Chapter - 11

Review of Related Studies
CHAPTER - II
REVIEW OF RELATED LITERATURE

Review of related literature helps the investigator to state the significance of the problem precisely, to develop a suitable research paradigm, to relate the result of the study to the previous knowledge and in suggesting further research. A brief summary of previous research and the writing of recognized experts provide evidence that the investigator is familiar with what is already known and with what is still unknown and untested. Since effective research must be based on past knowledge, this step helps to eliminate the duplication of what has been done and provides useful hypothesis and helpful suggestions for significant investigation (Best, 1977).

Any investigator is to be up-dated in the information about studies, related to the own problem, already made by others. References are made to such similar or related studies and their evaluation too is made for the benefit of the readers. Herein the investigator finds another opportunity to justify his own endeavour in the treatment, selected by him, of the problem. The review of related studies refreshes the investigators ideas, regarding the problem of his own and helps him in the whole process of research.

The Investigator identified seventy-three studies related to Learning disability. Among them twenty-nine were conducted in India and sixty four wee conducted abroad. The collected studies were organized chronologically and the abstract of them are given below.

2.1. NEED FOR THE REVIEW OF RELATED LITERATURE

The review of related literature helps the investigator to define his / her problem not only with reference to the problem the investigator wishes to tackle but also in relating the topic to the chosen field. It is an indispensable step for a researcher as it gives him a deeper insight and understanding of the problem.
By examining what has been already done about the problems, the investigator becomes familiar with various trends and phases in the areas. In the words of Good "The key to the vast store house of published literature may open doors to sources of significant problems and explanatory hypotheses and provide helpful orientation for definition of the problem, background for selection of procedure, and comparative data for interpretation of results. In order to be truly creative and original one must read extensively and critically as a stimulus to thinking”.

Related literature includes theoretical discussions, reviews of the status of knowledge by authorities, philosophical papers description and evaluation of current practices and empirical researches, writings, documents, articles, and books. Review of related research is indispensable to get a clear-cut perspective of the problem.

According to Best (1977), "A brief summary of previous research and the writing of recognized experts provide evidence and research is familiar with what is already known and with what is still unknown and untested. This step helps to eliminate the duplication of what has been done and provides useful hypothesis and helpful suggestions for significant investigation"

The literature in any field forms the foundations upon which all future work will be built. Scanning of relevant research reports guides the researcher in the right direction highlighting the pit fails of the earlier studies showing him title landmarks achieved. Also a synthesized collection of previous studies helps the researcher to identify the significant overlaps and gaps among the prior ones. The investigator can probe into the neglected areas, which need more concentration. Further, the review of related research enables the investigator to get the frontier in the field of his problem. Until the investigator has learnt what others have done and what still remains to be done in his area he can not develop a research project that will contribute to furthering knowledge in his field. It makes the researcher aware of the researcher possibilities that have been
overlooked. His focus on these areas may have the way to break new grounds and come out successful with new theories and principles which may be of permanent value in the field of teaching and learning.

The literature so far available shows that a good number of studies have been done on learning disabilities. Most of the studies are related to personality characteristics, awareness and other variables related to causes. Experimental studies on learning disability children have also been conducted to some extent. Awareness studies have also been attempted both in India and abroad. In this chapter, an attempt is made to present a summary of literature related to the research topic under two broad categories such as - studies conducted in India and studies done Abroad.

2.2 CLASSIFICATION OF STUDIES

The investigator reviewed ninety three studies and on Learning Disability of which twenty nine studies conducted in India and sixty four studies in abroad. The collected studies were organized chronologically and the abstracts of them are given below.

2.3. STUDIES CONDUCTED IN INDIA

The studies conducted in India on children with Learning Disability and academic achievements are presented below. The Investigator reviewed twenty nine Indian studies among them fifteen were on the causes, characteristics factors related to learning disabilities and diagnosis of learning disabilities and fourteen were on academic achievement and remedial instruction.

2.3.1 Studies on children with Learning Disability

Fifteen Studies on children with leaning disabilities, causes, characteristics factors related to learning disabilities and diagnosis of Children with Learning Disabilities were reviewed and presented under this heading.
Prasad, (1982) study with primary school children showed that poor expressive language development and poor visual perceptual development are primary factors leading to learning difficulties.

Bhattacharya, (1983) conducted a study on the diagnosis and prevention of the learning disability among primary school students in arithmetic. The objectives of the study were (1) to diagnose the detailed patterns and (2) To try out experimental teaching methods which would prevent development of learning disabilities in these areas. The major findings were (1) The Experimental group taught material achieved significant more than the control group taught by conventional method (2) The experimental group showed better results and prolonged memory of the learned materials that the control group (3) The experimental group showed more interest in the lesson than the control group.

Ramaa, (1984) studied the Diagnosis and Remediation of Dyslexia amount students of classes III and IV. The objectives of the study were (i) to identify dyslexics; from among Kannada readers studying in grades III and IV of elementary schools, (ii) to develop tests required at different phases of the study, (iii) to find out in which of the neuropsychological processes essential to learn to recognize words dyslexics were deficient in comparison with non-dyslexic poor readers and normal readers, (iv) to analyse the types of errors committed by different groups of children while reading Kannada, (v) to study the developmental history of dyslexic children, and (vi) to study the effectiveness of the remedial programme in improving the speed and accuracy of Kannada word recognition in case of dyslexics.

The study involved three phases: (1) Identification phase: Dyslexics were identified from among a group of 550 children who were studying in grades III and IV and having Kannada as their first language at school through an exclusionary approach by using a set of criteria. Out of those 550 children only 14 could be identified as dyslexics. An equal number of non-dyslexic poor readers and normal readers matched on the required variables were also
selected from among the same group of 550 children for purposes of comparison. (2) Diagnostic phase: This phase involved comparison of the neuropsychological process of dyslexics, non-dyslexic poor readers and normal readers, comparison of the errors committed by all the three groups while reading Kannada, analysis of the developmental history of the dyslexics.

The major findings were: 1. Dyslexics were differentiated from the other two groups by visual-verbal association ability. 2. Dyslexics may or may not have deficiency in one or more visual and/or auditory processing skill. 3. The majority of normal readers were deficient in visual processing skills in comparison with the other two groups. 4. Like dyslexics, even non-dyslexic poor readers were relatively more deficient than normal readers in auditory processing skills, 5. There was no qualitative difference in the reading errors committed by the three groups of readers. 6. All the three types of readers got confused usually between letters with auditory or visual or auditory-visual similarities. 7. In most of the cases the substitute for the correct response while recognizing a letter or a word was same in all the groups of children. 8. 'Visual-spatial' difficulties observed among dyslexics while reading English could not be observed among dyslexics while reading Kannada. 9. Though, in individual cases there were behavioural symptoms like delay in speech and/or motor development, cross laterality, hyperanxiety and impulsivity, there were no such symptoms common to most of the dyslexics. 10. The etiology of dyslexia could not be traced in all the cases. 11. The remedial programme was found to be effective in improving the accuracy of letter and word recognition to a considerable extent among all types of dyslexics. 12. The remedial programme was less effective in improving the speed of letter and word recognition. 13. In almost all the dyslexics the level of reading comprehension improved after the remediation.

Shah, (1985) conducted psychometric exploration study on Dyscalculia amongst first graders. The major objectives of study were: (i) To identify children suffering from Dyscalculia in the first grade of Primary schools: (ii) to study relationship between the achievement in Arithmetic and three psychological
factors, viz, intelligence, problems faced by the children and parent-child relationship and (iii) to offer suggestions for decreasing the Dyscalculia amongst the first graders. The major conclusions drawn from the study were.

a. The difference between the means of boys and girls achievement scores was significant at 0.01 level and boys were a significantly superior to the girls in Arithmetic.

b. The difference among the means of all the three groups was significant at 0.01 level.

c. The coefficient of correlation of achievement scores with IQ's of the whole group was found to be 0.59 and it was significant at 0.01 level.

d. Children were suffering from application of knowledge, i.e., they considerably failed to take a decision about the process, whether to make addition or subtraction.

e. School-climate was not suitable to disadvantaged children.

f. Some students suffered from an inferiority complex and lacked self-confidence. They were equally introvert in nature.

Rao, (1986) tries to study the nature and incidence of reading disability among primary school children. The results of the study showed that (1) the reading disability was prevalent in about 20 percent of students in the primary schools (2) sex difference were not significant with regard to reading disability (3) students in rural areas were significantly more backward when compared to the students in urban areas in reading skills and (4) the reading disability was closely related to language deficiency

Mohapatra, (1991) studied the problem of reading, memory and attention processes of normal and reading disabled children. The sample comprised 40 subjects, 20 each from game II and Grade IV. Among them, 10 were normal and 10 were reading disabled. The tools used included decoding test comprehension test, letter cancellation test, visual closure test, visual memory test, auditory closure test and auditory memory test, The study reveal that the normal and the reading disabled children did not differ with respect to their intelligence. In the
case of decoding score, normal subjects of both grades performed better than the reading disabled subjects. In the case of oral reading errors, the normal children made significantly less errors than the reading disabled children. There was a significant difference in comprehension as a function of reading ability only and not grade. There was a significant difference in comprehension as a function of reading ability only and not grade. There was a significant difference in the Digit Span score as a function of reading ability only and not for grades. This indicated that the normal children of both grades had better performance in digit recall than the reading disabled of both grades. The difference in the errors in letter cancellation as a function of grade was not significant. There was no significant difference in the letter cancellation time as an effect of grade as well as an effect of grade as well as an effect of reading ability.

