities would also lead to emotional disturbances. They further suggested presence of other factor that might be responsible for both learning disabilities and emotional disturbances. Thus a need for further exploration of the familial and social dimensions of learning disabilities in children was indicated.

In a comparative study of self-concept, family stress and personal problems of university level 80 LD subjects and 80 non-LD subjects, Wright and Stimmel (1984) found that subjects with LD viewed themselves and their parents more negatively, recalled more family stress during childhood and adolescence and
reported more drug abuse, delinquency and suicidal thoughts than the non-LD group.

Leslie (1986) investigated the ways in which mothers of learning disabled children cope with and defend against the diagnosis and manifestations of their child's problem, as well as to explore the mother's reactions and experience with the process of diagnosis and treatment in a clinical setting. Results indicated that the mothers generally evidenced coping mechanisms when involved with medical, social and educational agencies and were able to appropriately obtain services for their child. However, coping functions broke down and gave way to more defensive mechanism in direct confrontation with the child's projection, denial of the problem and displacement of anger on to the child were seen. Mothers, contrary to traditional attitudes, experienced relief at receiving a diagnosis, confirming their suspicions rather than experiencing shock or grief.

Mothers of 23 learning disabled and 33 non-LD 2nd-6th graders were interviewed by Bryan, Pearl, and Zimmerman (1982) to determine their perceptions of their children's strengths and weaknesses, causal attributions for these strengths and weaknesses, predictions for future performance and evaluations of their children in relation to other children. Results showed that mothers of LD children were more negative in each of these areas than did mothers of non-LD children.

Humphries and Bauman (1980) found that compared to 35 mothers of normal achievers, 35 mothers of learning disabled children exhibited a pattern of more controlling but less hostile child rearing attitudes on the parental attitude scale. No correlation was found between strict control and hostility for mothers of the LD children. They suggested that mothers of LD children needed a structure for their children but without any hostile feelings. This pattern would argue favourably for mothers assuming a parent teacher role.

Stephanie, Maconoughy, and Ritter (1986) studied the parental reports on social competence and behaviour problems of learning disabled boys. The parents of LD boys reported significantly lower levels of social competence and more
behavioural problems than the parents of normal boys. The LD boys had significantly higher scores for both externalizing and internalizing types of problems including problems related to depression, uncommunicativeness, obsessive compulsive behaviours, social withdrawal, hyperactivity, aggressiveness and delinquency compared to a sample of other clinically referred boys.

Bryan and Bryan (1981) studied the social and personal characteristics of learning disabled children focusing on the attitudes of significant others (parents, teachers and peers) toward the LD children and on the attitudes of LD children themselves. It was found that LD children were likely to be socially rejected by others. They held themselves in low esteem and attributed their failures to lack of ability and their success to external forces beyond their control. Significant others were likely to hold lower unrealistic expectations of the LD children’s ability to progress academically. The LD children appeared to be less competent in social communication than the non-LD children.

Studying the expectations of students future achievement of 28 home room teachers and 132 mothers of learning disabled and normally achieving 3rd graders, Boersma (1982) found that teachers and mothers had significantly lower academic expectations for LD subjects.

Stephanie and Maconaughy’s (1986) examination of teachers reports on classroom observation of behavioural problems among dyslexics also indicated that in general teachers ratings had shown LD children to be less socially adept, less test oriented, less verbally facile, less organized and less responsible than the non-LD children.

Palmer, Drummond, and Tollison (1982) found that LD subjects were less persistent and were perceived by their teachers to exhibit more learned helplessness than the normally achieved subjects. Based on his clinical experience Ames (1983) suggested that large percentage of children referred as learning disabled were children of normal academic potential who were over placed in school and the possibility that poor school adjustment might be due to immaturity and unreadiness.
for the work of the grade in which the child was placed rather than to a learning disability.

Siperstein (1985) assessed 8, 29-45 years old teachers' differential behaviour toward isolated or rejected learning disabled children and toward popular non-LD children in 4th, 5th and 6th grades. Differential behaviour was defined by classroom observations of the interaction patterns and sequences of behaviour that occurred between subjects and target students. An intervention strategy designed to make subjects aware of their behaviours was employed. Results indicated that prior to the awareness programme, teachers initiated significantly more interactions, responded with greater frequency of corrective behaviour and used more negative verbal and non-verbal behaviours with isolated LD than they used with popular non-LD children. Post awareness the quantity of subjects interaction with LD students, remained essentially the same. However, the negative quality of these interactions was significantly reduced. It was concluded that in attempts to promote a more positive social climate for LD children who were low in social status, direct intervention with teachers' specific behaviours rather than with their general attitudes was most important.

Myschker (1980) examined behaviour disturbances in 1, 031 (607 Boys, 424 Girls) pupils at 6 special schools for the learning disabled in Hamborg, West Germany. 71 teachers responded to questionnaires assessing the incidence and types of behaviour disturbances in their pupils. Of the 480 pupils judged as behaviour disturbed 322 were boys and 148 were girls. Pupils in the lower grades were found to manifest significantly greater incidence of behaviour disturbances than pupils in the higher grades. Boys displayed different types of behaviour disturbances than girls. The number of behaviour disturbance judgments was independent of age, sex and education of the teachers.