Ramaa, (1992) gives a list of the commonly observed problems among learning disabled children. They are: (i) abnormal activity level such as hyperactive and hypoactive, (ii) attention problems (iii) motor problems (iv) visual perceptual problems (v) auditory perceptual problems (vi) language problems (vii) faculty work habits (viii) social-emotional behaviour problems (ix) orientation problems and (x) academic disabilities.

She also lists the different types of learning disabled children such as:

- Oral-language disabilities: Dysphasia and Aphasia
- Reading disabilities-Dyslexia and Alexia;
- Writing disabilities-Dysgraphia, Agraphia, Revisualization problems, formulation and syntax disorders, spelling problems; and
- Arithmetic disabilities.

Ramar, (1992) deals with different aspects of learning disabilities in her handbook on learning disabilities. The major focus is on enabling the teacher education to develop proper insights in the teachers with respect to the nature of learning disability, procedures in providing remedial help to learning disabled children in regular classrooms. The book has been prepared on the basis of
practical and research experience acquired by her in the area of learning disabilities.

Srivastava, Sushila and Afiah, (1992) studied ‘learning disabilities among elementary school children: Influence of sex, age and religion’. The study focused on the identification of the learning disabled and assessment of their ability in reading, writing, spelling, language and arithmetic. The results revealed that age had a significant influence on disability in reading language, writing and spelling. There was no significant difference between boys and girls in their disabilities in reading, arithmetic language and spelling but sex had a definite bearing on the writing disability of the learning disabled. The Hindus, Muslims and Christians did not differ significantly on five types of learning disabilities.

Parmer, et al. (1994) A comparative study with normally achieving students indicated that both students with mental retardation and those with learning disabilities lag considerably behind their average achieving peers.

Anna Elizabeth Kurivilla, (1999) investigated the creativity among the learning disabled children the objectives of the study were:

a. To assess the level of creativity if the learning disabled children.
b. To compare the creativity scores of the learning disabled boys and girls of standard IV and V studying in Government, Government aided and Corporation schools.
c. To establish relationship between creativity scores of learning disabled and economic status of the family and
d. To determine if creativity scores of learning disabled are influenced by literacy of the parents.

The result shows that:

a. Learning disabled children are creative.
b. Differential analysis of the creativity scores of the Learning Disabled boys and girls show that boys are more creative than girls.
c. Differential analysis made between the samples of standard IV and V reveal that V standard children are more original than their juniors.

d. Learning Disabled children of Government Aided schools were found to be better than those in Government schools in flexibilility and originalility.

e. Corporation schools are better than Government Aided schools in fluency and flexibilility, where as in originality Government Aided schools were better.

f. All aspects of creativity of corporation school performance were better than Government schools.

g. Correlation analysis shows that creativity scores of the learning disabled are not influenced by the literacy status of the parents and

h. Economic status of the family and creativity scores of learning disabled was found to be unrelated.

Ramaa, (2000) studied on Two decades of research on learning disabilities in India describes a range of research studies relating to learning disabilities in India during the last two decades. Attention is called to the existence of many different languages within India. Standardized and teacher-made tools have been developed for assessment and remediation purposes. The paper ends by making some suggestions for further research.

Kusuma Harinath, (2001) studied certain factors related to learning disabilities in English among school students. The objectives of the study were to develop diagnostic test to identify reading, writing and spelling difficulties in English; to find out intelligence of students with reading, writing and spelling difficulties; to study the personality characteristics of students with learning difficulties and: to study the awareness of teachers and parents about learning difficulties. The study reveals that:

a. Boys experienced more reading disabilities than girls;

b. Age and class had no effect.
c. Community influenced on their spelling difficulties.
d. Parents educational qualifications influenced learning difficulties.
e. Location of school influenced on the learning difficulties.
f. Medium of instruction also influenced learning difficulties particularly spelling difficulties.
g. Mass media has no influence.
h. Parent’s income influence learning difficulties but not writing difficulties etc.

Thus this study delineates various factors related to learning difficulties in English among school students.

Soni, (2004) examined the perception of children with special needs related to their education and found that 62.5 percent of the children felt that their teachers had a positive attitude toward them and that they invested extra time to help them. The same study found that slightly more than half of the children with special needs responded that teachers sometimes pose questions to students with disabilities. Their response to whether or not the teachers encouraged them to ask questions was a resounding and discouraging never. One can deduce that while the intentions of teachers are generally noble, they are unable to effectively engage students with special needs in the classroom.

Sujathamalini, (2005) Competencies Required for Primary School Teachers to Handle Learning Difficulties in children. She conducted the study with the objectives of (1) to develop a rating scale to assess the possessed competencies of primary school teachers to handle learning difficulties in children; (2) to develop a questionnaire to identify the required competencies for the primary school teachers to handle learning difficulties in children; (3) to find out the significant difference if any, in the possessed competencies of primary school teachers to handle learning difficulties in children due to variation in their gender, age, community, educational qualification, type of training received, years of experience, type of school they are working and location of school; (4) to
find out the significant difference it any in the required competencies of primary school teacher to handle learning difficulties in children due to variation in their gender, age, community, educational qualification, type of training received, years of experience, type of school they are working and location of school. The findings of the study were (1) there exists significant difference in the possessed competencies of primary school teachers to handle learning difficulties in children due to variation in their gender, age, community, educational qualification, type of training received, years of experience, type of school they are working and location of school; (2) there exists significant difference in the required competencies of primary school teachers to handle learning difficulties in children due to variation in their gender, age, community, educational qualifications, type of training received, year of experience, type of school they are working and location of school.

2.3.2 Studies on Remedial Measures and Achievement

Among the twenty nine studies in India the Investigator reviewed fifteen studies fourteen studies on the academic achievement, teaching techniques and remedial instruction.

Rastogi, (1983) took up a study on diagnosis of weakness in arithmetic as related to the basic skills and their remedial measures. The findings of the study sowed that one of the important causes of backwardness in maths was poor command over basic Arithmetic skills and attitude towards sex differences in either attitude towards maths or achievement in maths. The course of self-help in basic arithmetic skills, developed by the investigator was equally effective with either sex.

Anand, (1985) Under a study of the factors that affected the orthography in Hindi and diagnosis of spelling mistakes in writing of class V students of Hindi-medium schools of Delhi, among with a remedial programme. They study concluded that the largest number of mistakes were made in respect of the use of “Matra” closely followed by the use of incorrect words. Most of the spelling
errors were due to inadequate mastery of the basic tasks in process of spelling. Ability to spell correctly did not automatically improve with age. Use of teaching learning strategies, which involved oral-aural-visual and motor experiences of the word, were most suitable for improving the spelling-ability of students.

Bhattachariya, (1985) tried out a technology method of preventive teaching for the alleviation of learning disabilities of the students in life science. The hypothesis made were: (1) The experimental group taught by audio visual materials and techniques would achieve significantly more than the control group taught by the conventional method and (2) The experimental group would show more interest in the lesson than the control group. The results of the study were:

1) All the three hypothesis were retained.
2) Eighty major patterns of disability in the content area were identified.

Joshi (1985) in a study scrutinized errors in written English and tried to device remedial programme. Students of grades V to X were taken up for the study which was an action research programme. It was found that the number of errors were reduced after the introduction of the remedial programme which included correction of spelling, syntax, written expressions and drilling.

Bhattacharya, (1986) investigated learning disabilities developed by secondary students in the age of equation sums in Algebra. The objectives of the study included.

1) To conduct a survey of the learning disabilities developed by the beginners reading in secondary schools.
2) To conduct a specific experiment on effectiveness of the two mathematical methods for prevention of learning disabilities usually developed by beginners in linear equation sums in one unknown in algebra.
Dutta, (1986) studied at diagnosis and prevention of learning disabilities in the reasoning power of the students in Geometry. The main purposes of the study were (1) to diagnose the major patterns of disability in the specific areas of geometry, and (ii) to try out experimental teaching methods which would prevent development of learning disability in the area under study. Some of the pertinent findings of the study were:

1) Thirty three major patterns of disability were identified.
2) The experimental group taught by audio-visual materials and techniques achieved significantly more than the control group taught by conventional method.

Sivakami, (1999) deals with the effectiveness of instructional strategies in her thesis on 'Effectiveness of certain instructional strategies to overcome learning disabilities in English at primary stage'. The major focus is on the remedial instructional strategies to be adopted for the children with reading, writing and spelling difficulties. The post test achievement scores are higher than the pre-test achievement scores. This throws light on the effectiveness of the remedial instructional strategies used in the study.

Reddy, (1999) estimates that at present there are about 10 to 15 per cent of the students population suffering from learning difficulties in every classroom at primary stage.

Reddy, Ramar & Kusuma, (1999) have done some exhaustive works in the field of learning disabilities. Their book "Learning Disabilities A practical guide to practitioners", provides practical information of assessment and identification practices and it discusses instructional strategies such as meta-cognitive instruction and social skill training. Further this book presents effective interventions for dealing with a variety of behavior and attention problem. Also presented are classroom instructional interventions for teaching specific subjects such as language and mathematics. This book is an outcome of a rare blend of
theoretical assumption at research level and practical relations in real classrooms.

Reddy, Ramar and Kusuma, (2000) have enumerated language learning problems of learning disabled children in their book entitled, "Learning Disabilities a Practical Guide to Practitioners". Also they provide suggestions to circumvent those specific deficiencies. All the specific deficiencies related to each study of language learning are highlighted and appropriate intervention strategies are also provided for the guidance of teachers. The prime tactics are physical guidance, shaping, modeling, telling, cueing, prompting, time delay and refinement tactics to overcome learning disabilities in children.