Specific Psychological test performance of the Learning Disabled Children:
A considerable number of studies have been reported in the literature which explored the deficits in the cognitive, connative and affective domains of the learning disabled children using specific psychological tests. Mayers, Hamill, and
Valett (1969) found that the learning disabled children show the characteristics such as typical spelling errors, auditory discrimination problems, letter recognition problems, initial sound in words confusion, counting and number recognition difficulties, auditory memory deficits and the like.

Lombardo and Drabman (1985) asked 62 LD students aged 9-11 years to produce visual-auditory and kinesthetic forms of information by vocalizing multiplication problems. Results indicated that LD students had shown little or no progress in multiplication.

Den (1985) studied the conservation and mathematics achievement in the LD children. He investigated the development of the cognitive stage of concrete operations, specifically conservation in 22 LD children (9-12 years) who had significant deficits in maths achievement and in 18 age matched controls with average achievement in maths. Students were given tests of conservation in six areas - two dimensional space, number, weight, substance, continuous quality and discontinuous quality. Significant group differences appeared indicating that many LD students had not yet developed the concept of conservation even in the elementary school years.

Houck, Todd, Barnes, and Englehard (1980) found that children with specific learning disabilities in mathematics demonstrated inefficiencies in one or more of the following: internal data manipulation and quantitative reasoning, memory, spatial, figural and temporal differentiation. Memory deficits in storage, synthesis and retrieval account for most students deficit in arithmetic. However, there were system inefficiencies, e.g., inconsistencies in naming arithmetic functions and the use of archaic language, that might also account for them.

Matejeck and Vokounova (1982) reexamined the findings of S.Tetzchner (1978) regarding letter confusions in Norwegian children by replicating the study with 65 dyslexic 3rd, 4th graders and 85 age-matched controls without reading difficulties. Subjects were showed slides with 4 letters for 5 seconds to determine which letters the dyslexics confused. Neither in the ezech nor the previous
Norwegian dyslexic samples were confusions of mirror letters a specific differentiating sign. The same asymmetries were found in the frequency of substituted letters in the Norwegian and czech dyslexics and in the normal readers alike. Analysis of results indicated that confusions among dyslexics were influenced by the articulatory similarity of corresponding phonemes.

Michael and Marsha (1977) gave thirty five LD children aged 4-6 years a delayed matching task in which they had to choose on each trial which of two lines was the same as previously displayed standard line. They found that their choices were no better than random when the lines differed in degree of slope but not in left-right orientation and were only marginally more accurate when the lines were left right mirror images. It was also found that performance improved significantly when the lines differed both in degree of slope from the vertical and in left right orientation and improved still further if at least one of the lines was horizontal or vertical. The results suggested that young children had extreme difficulty in encoding in memory either the degree of slope or the left-right orientation of an oblique line.

Heller (1979) registered the eye movements of 12, 5th graders, 6 normal and 6 with dyslexia, while they were reading different texts. It was possible to previously record the frequency and duration of fixation and the direction of saccades. It was found that there were striking differences in the mean values of eye movement parameters and in the consistency of the reading behaviour between the groups. The most important differences however, was the duration of fixation along the lines. Normal readers tended to fixate at the beginning of a line for a longer time and later fixation points for a shorter time. In dyslexics the duration of fixation was distributed relatively evenly over the lines.

Lee Swanson (1984) found that learning disabled children's reading difficulties were due to inability to activate a semantic representation that interconnects visual and verbal codes.

Reviewing the physiological studies that had been conducted on non-hyperactive learning disabled children Dykman, Ackerman and Holcomb (1983) found the evidence of some degree of attentional deficit in LD children but it did not necessarily imply brain damage or brain dysfunction. It was also found that LD children might require a greater feedback of information and more stimulation than non-LD in order to achieve comparable levels of performance.

Donahue and Pearl (1983) found that conversational skills in LD children would reflect deficits in social knowledge as much as in linguistic structure and that conversational language intervention in naturalistic settings would ensure the generalisation of linguistic skills to the appropriate use of language in social contexts. They argued that a model of communicative competence that would integrate the roles of social knowledge and linguistic skills might be a valuable means of evaluating the impact of children's interactional over linguistic difficulties on academic achievement.

Steps advanced in the remedy of learning disabilities:

The rationale behind the development of any intervention programme depends on the orientation of the investigator regarding the causation of the learning disabilities. Accordingly several educational methods, approaches and strategies have been advanced towards the remediation of these disabilities. A brief note on some of the major approaches was given below.

The perceptual motor system approach by Kephart (1971) emphasized that higher level mental processes largely develop out of and after adequate development of motor system or perceptual system, "Kephart, Gatmen, Barsch and Cratty were the chief advocates of this system. It mainly utilizes movements, exercises, games and activities to improve the children's learning potential."
Carl Delacatos system, developed by Delacato (1959) at the Institute of the Human Achievement in Philadelphia, USA is a neuro psychological approach. According to this system, neurological organization is complete in man and is a result of ontogenetic neural development. If a child does not develop normally it is believed that there are missing or incomplete areas of organization. Treatment in the Delacato model assumes that experience affects the brain and that specific types of experience will affect specific levels of brain. Therefore, this is the treatment of the brain, not a treatment of the symptoms programme. However, this system is highly controversial and there are many criticisms against it.

A psycholinguistic/Diagnostic system, makes use of diagnostic test of the Illinois test of psycholinguistic abilities (ITPA) developed by Kirk and McCarthy (1968) is made up of twelve subtests that evaluate abilities in the two major channels of communication visual motor and auditory vocal. Three types of psycholinguistic process receptive, organizing, and expressive are recognized and evaluated. Two levels of organization are also recognized the representational and the automatic. It is not recommended as the total diagnostic base in learning disabilities planning and programming, but in practice it is often the major tool on which remediation is based.

Dr. Marrianne Frostig’s approach is also an other test based system developed by Frostig, M (1964). It involved tests consisting of measures in five areas of visual perception as well as a training is limited to visual-perceptual skills and the programme is also basically emphasizing visual perception. As it is exclusively one of visual perception, in its approach remediation related to the Frostig training programme co-ordinated with the DTVP (Development Test of Visual Perception) is of limited value for children experiencing problems in the auditory channel.

Multisensory systems approach involves utilization of a variety of sensory channels such as visual, auditory, kinesthetic and tactile developed by Dr. Grace Fernald (1943) his method represents a more completely multisensory approach than most, if not at all, the rest with a balanced use of the (VAKT) visual, auditory, kinesthetic and tactile sensory modalities.
Language development system of Dr. Helmer Myklebust (1956) provides a completely well developed theoretical approach for remediation of learning disabled children. He believes that disability is behavioural and cause neurological. His approach emphasise multidimensional evaluation of the disability in the first phase. Next phase involves determination of child's state of readiness and approach the child with what he calls clinical teaching, teaching at his levels of readiness. In addition to the five multidimensional considerations for teaching the learning disability child, he gives thirteen principles for remediation. However, this approach appears to be more auditory oriented rather than visually.

Environmental control systems developed by Dr. Strauss, Lehtinen (1947) and Cruickshank (1967) advocates, an educational setting for hyperactive, brain injured children in which structure is maximized and extraneous stimuli are minimized. The class setting would undoubtedly be called "sterile" for the normal child. For severe cases, a self-contained class is recommended with the children participating little in other areas of the school plant (Cafeteria, Auditorium or Library). Careful consultation and planning with the family is highly recommended and reintegration in the regular class may likely to be slower than with learning disabilities children without the brain injury characteristics.

Apart from the afore mentioned major systems and approaches used in the remediation of learning disabilities review of related literature shows a spate of researches carried out in developing intervention programmes involving parents, teachers and the learning disabled.

*Parent and Teacher Education Programmes:*

Shapero and Forbes (1981) found academic tutoring combined with parental counseling to be most effective with the learning disabled children.

Roth and Weller (1985) described 4 models Therapeutic, Informative, Management and Helpful hints for the parents of learning disabled children. They were designed to meet a variety of parental needs and help teachers select appropriate programmes. The Therapeutic model provides maximum support for
parents having difficulties in adjusting to LD children. It requires parents to confront actively the child's learning problems and devises ways to cope with it. If focuses on the problems of the family constellation, not just the child's learning/educational problems. Informative model emphasises the delivery of information, usually dealing with the nature of learning disabilities, underlying causes of the child's learning problems and the reasons that the child may experience difficulties in coping with his/her environment. Management model highlights the principles of behaviour modification. It provides parents with an understanding of basic human behaviour theory and train parents in the use of appropriate techniques. These models may not meet family's emotional needs, however and other require parents to change their own behaviour. Helpful hints model describes ideas and strategies useful for particular situations.

Switzer (1985) presented a cognitive problem solving model to aid in helping families accept children's diagnosis as learning disabled. This model was a useful tool for professionals interested in sharing information with groups for the purpose of decreasing anxiety.

Gold and Richman (1979) reviewed two psycho-educational models of school-based parent counseling designed to enhance communication and understanding between parents and their learning disabled children. The model proposed by P. Briklin called for an intensive interchange of factual and emotional information between counselors and parents as a group or individual basis. The emphasis here was on training parents to listen, observe and respond more appropriately to their children's behaviour. A. Adamson's model focused on educative and interpretive counseling designed to assist parents in increasing their children's internal control and self-esteem. Parents are also encouraged to deal directly with their own negative feelings about themselves and their offspring. Both approaches seek to establish a co-ordinated relationship between home and school.

According to McWhirter (1976) parent counseling and parent education procedures were important interventive mental health strategies. In this model
factual information and emotional support were provided to parents of the LD children in a series of 6-8 group sessions. The content areas included LD definitions, laterality and directionality, visual perceptual difficulties, auditory perceptual problems, perceptual motor issues etc., parents were involved in experiential activities designed to help them experience the world of LD persons. Time was also provided for open discussion of specific problems. Feedback from parents indicated a very positive response.