Reddy, (2000) studied the Role of Educational Technology in learning disability in which he has highlighted the need for assistive technology to the learning disabled. The processing, spelling checking, proof reading programmes, brain storming, speech recognition system, speech synthesis, screen reading, word prediction, personal frequency modulated listening systems and taking calculators were of much use to circumvent the learning disabilities in children.

Bina Nangia, (2000) Studied for the Development and Validation of Remedial Programme for Promoting Education of Dyslexic Children in Main Stream Schools. Conducted a study with the objectives (1) To identify dyslexic students of classes II and III, evaluate their IQ, spelling age, reading level, reading comprehension level, and listening comprehension level. (2)To prepare and validate a remedial programme for spelling, reading, reading comprehension, and listening comprehension. The sample of the study was a purposefully selected sample of 30 dyslexic students from primary classes consisting of 15 from class II and 15 from class III. This formed Group A, which is the experimental group. An equal number formed the control group, Group B matched uniformly in respect to IQ, SES, & educational achievement in the previous annual examinations. The main Finding of the study was that the
remedial programme developed by the investigator proved to be effective in improving Spellings, Reading level, Reading comprehension and Listening comprehension.

Rajaguru, (2003) conducted a study on Emerging Behavioural Techniques to Enhance the Quality of Instructional Strategy for Learning Disabled. The emerging behavioural techniques such as Brainwave Analysis, Meditation, Relaxation techniques and self-hypnosis are closely associated with teaching-learning process. He attempted to establish the effectiveness of self-relaxation on learning process with special reference to the retention ability of the learning disabled (L1) students. The sample of his study consisted of 22 postgraduate students (12 boys and 10 girls) selected from 45 post-graduate students with LD (26 boys and 19 girls) identified from one self-financing Arts and Science College at Coimbatore, Tamilnadu. The two Equivalent group Pre-test and Post-test design was used. For assessing the retention ability, ten meaningless words (nonsense syllables) were exposed one by one to the students. The students of the experimental group were asked to practice self-relaxation technique (SRT) for one week once a day. While the experimental group students were asked to do SRT, the control group students were allowed to be free. TheRetention Scour collected form this study was subjected to statistical analysis. The major finding of the present study is that the SRT facilitated to enhance retention ability of Post-graduate students with LD.

Pranita Gopal, (2004) of Army Institute of Education, New Delhi, India studied on Concept Mapping – A Pedagogical Tool for Grammar Lessons. The Objective of the study was to study the effect of the use of concept maps on the teaching and learning of English grammar. 94 IX standard students of Army Public School, Delhi Cantt, were selected as sample for the study. The hypothesis of the study was the use of concept maps is effective in the teaching and learning of English grammar. The finding of the study was Students who are imparted learning experiences through concept map signal a better performance.
on their understanding of the concepts of English grammar as compared to the ones taught through commonly prevalent options.

**Madhuri Kulkarni, et al.** (2006) conducted a study ‘Educational Provisions and Learning Disability’ to assess the impact of the provisions of the Maharashtra government on the academic performance of children with specific learning disability (SpLD) at the Secondary School Certificate (SSC) board examination. The academic performance of 60 children (45 boys, 15 girls) at the SSC board examination with benefit of chosen provisions was compared with their performance at their last annual school examination before diagnosis of SpLD. There was a significant improvement in their mean percentage (%) total marks scored at the SSC board examination as compared with the mean % total marks scored by them at their last annual school examination before the diagnosis (63.48± 7.86 vs. 40.95 ± 7.23 ) [mean ± SD, mean % difference = 22.53, 95% CI = 19.8 - 25.26, P < 0.0001, using student's t test]. Also, children who had availed exemption of one language or opted for lower grade of mathematics had scored significantly better marks in their optional subjects (P < 0.0001 and P = 0.0009, respectively). It was found the Children with SpLD who availed the benefit of provisions showed a significant improvement in their academic performance at the SSC board examination. (Indian Journal of Pediatrics, Volume 73—September, 2006 789)

2.4 STUDIES CONDUCTED ABROAD ON LEARNING DISABILITY

A considerable research works have been carried out on learning disabilities in the foreign countries in the 1990s. These include survey studies, studies, and experimental studies. The Investigator reviewed sixty four studies conducted abroad. Among them Seventeen were on the causes and characteristics factors and diagnosis of Children with Learning Disability and forty-seven were on the academic achievement, teaching techniques and remedial measures. Such studies are summarized here under.
2.4.1. Studies on causes and characteristics

Seventeen studies on children with learning disabilities, causes, characteristics factors related to learning disabilities and diagnosis of Children with Learning Disability were reviewed and presented under this heading.

Johnson, et al. (1956) estimated indicated that from less than one and half percent to more than one percent children may have difficulties in vocalization.

Broder, (1971) finds that there are three groups of dyslexics: 9 percent of dyslexics have visual problems which are called dyseidefic 63 percent of dyslexics have auditory and linguistic problems which are called dysphonetic and the remaining is a mixed group.

Peter Farrell, (1977) states that there may be several reasons why pupils may have difficulty in learning the task or one step of it. For example:

- The pupil may be confused due to the task not being presented clearly – the materials may be in the task not being presented clearly – the materials may be in a muddle or the teacher may be distracting the student by using inappropriate language;
- The pupil may be finding the whole teaching session unrewarding resulting in his / her losing interest or appearing fed up;
- The step may be too difficult.

The following are some suggested solutions:

a. The teacher should observe carefully whether (i) the pupil is attending to the task; (ii) the materials are set out correctly and there are no distraction; (iii) the instructions are clear; and (iv) the prompting is effective;

b. If the above step does not work, the teacher should go back to the previous step which has already been learned. If the pupil fails on this
step as well, then perhaps the students has forgotten how to do it and it
needs to be taught again, possibly to a more stricter criterion of success;
c. If the pupil succeeds on the previous step, the problem may lie in the
present step being too difficult. The teacher could do further task analysis
on this step and bread it down into two or more simpler steps;

   Perhaps the pupil no longer feels rewarded for working on the task. In this
case, a different reward could be used or existing rewards could be
strengthened. Alternatively the pupil could be given a break from working
on the task.

   Catherine, V. Morsink, (1983) initially opines that the incidence and
prevalence is to be about 2 percent. Similarly, Crisfield (1986) estimates that as
much as 10 percent of the population may have mild developmental dyslexia and
4 percent have severe dyslexia. American Psychiatric Association (1994)
estimated that approximately 3 percent of the school population should be
regarded as specifically learning disabled.

   Baiden, (1984) states that dyslexia is common with around 5 percent
incidence regularly identified in the western countries.

   Ann, (1993) also studied the effects of discrepancy models and eligibility
decisions on student selection in the diagnosis of learning disabilities. The
purpose of the study is to examine the criteria for diagnosis and the means by
which they are operationalized. A second major objective of the study involved
comparing the IEPC’S eligibility decisions against the severe discrepancy
criterion.

   The result indicates an increase in numbers when a regression method is
used over a simple difference score method. When the change, however,
included moving to more severe cut off score the pattern reversed and a 20
percent decrease was observed. While IQ correlated with the discrepancies
when the simple differences score method was used, no correlation was
observed when regression was employed. Neither method resulted in disproportionate racial representation among those meeting the severe discrepancy criterion (ii) an agreement rate of 15 percent suggests a greater reliance on the severe discrepancy criterion than previously reported. Agreement was the same regardless of the method used.

Watson, (1993) analysed the characteristics of retained and non-retained learning-disabled students. The major purpose of this study was to compare the characteristics of Children with Learning Disability who had been retained and learning disabled students who had not been retained prior to identification as learning disabled.

Analysis revealed four of the six variables to be statistically different between the groups. Students in the retained group were significantly older than those in the promoted group. It appeared that this difference was due to the fact that the retained students had spent an extra year in school prior to being referred. The grade level at referral was essentially the same for the 2 groups Therefore it appeared the retention only delayed for 1 year, the inevitable Identification of the students as learning disabled the three remaining significant variables, IQ reading achievement and math achievement were significantly lower for the retained group.

Rene (1994) studied the reliability of authentic assessment in fourth-grade narrative and descriptive written language for students with and without learning disabilities. The purpose of this study was to determine reliability estimates of authentic assessment for fourth-grade narrative and descriptive writing samples for students with and without learning disabilities. The results of the study revealed (a) high inter-rater reliability among teachers when scoring and rescoring narrative and descriptive writing samples of students with and without learning disabilities. (b) low stability correlation when rescoring narrative and descriptive writing samples of students without learning disabilities (c) higher stability correlation when rescoring descriptive writing samples, and (d) moderate
stability correlation when rescoring narrative and descriptive writing samples of students with learning disabilities.

Robin, (1994) attempted a study of adaptive behaviour among preadolescent normally achieving, learning disabled and mild mentally retarded children (learning disabilities and social skills). The purpose of this study was to examine the adaptive behaviours of five groups of preadolescents. The results revealed that the LVHP scored significantly lower than the HVLP, but not the NOLO group. The items which contributed to these differences included both oral and written language.

Sanford, (1994) studied post school follow-up of individuals identified as learning disabled and mentally retarded. The purpose of this study was to determine the post school status of students identified as learning disabled and mentally retarded who exited high school in 1988, 1989 and 1990. Data analyses of the hypotheses indicated that there were statistically significant differences in post school adjustment variables between male and female, white and non-white and learning disabled and mentally retarded former students. The results of this study led the researcher to conclude that secondary special education programs for the mildly disabled should be restructured to include functional curriculum, vocational skills training, work study programs, and assistance with transition from school to work.

Dennis, (1994) studied the impact of the choice awareness program upon the self-concept, locus of control and interactive choices of children with learning disabilities. The purpose of this study was to determine the impact of the choice awareness program upon the self-concept, locus of control, and interactive choices of children with learning disabilities in two school districts.

The results indicate that the anecdotal information obtained from the instructor evaluations do suggest that improvement can occur through this
program. Further, research of the choice awareness program to children with learning disabilities is suggested.

**Hughes, (1994)** made a comparison of special education placement patterns relating to the racial membership of students identified as mildly mentally retarded and specific learning-disabled. The purpose of this study is to examine criteria that were used in the determination of eligibility for students identified as mildly mentally retarded and specific learning disabled.

Results indicated that there were a slightly higher percentage of African American students referred for special education assessment in the sample than Caucasian students when compared to total general population. Further, the findings revealed that African-American students were disproportionately over represented in classes for students identified as mildly mentally retarded and under represented in programs for students identified those eligibility criteria or student characteristics which significantly impacted eligibility / non-eligibility of students identified as mildly mentally retarded or specific learning disabled. Level of the assessor training was also found to influence the identification of the same students.

**Lain, (1995)** Studied learning preferences associated with the visual and auditory memory of third and fourth-grade students with attention deficit hyperactivity disorder (learning disabilities). The purpose of this study was to determine the amount of variance in the visual and auditory memory of ADHD students, with and without learning disabilities that could be accounted for by four predictor variables. The results showed that the four selected variables did not predict a significant amount of the total variance in visual and auditory memory. The current data do not support the assumption that accommodating a self reported learning style preference would make a significant difference in performance on a memory test.
Mittles, (1995) opines that it is difficult to obtain an accurate picture of the number of people who were defined as having learning difficulties. The available survey on the prevalence of learning difficulties is the total population is predicated to be 2 percent (Lerner, 1993).

Lindh, (1996) studied attributes of career goals established by elementary grade students with mild disabilities. The purpose of this study was to examine the attributes, differences, realism, and age appropriateness of career goals established by elementary-grade students with mild disabilities. The study found that students with mild disabilities and learners without disabilities differed in their choice of career goals there was no relationship between age and attributes of career goals.

Frost and Emery, (1996) and Gibson and Levin (1975) report that at least 15 percent of American School Children have reading difficulties.

Kathy Marie (1996) attempted the effects of self-speech on the problem solving abilities of children with and without learning disabilities (self-regulated learning). The purpose of this study is to examine the spontaneous use of self speech during task performance among children with learning disabilities (LD) and normally achieving (NA) children. In conclusion, theory and research suggested that students with LD display deficits in the self-regulated learning process.

Beth, (1997) studied the perceptions of paraprofessionals and classroom teachers concerning paraprofessional roles in working with students with disabilities in general education settings. This study was designed to investigate the types of duties and responsibilities assumed by paraprofessionals working in second and third grade classrooms serving students identified as having mild disabilities.
This study found that these employees do assume instructional duties but many do not have any training which 'mould enables them to address the educational needs of students with mild disabilities.

2.4.2 Studies Conducted Abroad on Academic achievement

Forty-seven studies were on the academic achievement, teaching techniques and remedial measures. Such studies are summarized here under.

Margo, et al. (1985) studied Facilitating Learning Disabled Students' Acquisition of Science Classifications (Learning Disability Quarterly, Vol. 8, No. 4 (Autumn, 1985), pp. 299-309). Thirty-six learning disabled junior-high school students were randomly assigned to three experimental conditions to learn three dichotomous classifications for each of eight minerals: hardness level (hard-soft), color (pale-dark), and common use (home-industry). In the direct-instruction condition, students were taught the mineral classifications according to the principles of direct instruction (i.e., student participation with repeated practice and reinforcement). In the mnemonic-instruction condition, students were shown thematic illustrations that integrated each of the minerals and its symbolized attribute classifications. Finally, in the free-study condition, students were instructed to learn the eight minerals using whichever method they chose. Results showed that students who learned via mnemonic instruction outperformed those who were allowed free study. The latter group, in turn, outperformed the direct-instruction subjects. Implications for classroom instruction are drawn.

Affleck, Madge, Adams and Lowenraun, (1988) compared the academic achievement of students with learning disabilities in an integrated classroom model, with the achievement of students having learning disabilities in a resource room programme. No significant difference were found between the achievement scores (ie., in reading, maths and language) of students I the respective programmes. They also note that the integrated classroom model was
shown to be less costly that the resource room programme but the two placements achieved similar results.

**Whinnery, et al. (1992).** In Implementing effective teaching strategies with learning disabled students through curriculum-based measurement. *(Learning Disabilities Research & Practice, Vol 7(I), 1992. pp).* Effective teaching strategies are used by all teachers to some degree. Effective teachers, however, have been found to use these strategies in a systematic and regular way. Systematic and successful application of teaching strategies requires the use of performance data to guide teaching decisions. Computer application of Curriculum-Based Measurement (CBM) is presented as 1 methodology capable of providing the necessary link between student performance and instructional decision making. A case study in math involving a 5th-grade learning disabled boy is presented to show how CBM with computerized feedback systems can be used to systematically implement effective teaching strategies.

**Shen, (1992)** attempted the use of selected mastery learning techniques on mathematics performance in non-disabled, learning disabled and educable mentally retarded children (mentally retarded) The purpose of the study was to improve learning strategies for special needs children in mathematics is necessary. Results showed that the mastery learning strategies promoted the learning outcomes of mathematics for non disabled children for learning disabled children and for educable mentally retarded children, but the effects on the latter were not. So significant as the use of the mastery learning strategies for non disabled and learning disabled children.

**Patricia, (1993)** studies "the effects of a motivation strategy that incorporates goal-setting on the test taking performance of young adolescents with learning disabilities". The purpose of this study was to incorporate goal setting and corresponding issues related to attribution, locus of control and self efficacy.
The experimental findings were negative for all four research questions. The results did not support the hypotheses. Although some students did increase scores in the areas of (a) spelling performance (b) self-perceptions of goal setting ability (c) self perceptions of locus of control, scholastic competence and self-worth and (d) attitudes towards study habits, group increases were not significant and experimental control was not demonstrated. Little evidence exists to suggest that the students internalised or spontaneously transferred the use of the intervention to a similar situation, that of vocabulary performance.

Ann, (1993) attempted program evaluation involving the effectiveness of an alternative instructional approach for mildly disabled students. The purpose of this project was to evaluate a program involving the effectiveness of an alternative instructional approach utilised with mildly disabled students at the elementary grade level. The purpose of the program was to assist students in the learning process within the regular classroom setting, rather than pulling them from the setting for instruction.

In an effort to determine the effectiveness of the program, an evaluation involving observations, rating scale, interviews and data gathering from participants was conducted. The data collected was used to determine if the alternative instructional approach effectively met the educational, social and emotional needs of the mildly disabled students as outlined in the students individual education plans.

Jean, (1994) analysed the mathematical problem solving processes of primary-grade students identified as learning disabled. The purpose of this study was to explore the mathematical problem-solving processes of primary-grade students identified as learning disabled. The results indicated that these learning disabled students could solve a variety of problems including the most difficult addition, subtraction, multiplication and division word problems; problems with extraneous numerical information and multiple step problems. The major barriers to solve problems appeared to be procedures learned without understanding
these results call into question the need for explicit strategy instruction in mathematics for learning disabled students.

**Lyytinen, et al.** (1994). *Mother: A child teaching strategies and learning disabilities.* (Journal of Learning Disabilities, Vol 27(3), Mar 1994. pp. 186-192). Examined the teaching strategies used by mothers of 30 boys (aged 8-11 yrs) with learning disabilities (LDs) and mothers of 30 boys (aged 8-21 yrs) with no LDs (NLDs). The behavior of mother-child pairs was videotaped in a teaching task that resembled a homework assignment. Results show that the mothers of Ss with LDs used fewer high-level strategies, and their total time used in teaching was less than that of the mothers of NLD Ss. The mothers of Ss with LDs exhibited more dominance and less emotionality and cooperation than did the mothers of NLD Ss. However, the mothers did not differ in task motivation. Ss with LDs had more inactive learning strategies, and their mothers' motivation, emotionality, and proportion of high-level strategies had a strong positive association with their children’s success in teaming. (PsycINFO Database Record (c) 2003 APA, all rights reserved).

**Kolar,** (1995) studied the effects of assessment modification on the room testing performance of students with learning disabilities. The purpose of this study was to investigate the effects of assessment modifications on the classroom math testing performance of students with learning disabilities. The results indicated that the mathematical knowledge of the subjects was more accurately reflected on paper-pencil measures when the tests were constructed and administered utilizing accommodations which were matched to dent strengths and weakness

**Coronado, V.** (1995) studied the anxiety of learning disabled school children with remedial instruction. The purpose of the study was to investigate the anxiety levels of elementary school learning disabled (LD) students provided with at least one semester of remedial instruction. The results indicate that
compared to non LD, the LD students displayed significantly higher levels of general anxiety, worry, over sensitivity, social concerns and concentration difficulties. Learning disabled females displayed significantly higher levels of general anxiety, worry and over sensitivity than LD male students. In addition, learning disabled fifth grade females showed significantly higher levels of anxiety that the learning difficulties of third and fourth grade male and female students. Moreover, learning disabled and regular education lower grades students did lie significantly more than upper grade students.