Kronick (1978) conducted a most effective training for parents of learning disabilities who felt that they contributed to their child's disability by their child rearing practices. He reported positive changes in parents knowledge, feelings and ability to function and their possible needs for future assistance when the training involved a combination of education and group counseling.

Fulmer, Cohen, and Marco (1985) examined issues in the process of conducting and communicating psychological assessment in structural family therapy. They suggested techniques to enhance the therapeutic effectiveness of psychological assessment feedback. It was argued that the way in which results of psychological assessment were communicated should be influenced by the therapist's assessment of the family's dynamics, and it was optional. If the feedback could be given by the consultant during a family therapy session. A recommended feedback session involves 2 parts. The transmission of relevant test findings and collaboration with the family to form a treatment plan based on these findings. Concrete tasks that can alter family structure in an ameliorative way include reframing, under focusing, over focusing, choice of family members to receive feedback defriangulation and altering proximity.

Kaslow and Cooper (1978) argue that no therapist can come in contact with and treat children with specific learning disabilities without being struck by the fact that have been utilized in recent years such as tutoring special education and child therapy. They emphasize the importance of utilizing family therapy as the treatment of choice at sometime during the course of treating the child and helping the parents to understand and deal with their handicapped youngster.
Rosner (1975) developed a very useful 3 stage teaching guide for parents of children with dyslexia and other learning disabilities that consisted of testing (simple tests to determine which skills the child should work on first), teaching (procedures for helping the child improve his basic skills) and prevention (methods of spotting early signs of learning disabilities).

Philage, Kuna, and Becerril (1975) developed a new approach in remediating the problems of the LD children, based on the family's contracting for service and on the major reinforcers in a child's life space. With the behavioural modification technique used in this approach results showed increased independent functioning of the children.

To provide effective support to pupil's who fail to progress on the basic school curriculum Jewell (1986) described an approach which involved designing individual education programmes (IEPS) with teachers and parents, and establishing systems to maintain the child's supporting programmes. Regular monitoring and evaluation were suggested to ensure perfect maintenance.

Hilton (1985) found the reinforcement of positive class-room behaviours (on task-behaviour, raising hands, quiet talk, staying in seat) as successful management techniques to develop better teacher student relations. It was also contended that it would improve teacher attitudes toward their teaching and significantly enhance the mainstreaming of learning disabled students.

Cohen, and Safran (1981) designed a model to train experienced and in experienced learning disabled resource teachers for future roles in main streaming programmes. It emphasized the development of teaching strategies, communication and conferencing skills through micro teaching and stimulation. With feedback provided at several interaction points. The model was found successful in many schools.

According to Towle and Ginsberg (1975) pupils performance problem was a function of environmental conditions in the classroom and the teacher was the
key to the youngster's class room success. To aid the teacher in understanding performance problems they presented a method for performance analysis that was found successful.

**Remedial Education programmes for the learning disabled children**

Various methods such as Individualised Teaching Strategies to academic learning time including cognitive control therapy, motivation, attention training, bio-feedback technique, and behaviour modification, etc., were used in developing the educational intervention programmes for learning disabilities. Some of the relevant studies based on these methods were given in the following pages.

Baron (1978) was of the opinion that educational intervention for learning disabilities was to be given as per the need of the child at school environment by teachers or psychologists. And in the administration of remedial programmes Fleischner (1987), Groff (1974), Hagin (1973), Mohite.P (1987), Rama.S (1984) and others emphasized drilling, over learning, novelty in the situation, familiarity and meaning fullness of the words, letters and numbers that were in the experiential domain of the LD subjects.

According to Gallagher (1986) the planning of special education for learning disabilities must involve educators from regular and special education to cope with the large group of children at the boundary between the two areas.

Guyer (1974-75) emphasized that, if LD children were taught from the beginning to progress systematically from concrete to semi abstract to abstract concepts using a multi sensory approach the number of school dropouts, Juvenile delinquents and school phobias might be vastly decreased.

Gillingham (1965) developed a remedial techniques to LD children to taught through the constant use of the association between visual pattern, sounds and the kinesthetic falling, accompanying with the production of the sound.
Mcnutt (1984) proposed a holistic language arts programme which combined all of the language arts (e.g., reading, writing, speaking, listening) was based on cognitive/psycholinguistic principles and can be used in resource rooms for learning disabled subjects. Experiences emphasizing oral language, reading and writing together with individualized reading and writing, discussing written language and strategy lessons with in a holistic frame work of the programme enabled learning disabled students to develop their language arts skills through continual reinforcement.

Consilia (1974) proposed a 3 part plan to develop the potential and assist in the progression toward normal functioning of the learning disabled child. The plan included (a) understanding the strengths and weaknesses of the LD child, (b) structuring guidelines, delineating tasks in small segments and giving directions with logical sequential progression, and (c) assimilating the student into the mainstream of the school programme, while individualizing his instructions to strengthen his weaker systems, as far as his strengths were identifiable.