Holcomb, Helene, and Beatly, (1995) attempted to compare the achievement of low achieving and learning disabled elementary school students. This study examined the academic progress in basic reading skills of students identified as learning disabled (LD) with and without ability / achievement discrepancies and low achieving not disabled (LA) students. The purpose was to examine the characteristics of LD and LA students, to investigate their achievement in reading during a school year, and to explore the factors that influenced their academic progress in light of the discrepancy assumption of the learning disabled definition. The result reveals that the learning disabled students exhibit distinct characteristics that the learning disabled students exhibit distinct characteristics that distinguish them from other low achievers. The discrepancy component of the learning disabilities construct suggests that the learning disabled have with discrepancy between ability and achievement in reading. Students world benefit more from special education instruction than other low achievers and that they would make more academic progress that learning disabled with no discrepancy (Learning Disabled – ND) students because f higher ability (IQ).

Butler, (1996) studied the effect of positive self-talk training on perceptions of self-efficacy in students with specific learning disabilities. The purpose of this study was to determine the effects of positive self-talk training on the perceptions of self-efficacy in students with specific learning disabilities.
Analysis of these data revealed a statistically significant difference in the pre test and post test scores for the sub-scale social. No significant differences were found in the pre test post test scores for the sub-scales self-image and academic.

David, (1996) studied social skill intervention in a residential summer camping for children with learning disabilities. The purpose of this study was to investigate the effects of direct social skill instruction in a medicated learning context on the social skills use behaviour and the social information processing skills of 94 children and adolescents with learning disabilities.

The results showed that social information processing skills improved. In general participants with high self-concept outperformed participants with low self-concept on social information processing. It was concluded that the structure and positive medicated nature of the intervention supported growth. It was also concluded that cognitive awareness preceded actual observable behavioral change.

Lecvn, (1996) studied the career-related self-appraisal skills of adolescents with learning disabilities and their relationship to mainstreaming. High school, verbal reasoning, numerical reasoning. The purpose of the study was to compare forty-eight high school seniors, 24 with learning disabilities and 24 without learning disabilities in terms of their self-appraisal skills for two career related abilities, verbal reasoning and numerical reasoning abilities. A discriminate function analysis indicated no significant difference between the two groups of students with regard to their self-appraisal skills for verbal and numerical reasoning. It revealed that these students compared themselves to students without learning disabilities for verbal reasoning ability and to students with learning disabilities for numerical reasoning ability.

Thomas, et al. (1996) in their article Teacher perceptions of mainstreaming/inclusion, 1958-1995: a research synthesis and Exceptional Children, Vol. 63, 1996 described the process of integrating students with
disabilities into general education classes in order to address the requirement of "least restrictive environment" mandated by the Education for All Handicapped Children Act of 1975 (Public Law 94-142; now the Individuals with Disabilities Education Act). In order for mainstreaming/inclusion to be effective, it is generally agreed that the school personnel who will be most responsible for its success--general classroom teachers--be receptive to the principles and demands of mainstreaming/inclusion (Garvar-Pinhas & Schmelkin, 1989). What are the perceptions of general education teachers toward teaching students with disabilities in their classes? And overall mainstreaming/inclusion Issues. Through systematic research synthesis procedures, summarized teachers' responses to these questions and evaluated the potential impact of such variables as geographical region, year of the survey, and teacher characteristics on teacher attitudes. This synthesis should provide important information about where the field of education is, and where it appears to be heading, with respect to this important educational policy.

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Steven, R. Forness, Kenneth, A., & Kavale, (1996) studied Treating Social Skill Deficits in Children with Learning Disabilities: A Meta-Analysis of the Research. Although social skills training or intervention for children with learning disabilities has been widely used in the past 15 years, little systematic synthesis of its effectiveness is available. The current study is a meta-analysis of 53 studies on social skills training completed during this period. The mean effect size (ES) obtained was only .211, with very few differences among teachers, peers, or children themselves who judged effectiveness of training. This relatively modest effect is discussed in relation to other special interventions for children
with school learning or behavioral disorders and possible links between learning
disabilities and social skills that might account for poor treatment outcome.

Periocola, (1997) studied how students with learning difficulties progress
in a constructivist classroom. The purpose of the study was to investigate the
mathematics teaching and learning in a third grade constructivist classroom that
included a heterogeneous group of students. Specific strengths discussed in the
conclusions are students' willingness to take risks and their level of involvement
weaknesses are indicated in the area of instructional grouping, assessment
techniques, and teacher support.

Case, Lisa Pericola, (1997) studied mathematical understanding to know
how students with learning difficulties progress in a constructivist classroom. Six
students and their teacher were the focus participants in the study. The teacher
participant had two years of experience in project IMPACT, a research study
which helped teachers to improve the mathematics achievement of all students
through more constructivist teaching methods. The results suggested important
relationships between participants’ mathematics learning and (a) their role in the
classroom community, (b) the methods of instruction, and (c) the influence of
relationships outside of the classroom. Specific strengths discussed in the
conclusions are students' willingness take risks and their level of involvement.
Weaknesses are indicated in the area of instructional grouping, assessment
techniques, and teacher support.

Marie, (1997) analysed teaching strategies used by regular education
teachers to accommodate students with minor learning disabilities. The purpose
of this study is to investigate the ideas used by teachers who have successfully
educated special education students. Key points noted room this analysis were
methods of instruction, accommodations for behaviour, academic adaptations,
and parental involvement. These teachers incorporate teaching strategies that
involve all students in the learning process.
Morrison, G.M., & Cosden, M.A. (1997). Risk, resilience, and adjustment of individuals with learning disabilities. Learning disability quarterly, 20, 43-60. This article seeks to examine how risk factors throughout the life cycle interact with the presence of an individual's learning disability to affect his/her emotional and societal adjustment. The concepts of risk and resiliency are used to frame our understanding of how having a learning disability affects such nonacademic outcomes as family adaptation, adolescent problems of school dropout, and juvenile delinquency.

Swanson, et al. (1998) in Teaching effective comprehension strategies to students... METACOGNITION -- Study & teaching; LEARNING disabled (Education. Intervention in School & Clinic, Mar98, Vol. 33 Issue 4, p209, 10 p), Summarizes several meta cognitive strategies designed to improve reading comprehension in students with learning and reading disabilities and describes an instructional model showing how to teach comprehension strategies to students. Discussion of practical suggestions to help teachers implement the strategies in their classrooms; Details on summarizing expository text;


effective inclusive teaching; Example of an application of inclusive education; Philosophy behind inclusion.

**Keel et al.** (1999) Discussed on Selecting Instructional Interventions for Students with Mild Disabilities in Inclusive Classrooms. Focus on Exceptional Children; (Apr99, Vol. 31 Issue 8, pl, 16p), .Discusses inclusion intervention strategies for students with mild disabilities. Factors involved in selecting appropriate interventions; Interventions that may be used appropriate in inclusive classrooms; Factors that seem to be associated with successful inclusion in life by students who had been served in classes for students with learning, difficulties.

**Cruz, et al.** (2000) studied on Let's play mancala and sungka! Learning math and social skills through ancient multicultural games Teaching Exceptional Children v. 32 no. 3 (January/February 2000) 20M p. 38-42. Part of a special section on diversity in the new millennium. The writers describe how sungka and mancala, two ancient multicultural games, can be used to help students with learning disabilities succeed in school. The objective of both mancala and sungka is to have the most pieces in a kalaha, or storage area, which is situated at both ends of the playing board. In both games, a player has to start from his or her own side and continue playing when the last piece lands in his or her kalaha. For students with disabilities, these games can help with mathematical concepts; memory, observation, and concentration; face-to-face social interaction; fine motor skills; cooperation and competition; teaching strategy; and multiculturalism. These games appeal to students with disabilities because they are instructional strategies packaged as games.

**Bhat, Preetha, et.al** (2000) reviewed on legal perspective on the use of specific reading methods for students with learning disabilities. (Learning Disability Quarterly. v. 23 no. 4 fall 2000 p. 283-97). This article reviews 27 legal decisions published between 1989 and 1998 involving students with learning disabilities and parental requests for specific reading methods selected and used
by the school district. These decisions were analyzed in an effort to look at specific parental requests for particular reading methods and the courts' response to this type of request. The review of these decisions indicated that parents of students with learning disabilities were of the opinion that the basic tenets of IDEA (Individuals with Disabilities Education Act) were violated when their child did not receive reading instruction using a specific method. This premise was based primarily on the lack of academic progress made by the child in reading. Parents also expressed concern over the appropriateness of the reading programs offered by the school district and voiced the sentiment that their child would show academic progress if the school district used one of several multisensory methods for reading instruction. The legal issues are defined and interpreted through a careful examination of existing decisions at several judicial levels. Rationales employed by the state-level hearing officers, judges, and federal agencies in reaching decisions related to educational methods and children with learning disabilities are discussed in detail and implications are presented.

Russell Gersten, et al. (2001) in Teaching reading comprehension strategies to students with learning disabilities: A review of research. (Review of Educational Research. Washington. Summer 2001. Vol. 71, Iss. 2; pg. 279, 42 pgs. ISSN: 00346543). Gersten at al review the body of research on reading comprehension for students with learning disabilities. Among the findings are an increased use of socially mediated instruction, the need to teach multiple strategies to students to improve comprehension and controversies in how important it is to explicitly teach specific strategies vs merely providing flexible frameworks to structure dialogue on texts read.

readers; Efficacy of semantic mapping; Details on the Keyword method, a mnemonic strategy for elaborating unfamiliar word.


Woodward, et al. (2002) studied the Meeting the Challenge of Mathematics Reform for Students with LD. (Journal of Special Education; Summer2002, Vol. 36 Issue 2, p89, 13p). The purpose of this article was to examine the sustained effort to reform K through 12 mathematics instruction in this country over the last 10 years and the implications of this reform for students with teaming disabilities. It begins by describing three forces that have driven mathematics reform: shifting theoretical paradigms, disappointing levels of mathematics performance of students in the United States, and the impact of rapidly changing technologies, then discusses concerns about this reform from the special education community. In the second half of the article, provides synthesized special education research relevant to mathematics reform, along with thoughts about future directions in mathematics education for students with teaming disabilities.

Mathes, P.G., Denton, C.A., (2002) discussed on the ‘Prevention and identification of reading disability’. This article explores the current state of knowledge regarding the causation and prevalence of reading disability, along with evidence that the incidence of this condition can be dramatically reduced through quality intervention. Specifically, we (1) explore what is known about the nature and causes of reading disability, (2) examine how reading disability can best be identified, and (3) estimate the percentage of children that have severe reading difficulties that indicate the true presence of a disability.
Coste-Zeitoun, D. et al. (2002) studied the 'Specific remedial therapy in a specialist unit: evaluation of 31 children with severe, specific language or reading disorders over one academic year'. The aims of this study, focusing on children diagnosed as dysphasic and/or dyslexic, were: During the academic year 2001-2002, 31 children (18 dyslexic and 13 dysphasic) were attending school. The teaching program and intensive speech therapy (3 hours/week) were tailored for each child according to his/her specific disorders. Reading, spelling and numeracy developmental skills of each child were evaluated by appropriate tools at the beginning and at the end of the year. Impairment was defined by measuring the gap between the observed and the expected skills, according to each child's age. Using a self-control method, progress achieved by each child throughout the year was calculated with each tool, in each subject, by subtracting the impairments disclosed at the beginning from those disclosed at the end of the year. Progression was classified within three groups according to the progress normally expected over an academic year (i.e. nine months) from children with no disabilities attending school regularly; a progression fewer than three months was considered as no progression. Uni- and multivariate analyses including age (< or= or />9), type of pathology (dysphasia/dyslexia), and intellectual quotient (IQ) as covariates was carried out to search for independent prognosticators. Findings: The entire group demonstrated during the year significant progress for reading (p = 0.0001), spelling (p = 0.0001) and numeracy (p = 0.0001). Nineteen children (61 percent) showed more progress in reading than normally expected over nine months. Out of the remaining 12 children, 10 demonstrated more progress in spelling and/or numeracy than normally expected over nine months. All three reading evaluation tools disclosed a progression although one was less efficient (p = 0.05). Multivariate analysis disclosed age< or=9 and dysphasia as independent progress prognosticators. Placement in a specialist unit allows children suffering from severe dyslexia and dysphasia to lessen the gap in reading, spelling and numeracy. The two prognosticators disclosed highlight the importance of early diagnosis (i.e. before nine years old) and treatment of specific language and/or reading disorders.
Foorman, B.R., Breier, J.I., & Fletcher, J.M., (2003) Discusses on ‘Interventions aimed at improving reading success: an evidence-based approach’. There is a consensus among researchers about the critical elements for effective reading instruction. These elements are the integration of explicit instruction in the alphabetic principle, reading for meaning, and opportunity to learn. These critical elements are present in classroom instruction that prevents reading difficulties as well as effective small-group and one-on-one interventions. Research on effective classroom instruction and reading interventions is described, and the case is argued that the most effective intervention is provided early—in kindergarten through 2nd grade—rather than after 3rd grade, and allows for sufficient intensity, duration, and supportiveness that no child is left behind. Policy implications for changes in (a) the way learning disabilities are identified and (b) the content of professional development of teachers are discussed.

Reynolds, D. Nicolson, R.I. & Hambly, H., (2003) studied on ‘Evaluation of an exercise-based treatment for children with reading difficulties’. An evaluation is reported of an exercise-based approach to remediation of dyslexia-related disorders. Pupils in three years of a Warwickshire junior school were screened for risk of literacy difficulty using the Dyslexia Screening Test (DST). The 35 children scoring 0.4 or over on the DST were divided randomly into two groups matched for age and DST score. One quarter of the participants had an existing diagnosis of dyslexia, dyspraxia or ADHD. Both groups received the same treatment at school but the intervention group used the DDAT exercise programme daily at home. Performance on the DST and specialist cerebellar/vestibular and eye movement tests were assessed initially and after six months. Cerebellar/vestibular signs were substantially alleviated following the exercise treatment whereas there were no significant changes for the control group. Even after allowing for the passage of time, there were significant improvements for the intervention group in postural stability, dexterity, phonological skill, and (one-tailed) for naming fluency and semantic fluency. Reading fluency showed a highly significant improvement for the intervention
group, and nonsense passage reading was also improved significantly. Significantly greater improvements for the intervention group than the control group occurred for dexterity, reading, verbal fluency and semantic fluency. Substantial and significant improvements (compared with those in the previous year) also occurred for the exercise group on national standardized tests of reading, writing and comprehension. It is concluded that, in addition to its direct effects on balance, dexterity and eye movement control, the benefits of the DDAT exercise treatment transferred significantly to cognitive skills underlying literacy, to the reading process, and to standardized national literacy attainment tests.

**Baker et al.** (2003) studied on Teaching Expressive Writing to Students with Learning Disabilities: Research-Based Applications and Examples. Journal of Learning Disabilities; Mar/Apr 2003, Vol. 36 Issue 2, p109, 15p,. Presents research-based examples of effective instructional approaches for improving the quality of the content of stories and essays written by students with learning disabilities. Background on research on improving writing content; Role of feedback and interactive dialogue; Impact of handwriting and spelling.

**Heiman, et al.** (2003) studied on the Students with Learning Disabilities in Higher Education. (Journal of Learning Disabilities; May/Jun 2003, Vol. 36 Issue 3, p248, 11 p) This study compared 191 college students with learning disabilities (LD) and 190 students without LD in four main areas: academic difficulties, learning strategies, functioning during examinations, and students' perception of factors that help or impede their academic success. Analysis of the personal data of students with and without LD revealed no significant differences between groups on grade point average, number of courses taken, and family status, but students with LD reported having more difficulties in humanities, social sciences, and foreign language than students without LD. Regarding academic strategies, students with LD devised unusual strategies and preferred additional oral explanations or visual explanations, whereas nondisabled students preferred more written examples. These differences indicated that students without LD
used more written techniques than did students with LD. During examinations, the students with LD had difficulty concentrating and were concerned about lack of time. They experienced stress, were nervous, and felt more frustrated, helpless, or uncertain during examinations than students without LD. The implications for college students with LD are discussed.

**Margolis, et al.** (2003) studied Self-Efficacy: A Key to Improving the Motivation of Struggling Learners. Preventing School Failure. (Summer 2003, Vol. 47 Issue 4, p162, 8p). Discusses ways in which teachers can strengthen a learner's self-efficacy and increase their motivation for school work. Suggestions on linking new school work to recent successes; Importance of teaching needed learning strategies; Reinforcement of efforts and persistence; Strategies to improve the effectiveness of peer coping models.

**Anderson, et al.** (2004) studied on the 'Middle and High School Students with Learning Disabilities'. American Secondary Education; Spring 2004, Vol. 32 Issue 2, p19, 20p, Investigates the use of an academic intervention that was effective in enhancing the academic performance of middle and high school students with learning disabilities (LD) in Indiana. Requirements for general education teachers; Types of strategies that are applicable across different academic content areas; Method use for enhancing recall and retention information in middle and high school students in any subject area.

**Magnan, A. Ecalle, J. Veuillet, E. Collet, L.** (2004) Conducted a research project titled 'The effects of an audio-visual training program in dyslexic children, in order to investigate the usefulness of intensive audio-visual training administered to children with dyslexia involving daily voicing exercises'. In this study, the children received such voicing training (experimental group) for 30 min a day, 4 days a week, over 5 weeks. They were assessed on a reading task before and after the training. A significant benefit to the experimental group was found after training. These preliminary results underline the role of the phonological components of dyslexia.
Sandhya Sankar, (2004) Research Paper presented for Master’s Degree in Learning Disabilities, University of Columbia. The goal of this paper is to examine two theories of learning, Behaviourism and Constructivism, that advance very different descriptions of human functioning and learning and that have given birth to divergent philosophies and approaches to education. It also presents some of the instructional implications of these theories with a focus on children with learning disabilities. Research on teaching strategies to students with learning disabilities has been ongoing since the mid 1970s. A number of successful strategy teaching efforts have been empirically developed and implemented to improve learning of students with learning disabilities and low achievers (Deshler & Schumaker, 1986). In general, these efforts have included direct teaching or guided instruction, in which students are prompted to establish goals, select appropriate procedures and monitor progress towards achieving goals. In these efforts, a strategy is identified that will enable a student to solve problems (e.g., identifying the main idea). Strategy teaching occurs over a period of time with individuals or groups. Many of these efforts have led to enhanced performance and outcomes for students with learning disability. As Gersten et al. (1984) conclude, "Approaches which explicitly teach problem solving strategies, and carefully lead students through all the steps in applying these strategies to real world problems, are more effective than approaches that try to develop vaguely defined general problem solving or inquiry skills," (p.56).