Ganschow (1974) described a technique of error pattern analysis to determine what disabled spellers know about the spelling system and to make decisions for remediation. Based on the students knowledge of sound or symbol relationship error monitoring was suggested using multi-sensory method.

In his study on a mathematics programme that combines co-operative learning and individualized instruction to accommodate the social and academic needs of mainstreamed academically handicapped students and their non-LD classmates, Slavin (1984) involved 1,875 3rd-5th graders. The programme, Team Assisted Individualization (TAI), improved the social and academic behaviour of the LD subjects. The results indicated positive effects on the achievement and behaviour of non-LD subjects also.

Pflaum and Bryan (1982) reviewed studies on oral reading and suggested that when problems were found among children in the use of context information, they must be taught strategies for identifying errors and determining their seriousness, for integrating meaningfulness with phonic knowledge and for correcting their own
errors. Training was considered appropriate only when the disabled reader had reached 2nd grade reading level.

To examine the utility of co-operative groups on a technology for mainstreaming 5 academically deficient students in a regular 4th grade class room Lew and Bryant (1984) conducted a weekly spelling test of 20 words chosen from the 4th grade reader for 27 subjects including the 5 targetted special needs learners. A return to baseline research design was used in which targetted subjects were assigned to cooperative groups with regular members of the class for 5, 4 and 3 weeks period between 5, 2 or 3 weeks of regular instruction results indicated that relative to 2 individualistic techniques, cooperative groups promoted higher academic mastery among both regular and targetted subjects. Thus, results supported the use of cooperative group as a technique for academic as well as social mainstreaming in the regular class room.

Wood and Aldridge (1985) presented guidelines for regular class room and special education teachers for helping learning disabled students to adapt and achieve maximum performance on teacher made tests. They offered suggestions for test construction, directions, multiple choice, matching, true-false, fill-in-the blank, and essay items, design and test administration. It was expected that appropriate class evaluation would help special education students to develop a more positive attitude toward self and school and optimize their test performance

Creekmore (1981) developed the “add-card” method of teaching reversibility the conversion from whole to parts and back to learning disabled children. This method involved counting objects representing the add ends and writing these numbers grouping the objects together, and recounting them as the sum.

Vernon., Coley and Dubois (1980) indicated that American sign language and the manual alphabet combined several desirable characteristics of remedial reading technique.
Smith and Lovitt (1976) studied the differential effects of reinforcement contingencies in 2 arithmetic situations acquisition and proficiency on 78, 11 years old learning disabled boys. In experiment I, subjects were presented with arithmetic problems which they could not compute accurately. Contingent toy models were used unsuccessfully. In experiment II, 2 types of reinforcement contingencies were applied, contingent free time and contingent toy models. He found that the subjects computational proficiency needed improvement, and the reinforcement contingencies were effective. It was concluded that once childrens specific educational levels were determined, interventions must be selected which aim at specific types of performance.

Ito (1980) conducted a follow up study on 62 learning disabled elementary school children to ascertain if the rate of reading gain made during part time placement in a resource room would be maintained after 1 year of full time attendance in regular classes. Results revealed that the group with the shortest stay in the resource room made significantly greater reading rate gains during treatment and continued during follow-up to learn at a higher rate.

Jokisch, Differenz, and Geschriebener (1976) examined the close relationship between written language and scientific activity and between oral language and artistic endeavour. They indicated a need to foster the latent oral linguistic potentials of learning disabled persons and develop new teaching methods and materials to strengthen their oral communication skills.

Fleischmer, Nuzum, and Marzola (1987) used singles and group research design on 60, 5th and 6th grade students to solve 4 kinds of arithmetic story problems. It was contended that some students who had adequate reading and computation skills, lack the procedural process and task specific knowledge necessary to solve problems. Literature on information processing, mathematics education, and instructional theory provide guidelines for content and teaching approaches. A 2-phase test of the problem solving unit showed that subject with LD could learn specific information needed to solve arithmetic problems as well as the procedural rules that enable them to apply that information.
Gettings, Bryunt and Fayne (1982) instructed 39 learning disabled children in spelling for 8 sessions over a period of 3 weeks. To an experimental group of 24 subjects he taught lessons that incorporated reduced unit size, distributed practice and review and training for transfer. They also taught to a comparison group of 15 subjects with methods typically used to teaching spelling. Findings suggested that LD children could improve their spelling skills while sound remedial principles were applied consistently.

Zigmard, Vallecorsa, and Leinhardt (1980) classified the remedial strategies for teaching, reading to learning disabled (LD) children into 3 categories that reflect a district view point. Concerning the source of reading disability. There were strategies that root the problem in the child, emphasized a mismatch between child and instruction, and focused on the instructional method employed. To examine specific casual relationships among many class room process variables, 105 LD students were administered pre and post tests comprising of the Spache Diagnostic Reading Scales, the Reading subtest of the Wide Range Achievement Test, and the Comprehensive test of Basic Skills. It was concluded that a disappointingly small amount of time was spent on the only activities that contribute significantly to growth in reading.