Vicari, et al. (2005) Do children with developmental dyslexia have an implicit learning deficit? The purpose of this study was to investigate the effects of specific types of tasks on the efficiency of implicit procedural learning in the presence of developmental dyslexia (DD). Sixteen children with DD (mean (SD) age 11.6 (1.4) years) and 16 matched normal reader controls (mean age 11.4 (1.9) years) were administered two tests (the Serial Reaction Time test and the Mirror Drawing test) in which implicit knowledge was gradually acquired across multiple trials. Although both tests analyse implicit learning abilities, they tap different competencies. The Serial Reaction Time test requires the development of sequential learning and little (if any) procedural learning, whereas the Mirror
Drawing test involves fast and repetitive processing of visuospatial stimuli but no acquisition of sequences. The result of the study was that the children with DD were impaired on both implicit learning tasks, suggesting that the learning deficit observed in dyslexia does not depend on the material to be learned (with or without motor sequence of response action) but on the implicit nature of the learning that characterises the tasks. They concluded the study stating that the Individuals with DD have impaired implicit procedural learning.

**Berends, I.E., Reitsma, P.,** (2005) conducted a study on ‘Lateral and central presentation of words with limited exposure duration as remedial training for reading disabled children’. They examined whether lateral presentation of words in remedial practice for reading disabled children has additional effects to central presentation. The effect of limited exposure duration (LED) is also studied as a possible factor in inducing higher level decoding processes or increased processing speed of words. Two groups of Dutch reading disabled children \((n1 = 25, \text{ mean age } = 9.8 \text{ years and } n2 = 36, \text{ mean age } = 7.1 \text{ years})\) repeatedly practiced reading words presented in the left, right or the central visual field. The results show that all children improved substantially both in reading speed and accuracy, which demonstrates the importance of repetitive practice in reading to attain fluency in reading disabled children. Further analysis demonstrated that neither site of presentation nor limited exposure duration added significantly to the training results. These findings do not corroborate neuropsychological theories suggesting a special role for lateral presentations.

**Iversen, et al.** (2005) studied on ‘The effects of varying group size on the reading recovery approach to preventive early intervention’. The purpose of this study was to determine whether an early intervention program based on the Reading Recovery (RR) format could be developed for pairs of struggling readers that would allow them to make accelerated progress similar to that experienced in the 1-to-1 RR tutorial. A preliminary pilot study showed that the RR lesson format could be adapted for teaching pairs of struggling readers without compromising the integrity of the lesson content,
provided that the average length of the lesson was increased to 41 min. An experimental study comparing the effectiveness of 1-to-1 RR instruction with RR instruction in pairs showed that although RR instruction in pairs required somewhat longer lessons (42 min vs. 33 min), there were no major differences between the two groups on any measures at discontinuation and at the end of the year, nor was there a significant difference between the groups in mean number of lessons to discontinuation. The results further indicated that by discontinuation, the children in the treatment groups were performing within the average range on all measures, and that these positive effects were maintained on end-of-year measures. Thus, by increasing instructional time by about a quarter, RR teachers can double the number of students served without making any sacrifices in outcomes.

Calhoon, M.B., (2005) studied ‘Effects of a peer-mediated phonological skill and reading comprehension program on reading skill acquisition for middle school students with reading disabilities’. The purpose of this study was to examine the effect of a peer-mediated instructional approach on the teaching of phonological skills and reading comprehension for middle school (sixth- to eighth-grade) students with reading disabilities. All students (n = 38) were identified as having learning disabilities and reading at the third-grade level or below. One group was taught using a peer-mediated phonological skill program, Linguistics Skills Training (LST), and a peer-mediated reading comprehension program, Peer Assisted Learning Strategies (PALS). The contrast group was taught in the more traditional whole-class format using a widely implemented remedial reading program. The results showed significant differences between conditions, with students receiving the LST/PALS instruction outperforming the contrast group on Letter-Word Identification, Word Attack, and Passage Comprehension using the Woodcock-Johnson Test of Achievement-Ill. Furthermore, large effect sizes for growth were found on Letter-Word Identification, Word Attack, and Passage Comprehension for the LST/PALS treatment group. No differences were found between conditions for reading fluency. Findings are discussed in regard to instruction delivery format (peer
tutoring vs. whole class) with respect to best practices for middle school students with reading disabilities.

Chenault, et al. (2006) conducted a study on “Effects of prior attention training on child dyslexics response to composition instruction” (Department of Educational Psychology, University of Washington, Seattle, 98195, USA). Twenty children (Grades 4 to 6) who met research criteria for dyslexia were randomly assigned to a treatment (attention training) or contact control (reading fluency training) group during their regular language arts block at a school that had emphasized multisensory, structured language treatment for reading disability. A university team provided either individual attention training (sustained, selective, alternating, and divided attention) or reading fluency training during the first 10 sessions and group composition instruction during the next 10 sessions. Analysis of variance evaluated the significance of Treatment x Session interactions from pretest to midtest (before composition instruction began) and midtest to posttest (when composition instruction ends). Treatment x Time interactions were not significant between pretest and midtest, but the Treatment x Time interactions were significant from midtest to posttest for Wechsler Individual Achievement Test, Second Edition Written Composition and Delis-Kaplan Executive Function System Verbal Fluency (attention treatment group improved more over time). Individual children showed the same pattern as group results. For child dyslexics in upper elementary school, attention training did not transfer directly to improved composition but prior attention training led to faster improvement in composing and oral verbal fluency once composition instruction was introduced. Effective instruction for dyslexia may depend on the sequencing as well as the nature of instructional components and require specialized instruction for writing as well as reading.

Strehlow, et al. (2006) conducted a study on ‘Does successful training of temporal processing of sound and phoneme stimuli improve reading and spelling?’ OBJECTIVE: The aim of this study was to measure and train auditory temporal processing in children with dyslexia and to examine whether there was
a transfer of improved auditory temporal processing to reading and spelling skills. METHODS: Computer-based procedures to measure and train temporal processing of sound and phoneme stimuli were developed. Test-scores for a normal control group consisting of 8-year-olds were established. Second graders with dyslexia were included in the training condition and divided into three groups: a control group, a group specifically trained in sound processing, and a third group specifically trained in phoneme processing. After an initial diagnostic procedure, both training groups received specific training every day for 4 weeks. All children, regardless of the group, received the same standard reading training programme designed for children with dyslexia at school. Outcome measures were assessed immediately after training as well as 6 and 12 months later. RESULTS: Tests for temporal processing of sound and phoneme stimuli proved to be highly reliable. Children with dyslexia (N = 44) showed impaired auditory processing of sound and phoneme stimuli compared to normal controls (N = 51). There was a specific significant improvement in sound, respectively phoneme, processing for the training groups immediately after the end of training. The improvement of phoneme processing remained stable after 6 months and as a trend after 12 months. After 6 and 12 months of training, children of all three groups improved significantly in reading no matter what group. In spelling, the sound training group had a slight advantage after 6 months, which was not stable after 12 months. CONCLUSIONS: Auditory temporal processing could be trained effectively at the sound and phoneme levels. However, no significant stable transfer of these improved abilities on reading and spelling exceeding the effect of the school-based standard training was demonstrated.

2.5 AN OVERVIEW OF RESEARCH REVIEW

The investigator reviewed ninety three studies and on Learning Disability of which twenty nine studies conducted in India and sixty four studies in abroad. Among the twenty nine Indian studies fifteen were on causes and characteristics of Children with Learning Disability and thirteen were on the academic achievement, , teaching techniques and remedial measures of Children with
Learning Disability and one on the competencies required for a teacher to teach children with learning disability. Among the sixty-four abroad studies seventeen were on Learning Disability and forty-seven were on the academic achievement, teaching techniques and remedial measures. Forty studies were survey in nature, among them fifteen were Indian studies and twenty-five were in abroad. There were twelve survey studies conducted in India and sixteen survey studies were conducted abroad on causes and characteristics of Children with Learning Disability. In the academic achievement, teaching techniques and remedial measures of Children with Learning Disability three survey studies were conducted in India and nine survey studies were in abroad. Forty-three experimental studies were conducted among them nine were Indian studies and thirty-four were in abroad. No experimental studies have been conducted in India and abroad on causes and characteristics of children with Learning Disability. In the academic achievement, teaching techniques and remedial measures of children with Learning Disability eight experimental studies were conducted in India and thirty-four studies were in abroad. One study was case study conducted in abroad.

There fourteen studies were conducted in India and five studies were conducted in abroad on primary school Children with Learning disability these nineteen were conducted on the on causes and characteristics of children with Learning Disability. Five experimental studies on the academic achievement, teaching techniques and remedial measures of Children with Learning Disability were conducted in India and ten were conducted in abroad. There was on one study among Middle school children and two studies on Adolescence in abroad. In India there were four studies on secondary school children in academic achievement, teaching techniques and remedial measures of children with Learning Disability.

In Indian there were eleven studies were on language development and two on arithmetic and one study on causes one study on problems of Children with Learning Disabled, one study on creativity, one on teacher competency, one
study on behaviour and one study in science. In abroad two studies were in language development and six in arithmetic and mathematics four studies on prevalence of learning disability, three on social skills, two on characteristics of learning disabled, one study on Educational needs of the Children with Learning Disability, one study on problem solving ability, one on visual and auditory memory, and one in post school status of the children with Learning Disability.