Morgan, and Lyon (1979) described the paired reading tuition procedure as a simple and flexible remedial technique for general application in corporating simultaneous reading and verbally reinforced individual reading and utilizing textual material suited to the child's interest and chronological age rather than reading age. They suggested to the parents of 4 reading retarded children for use at home for 15 minutes daily. The group's reading ages progressed markedly over 12-13 weeks of tuition. Reading comprehension but not spelling performance also advanced considerably.

Vander Leij (1981) conducted a research project with 26, 10-14 years old children with severe reading disability, reading at the 1st grade level. The project consisted of 3 experiments designed to investigate whether (1) the effect of presenting text simultaneously to eye and ear (passive reading), (2) the effect of
learning to read words in context in the passive reading method extending to reading the same words in isolation and (3) this method had an effect on reading ability in general. Results indicated that presenting a text simultaneously to eye and ear by means of a cassette tape had a positive effect on the subjects reading ability.

Atzesberger (1976) on studying the relative effectiveness of small groups (n=4 or less) vs. large groups (n=5-7) for dyslexia therapy in 66 dyslexic elementary school children. Diagnosis and therapy were performed by 14 teachers with special training in group therapy for dyslexic children. The 2 year therapy programme consisted of 3 hours per week training in reading and writing skills using written materials, cassette records and specialized type writers. Results indicated that both small and large groups made considerable progress in reading speed, writing ability and especially in reading accuracy. Only in writing ability improvement the groups differed significantly, with the small groups showing greater progress than the large groups.

Cohen and Kroll. (1981) examined the effects of increased instruction time on the spelling achievement of one male 10 year old learning disabled student. Each day the subject was asked to spell 6 words taken from a spelling series, and periodic review tests were administered. Prior to the subjects completion of the daily spelling task, the teacher reviewed the words for varying lengths of time. After baseline, whereby each word was reviewed for 6 sec., instruction time was systematically increased in increments of 3-21 sec/word. Results revealed that achievement on both the daily spelling assignment and review tests did not surpass 80% accuracy until instruction time reached the 21 sec level.

Spekman and Roth (1982) presenting an intervention frame work for the management of communication disorders in learning disabled children which consisted of three major components - communicative intentions, presupposition and the social organization of discourse. A set of general guidelines and principles was presented that touched upon teaching in the communicative context, responding to
communicative intentions, accepting context elliptical forms, utilizing direct intervention techniques and teaching for regularity vs diversity.

According to Schiffman, Tobin, and Cassidy-Bronsa (1982) there was a need for educators to become technologically and computer literate in order to help the handicapped students to have knowledge in the use of personal computer. They believed that the use of the computer would facilitate the individualized educational plan for handicapped students.

Minskoff (1982) presented a functional approach to education to ensure learning disabled students attain social competence in adulthood. This approach involves instruction in one or more of the following areas, depending on specific needs of the students, functional academics, social information, verbal social skills and non-verbal social skills. It was concluded that a complete educational programme for the LD subjects should include a functional academic programme that stresses social competence combined with remediation that was designed to treat students' learning disabilities and compensatory teaching that circumvented the students disabilities and utilized his/her learning strengths.

Observing the classroom demands of learning disabled students (9-12 years old) Smith, Robinson, and Voress (1982) contended that the LD children in this developmental period exhibited various patterns in learning that encompass any combination of deficits in listening, attending, expression and comprehension. Remedial instructions that incorporated direct and daily measurement of all skills targeted for instruction, emphasized curricular areas (e.g., generalization, listening and career or vocational training) and utilized instructional statistics (e.g., parental involvement, general problem solving, strategies and self-management) were recommended.

Burdman (1986) presented a step-by-step description of how learning disabled students' writing problems could be solved with the help of a word processing programme, they suggested that word processing encouraged LD students to explore
the entire process of writing, including prewriting, drafting and revising, using the computer as an electric note pad writing tablet and type writer all in one.

Giordano (1983) suggested a battery of pre-writing skills- scribbling, imitation, tracing, completion of sentences, discrimination, automatic, cued, ordered and message writing and free association in the remedial programme for children with no writing skills.

Hresko and Reid (1981) discussed the use of 5 substantially different approaches, to the study of learning disabilities - information processing, metacognition, genetic epistemology, cognitive behaviour modification and the specific abilities model. Four of these approaches recognized the importance of learners' activity and their current knowledge and its organization as the basis for selecting what was to be processed during environmental events. Therefore it was suggested that as cognitive approaches had already began to improve our understanding of learning and learning disabilities, the effectiveness of derivative educational interventions need to be explored.

Using special art techniques designed to develop and evaluate the ability to order, perceive, associate and represent components on 7-11 year old LD children, Silver, and Lavin (1977) found significant gains in children's concepts of space order and class as measured by pre and post tests designed for the study.

Cognitive control therapy, a form of task oriented psychotherapy developed for children whose hyperactive, aggressive, or withdrawn behaviour, is integrated with learning disabilities. The technique is based on research guided by the theory of cognitive controls. Cognitive processes are viewed as strategies that maintain an appropriate "cognitive affective balance" while a person is learning. The learning disabled person maintains a cognitive affective balance that results in stress and that is managed by flight and fight behaviours. With cognitive control therapy the therapist present the child with a series of cognitive tasks graded in complexity. The tasks also provide therapist and child a real life like
context within which to observe and work through the child's maladaptive ways and meaning information and related affects. Santostephano (1981) reported the effectiveness of the therapy in a case study.

David (1990) found Reuven Fenersteil's instrumental enrichment programme designed to teach thinking skills to be helpful in developing spelling and writing skills among the learning disabled children.

Cotugno (1982) tested the effectiveness of a new approach in the treatment of special education of learning disabled children. This study employed a pre and post test design with 29 special students aged 5-10 years. 11 subjects received training in the cognitive control approach and the rest received no training. Next the subjects were assessed by the cognitive control battery. Analysis of results indicated that while at pre-testing the 2 special education groups were significantly different from the regular class comparison group. The special educators' treatment group showed significantly different performance from the regular class comparison group on post testing.

Magne (1978) also supported the usefulness of cognitive learning therapy in remedying dyscalculia. Structural learning was regarded as superior to rote learning.

Reading comprehension is a complex cognitive process that presents an opportunity to apply cognitive training techniques, particularly with reading and learning disabled students. Problems in reading comprehension may arise from (a) lack of attention to instruction or (b) absence of strategies for interpreting and remembering what is read (Lloyd, Kosiewicz and Hallahan, 1982).

Deci and Chandler (1986) indicated the importance of motivation in the remediation of learning disabilities. According to them human motivation would include 3 major psychological needs i.e., self-determination, competence and relatedness. They emphasized the value of self-acceptance in teaching, implications of motivational theory and the necessity of teacher involvement in the efforts of mainstreaming the learning disabled.
According to Kelly (1985) focus symptoms such as hyperactivity and short attention span may be misleading in the search for the causes of learning disability and that lack of motivation may be the result of education system rather than inherent fault in the child. He suggested methods of dealing with motivational problems using social, environmental and physiological approaches.

Cohen (1986) found that the intrinsic approaches to student motivation were effective in contrast to traditional behaviourist approaches to motivating students in special education class rooms.

Cohen (1986) discussed a contrasted intrinsic approaches to student motivation. The results of recent research in the area of intrinsic motivation have particular relevance for teachers of exceptional learner.

Adelman and Taylor (1977) reported that rather than being viewed as a reflection of a disorder within the person, most problems in learning and behaviour were seen as a reaction to settings which did not deal effectively with the person's motivational and development status, they pointed out a need to establish an environment which can optimize the match between the learning situation and the learner's current developmental and motivational status.

Cook, Crump, and Welch (1982) investigated whether the inferential measures of attention predicted the classroom attendance of 140, 8-12 years old learning disabled and normal children. Attending behaviour was measured by elapsed time attending and was obtained by trained observer who made 315 minutes observations of each subject over a 12 weeks period. Inferential measures of attention were the G.F.W. selective attention raw score, recall score from the central incidental recall task, coding and Digit span scores from the WISC-R, RT and heart rate declaration. Direct observation of attending behaviour indicated significant variation among LD and Normal subjects. The bimodal distribution on observed attending behaviour with in the LD sample suggests the possibility of at least 2 sub-groups of LD subjects. Results revealed that direct observation of attending behavior indicated significant variation among LD and normal subjects.
Sandoval (1982) outlined steps for reducing distractibility and increasing attention, controlling impulsivity and encouraging deliberation and promoting good interpersonal skills and adjustment in learning disabled students. He suggested that teachers should modify target behaviour, implement inhibitory motor training, reduced restriction on movement, give natural feedback, use proof study cubicles, modify the place of the classroom, implement verbal self-control training programmes and form appropriate attitudes, set clear limitation behaviour create an emotionally supportive environment, teach children role playing techniques and use video feedback.

In a study of the effect of an instrumental programme designed to improve attending behaviour of learning disabled students, Argulewicz (1982) studied 73, 3rd grade learning disabled students from 8 public schools, assigned randomly to treatment and control groups. Attending behaviour training by a direct instruction method was given for group I, and group II was exposed to modeling on the attending behaviours but no other formal training. After the training the subjects were administrated 3 tasks of selective attention. Results found that group I performed significantly better on 2 of the 3 tasks.

Koons (1985) presents a processes-thought model to enable learning disabled students to convert a time lapse problem which is normally a para mental process, to a systematic paper and pencil activity coupled with a step-by-step thought pattern. The teacher can hold mental computation sessions with those students that he or she feels are ready to eliminate the paper and pencil technique by using a small fag board clock in the solution of a problem. Mastery of this skill is found to lessen frustration and increase self-confidence in students.