To sum up Prasad (1982) studied about the poor expressive language development and poor visual perceptual development are primary factors leading to learning Difficulties among the primary school children, Ramaa (1984) Studied the Diagnosis and Remediation of Dyslexia amount students of classes III and IV. Ramaa (1992) gives a list of the commonly observed problems among Learning Disabled children, Ramar. (1992) deals with different aspects of learning disabilities in her handbook on learning disabilities, Srivastava, Sushila and Afiah (1992) studied ‘learning disabilities among elementary school children, Reddy (1999) estimates that at present, there are about 10 to 15 per cent of the student’s population suffering from learning difficulties in every classroom at primary stage. All the above studies are in the primary school level. S. Ramaa’s (2000) paper is on Two decades of research on learning disabilities in India describes a range of research studies relating to learning disabilities in India during the last two decades.

Bhattacharya (1983) studied the diagnosis and prevention of the learning disability among primary school students in arithmetic, Rastogi (1983) took up a study on diagnosis of weakness in arithmetic as related to the basic skills and their remedial measures, Shah (1985) conducted psychometric exploration study on Dyscalculia amongst first graders, Bhattacharya (1986) investigated learning disabilities developed by secondary students in the age of equation sums in Algebra, Dutta’s study (1986) aimed at diagnosis and prevention of learning disabilities in the reasoning power of the students in Geometry. The above five
studies are in learning of maths, two studies Bhattacharya (1986) and Dutta (1986) are at secondary level and other studies were in primary school level.

Anand (1985) studied the factors that affected the orthography in Hindi and diagnosis of spelling mistakes in writing of class V with a remedial programme, Joshi (1985) in a study scrutinized errors in written English and tried to device remedial programme. Students of grades V to X, Rao (1986) studied the nature and incidence of reading disability among primary school children, Mohapatra (1991) studied the problem of reading, memory and attention processes of normal and reading disabled children, among the II and grade IV children, Kusuma Harinath (2001) studied certain factors related to learning disabilities in English among school students. The above studies were in language learning. Anand (1985) studied about Hindi learning and other studies were in learning English among the learning disabled children, Joshi (1985) was in secondary school level and all the other studies were in primary school level

Mehta, Mohan and Pande (1993) attempted to study the learning problems in rural primary school children. Their study shows that the common learning problems in the rural primary school children were poor memory (24.52%), poor comprehension (20.19%), poor concentration (18.5%), specific learning disabilities (6.9%), anxiety and stresses (11%) and conduct problems (6.9%). They also point out that an orientation programme to create awareness of mental health aspects should be imparted to teachers, which in turn world help them to understand the student better.

Reddy, Ramar & Kusuma (1999) have done some exhaustive works in the field of learning disabilities provided practical information of assessment and identification practices and it discusses instructional strategies such as meta-cognitive instruction and social skill training. Sivakami (1999) dealt with the effectiveness of instructional strategies to overcome learning disabilities in English at primary stage, Reddy’s (2000) paper on Role of Educational Technology in learning disability in which he has highlighted the need for
assistive technology to the learning disabled, the above studies deals with the instructional strategies.

Anna Elizabeth Kurivilla (1999) investigated the creativity among the learning disabled children is the only study found to investigate the creativity of learning disabled children.


Affleck, Madge, Adams and Lowenraun (1988) compared the academic achievement of students with learning disabilities in an integrated classroom.
model Ann (1993) attempted program evaluation involving the effectiveness of an alternative instructional approach for mildly disabled students; Ann (1993) also studied the effects of discrepancy models and eligibility decisions on student selection in the diagnosis of learning disabilities; Case, Lisa Pericola (1997) studied mathematical understanding to know how students with learning difficulties progress in a constructivist classroom, Frost and Emery, (1996) Gibson and Levin (1975) report that at least 15 percent of American School Children have reading difficulties. Johnson et al (1956) estimated indicated that from less than one and half percent to more than one percent children may have difficulties in vocalization. Mittes(1995) opines that it is difficult to obtain an accurate picture of number of people who were defined as having learning difficulties.

Holcomb, Helene, Beatly (1995) attempted to compare the achievement of low achieving and learning disabled elementary school students; Butler (1996) studied the effect of positive self-talk training on perceptions of self-efficacy in students with specific learning disabilities; and David (1996) studied social skill intervention in a residential summer camping for children with learning disabilities.

Dennis (1994) studied the impact of the choice awareness program upon the self-concept, locus of control and interactive choices of children with learning disabilities; Hughes (1994) made a comparison of special education placement patterns relating to the racial membership of students identified as mildly mentally retarded and specific learning-disabled Kathy marie (1996) attempted the effects of self-speech on the problem solving abilities of children with and without learning disabilities (self-regulated learning) Lain (1995) studied learning preferences associated with the visual and auditory memory of third and fourth-grade students with attention deficit hyperactivity disorder (learning disabilities) Lindh (1996) studied attributes of career goals established by elementary grade students with mild disabilities; Marie (1997) analysed teaching strategies used by regular education teachers to accommodate students with minor learning
disabilities; Patricia (1993) studies "the effects of a motivation strategy that incorporates goal-setting on the test taking performance of young adolescents with learning disabilities"; Rene (1994) studied the reliability of authentic assessment in fourth-grade narrative and descriptive written language for students with and without learning disabilities; Robin (1994) attempted a study of adaptive behaviour among preadolescent normally achieving, learning disabled and mild mentally retarded children (learning disabilities and social skills); Sanford (1994) studied post school follow-up of individuals identified as learning disabled and mentally retarded and Watson (1993) analysed the characteristics of retained and non-retained learning-disabled students. These are some of the studies conducted abroad on learning difficulties.

A critical review of studies covered in this chapter yields that adequate studies have been made on learning disabilities in foreign countries. But in Indian context, studies conducted so far are highly inadequate compared with foreign studies. Also we find variety and micro level in foreign studies.

Quite a number of studies are survey studies dealing with either the personality characteristics or the causes of learning disabilities (Rama 1992; Reddy 1999; Henry Linda 1996) There are quite a number of studies dealing with specific deficiencies in learning language (Holder, Beth 1997; Mcbrayer, Kim Fang 1997; Sloan, Diann Butler 1997; Miller Linda Delores 1996)

Also there are studies which focus on the learning disabled students' difficulties in learning mathematics (case, Lisa Pericola 1997; Chen, Tung Shen1994). Some studies focus on teaching strategies designed for learning disabled children. They established the effectiveness of some strategy or the other in teaching learning disabled children. (Sivakami 1999; Behr, Lynnette Marie 1997; Lewis Ellen Jo 1996; Coronado V Macro 1995; Kefferstan, Robert Disk 1954; Ganish, Tamicherys 1994).
Comparative studies have also been made comparing learning disabled children either with normal children (or) with other handicapped children (Mohle, Norine hecyn, 1997; Henande, Flormaria 1997; Nichols, Renependley 1996; Boyer-Shick Chren SusonLarson 1994; Kathy Marie 1997; Hol comb, Helene Beatty 1996;) Some recent studies have aimed at developing teaching techniques for teaching learning disabled children in regular classrooms (Neville, Eligabeth Kelar, 1995)

Studies have also been attempted to assess the awareness of teachers about learning disabilities in primary school children. (Stan Ford, Ruthwood 1995; Wilson, Able Gomez 1995; Vich; Gloria Mcsaurin -FG 1994) More awareness studies have been undertaken in the area of language learning disabilities (Klein, Rhea Marie 1995; Peak Pamela Kamille 1995)

Studies on other competencies such as social skills, communications, interpersonal relationship, and vocational skill have also been attempted (Shatzer, Joyee Rac Peace 1997; Halforan, Paul David 1996; Weintravle Naomi 1997; Stone, Patricia lain 1996; Kefferstan, Robert Dick 1994).

The Institute for the Advancement of Research in Education (IARE) in USA has completed a research study entitled Graphic Organizers: A Review of Scientifically Based Research. In the report, twenty-nine studies were identified and evaluated as scientifically based research (SBR). The studies provided evidence in support of the instructional effectiveness of the use of visual learning techniques. Scientifically based research cited in the literature review demonstrates that a research base exists to support the use of visual learning techniques for improving student learning and performance in the following areas.

Reading comprehension
  - Student achievement across grade levels, diverse student populations and content areas
Thinking and learning skills such as organizing and communicating ideas; seeing patterns and relationships; and categorizing ideas

Retention

From the above review it is very clear that adequate studies have not been attempted in Indian setting. Only a few survey studies have been undertaken so far. They are related to personality characters, or causes or awareness. Very limited experimental studies such as the study of Sivakami (1999) and only one study on achievement of children with LD in science Bhattachariya (1985) have been attempted so far. Even these studies also have not thought of dimensions such as visual learning techniques and training the teachers to enhance the achievement of the children with Learning Disability in science to be specific. At this point research studies to identify the required techniques and training teachers in them to handle the children with Learning Disabilities are the need of the hour to fulfill the Education for all, the goal of SSA particularly in a country like India where wastage and stagnation are more. Hence the investigator decided to take up the study on EFFECTIVENESS OF THE SELECT TECHNIQUES IN ENHANCING THE ACHIEVEMENT IN SCIENCE AMONG THE CHILDREN WITH LEARNING DISABILITY to fill the research gap. The methodology adopted for the investigation is presented in the forth coming chapter.

The following chapter deals with the Conceptual Framework for the present investigation.