Russell (1984) studied the effect of hypnosis on improving reading ability, academic achievement, self-concept, academic behaviour and dyslexia in 6-17 years old children with learning disabilities. Findings suggested that beneficial effect of hypnosis was achieved by its ability to reduce anxiety, increase relaxation, prove concentration and enhance self-concept.
Guyer (1974) discussed the applicability of the Montessori approach to the education of the elementary aged learning disabled child. The self-teaching aspects of the Montessori approach was applied to subjects with hyperactivity, short attention span, auditory and visual perception deficit, co-ordination problems and language deficits. It was suggested that if LD children were taught from the beginning to progress systematically from concrete to semi-abstract to abstract concepts using a multisensory approach, the number of school drop-outs, juvenile delinquents and school phobias might be vastly decreased.

Omizo and Williams (1982) examined the effects of Bio-feedback induced relaxation training on attention to task, impulsivity and locus of control among 32, 8-11 years old learning disabled children. All of them had IQ above 90. Attention to task and impulsivity were measured by the matching Familiar Figures test, and locus of control was measured by the NowickiStrickhard locus of control scale for children the treatment included EMC biofeedback training used with relaxation tapes univariate. F values and discrimination analysis was procedure revealed that the attention to task and impulsivity measures were valid discriminators respectively beyond the 0.01 and 0.05 levels of significance. Experimental subjects had significantly fewer number of errors on the attention to task measures and significantly lower impulsivity scores. It was suggested that the bio-feedback induced relaxation training afforded promises in assisting learning disabled children in reading their education potentials.

Miller (1986) discussed the way in which art activities could be used as a creative teaching tool. According to her drawing and painting could be used to develop LD children’s eye-hand co-ordination, to encourage self-expression and teach word relationships, Art activities could be used in behaviour modification (i.e.) to help the LD child with short attention span, difficulty in task completion and hyperactivity. They could also be used to express innate moods of the emotionally handicapped child.

Pflaum (1980) examined a method of studying the contributions to comprehension from different oral reading behaviour determined in the reading of
a group of learning disabled (LD) children. Readers 76 elementary school children (36 learning disabled and 40 non-LD) participated in the task, which required them to read a story orally and then re-tell all recalled information. Reading level was controlled and using a proportion of strong propositions retold as a dependent variable, regression analysis were computed with the non-LD group, no contributions to comprehension of any magnitude were due to the oral reading behaviours with the LD group, however 2 oral reading behaviours were found to provide unique contributions to various in comprehension. Higher rates of meaning changed errors predicted lowered comprehension and higher rates of high phonic care use predicted higher comprehension.

Grisseman (1981) discussed the topic of inversion mistakes (transposition of letters during reading) in dyslexia research and examined the extent to which inversion mistakes were characteristics of dyslexia. Shortcomings of the medical model of the etiology and therapy of letter inversions were reviewed, and a psycholinguistic model of etiology, diagnosis, and treatment of the inversion phenomenon was outlined. The role of overtaxing demands in causing disintegration of the functional structures associated with the reading process was noted. Building contextual and grammatical expectations in reading process and analyzing words into groups were 2 techniques proposed to did in the prevention and treatment of inversion mistakes. Other therapeutic techniques suggested were aids for remembering letter groups and morphemes, modification of impulsive cognitive style, visual perception training and speech therapy.

The foregoing review of related studies shows the multifaceted efforts of the investigators in defining and identifying the children with learning disabilities. Earlier researchers emphasised strongly the organic involvement in the causation of learning disability. The contribution of psychosocial and environmental factors in causing LD also gained the attention of the investigators later.

The review of literature lays the evidence of differences in personality characteristics of the LD and the NLD children. Some studies showed age and gender deferences also among the LD subjects. It was reported that in addition
to poor/low school achievement, the LD children were emotionally and academically maladjusted. To some extent this could be traced to the underlying factors in their home and school environment too. Studies revealed that the teachers as well as parents had poor or negative attitudes towards the learning disabled pupils. At this instance, it is difficult to single out the cause and the effect owing to the vicious circle formed. Uncongenial familial and school environment would have resulted in the child's learning disability or vice versa. However, documented evidence supports that the problem could be solved by bringing in positive changes in the familial and school environment of the child. Several interventional methods, systems and strategies were developed to improve the academic performance of the pupils. Some of the efforts made in these lines were reportedly successful in mainstreaming the LD child through intervention programmes involving the parents alone, some teachers alone are some confined themselves to educational remediation alone. Some comprehensive programmes involving parents, teachers and the LD children were also tried out successfully. It is easy to appreciate at this juncture that any intervention programme advanced to save the child from his disabilities should cover almost all aspects of the child's life-his personal and social life primarily at home and school.

Review of literature does not furnish much evidence of similar work done in India. Indian research on learning disabilities is in its infancy. Non-existence of even approximate estimates of the incidence of learning disabilities among Indian pupils may depict the magnitude of negligence to which the LD children are exposed to. In the absence of proper measures to be taken in the diagnosis and remedy of the learning disabled's abilities, most of the Indian children with learning disabilities go unnoticed in the guise of low achievers, under achievers, truants, disinterested etc. Infact they are denied of their due justice as exceptional children with special educational facilities. It may be due to the unawareness of the parents, teachers and educators regarding the causes and consequences of learning disabilities. Keeping in view the existing lacunae in the literature, regarding the identification and remediation of LD children in an Indian context, the present study was envisaged as a step to fill the gap.