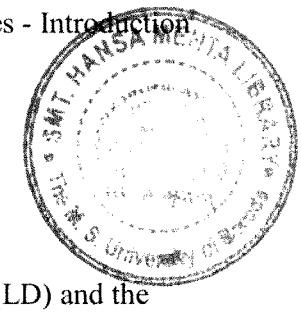

Chapter 1

Introduction

This chapter presents an overview about Learning Disabilities (LD) and the status of research on LD in India. Learning disabilities is a known issue in the USA amongst the average population, however, in India, knowledge about LD is limited to professionals dealing with the mental health issues of school going children. For this reason, the investigator provides a brief introduction to the subject of LD and its subtype writing disabilities, before discussing the purpose and need for this study.

Learning Disabilities

The history of Learning disabilities (LD) can be traced back to the early 19th century. The need to study LD perhaps came from the concern about students who continually failed in school in spite of possessing average intelligence (Hirisave, Ommen & Kapur, 2002). The study of LD has undergone several conceptual changes. Several terms have been used to describe LD and children who have LD.

The study on learning disabilities was initially started by Strauss and his colleagues in the 1930's. The term brain-injured was changed to minimal brain damage during 1960's. The term LD itself was coined by Kirk in 1962. The first definition of LD was also submitted under his leadership.The National Advisory Committee on handicapped children (USA) presented a new definition with some modifications in 1968. In 1982, Myers and Hammill challenged this definition. According to them, the definition included phrases regarding "basic psychological processes" and "the ability to listen, speak, read and write" that were vague and ambiguous. Later, the National Joint committee for Learning Disabilities (NJCLD)

gave a definition that rectified the flaws found in the definition given by the National Advisory Committee.

A variety of models and definitions for LD have developed over the years incorporating medical, neuropsychological, psycho-educational, behavioral and linguistic aspects. Young and Tyre (1983) stressed on the special educational needs of children with LD rather than the physical, mental and emotional deficits of these children. The model proposed by Spreen (1989) considered neurological, environmental and emotional factors associated with LD. DSM III R introduced LD as Scholastic Skills Deficit Disorder. In 1993, the International Classification of Disorders (ICD) published by WHO introduced LD as Specific Developmental Disorders of Scholastic Skills. This definition specified that the disorder is diagnosed when the individuals score on academic tasks is two grades below.

According to APA (1994), the prevalence rate of LD is between 2-10%. Approximately five percent of students in the public schools in the United States are identified as having LD. Even Indian studies have reported an incidence rate of approximately 10% of all school going children (Karande et al, 2007). The USA and several countries in Europe have a long history of research in the area of LD. However, there are other countries where research in this area has just started. One of these countries is India where the present study was conducted.

Status of LD in India

In India, interest in the area of LD has risen only in the last decade or so (Karanth, 2003). In the past couple of years, independent professionals and researchers in India have studied learning disabilities. However, there are few epidemiological studies conducted in India (Karanth). Most of the work done in this

area is scattered and sporadic in nature. Very few studies are documented and hardly any information is disseminated to the educational/ professional community (Karanth). Often this leads to unnecessary repetition of work.

As mentioned earlier, a number of studies have been conducted in India, however they are scattered across individuals and institutions. A diverse range of professionals such as psychiatrists, psychologists, special educators, medical professionals, teachers and parents have shown interest in this area (Karanth & Rozario, 2003). Medical institutions, University departments, Governments agencies, Non-government organizations (NGO) and other such institutions have played a part in this area so far. The efforts of these institutions and researchers have led to some positive achievements. With the help of the State Council for Education Research and Training (SCERT), Maharashtra, SNDT University was able to formulate certain provisions for the benefit of children with LD. The list of provisions included exemption from a third language and higher mathematics, allowing extra time during examinations and provision of a scribe for students with writing disabilities (Pandit, 2003).

However these provisions are limited only to one state. Due to the lack of proper information dissemination, most of the time, parents and teachers remain unaware about these provisions (Karanth 2003). However in India, due to the lack of collaboration between the researchers and the teachers, hardly any classroom intervention takes place. Research from the US indicates that most of the intervention strategies for students with learning disabilities can be easily applied within the classroom by the teacher (Graham, Harris & MacArthur, 2002).

In India, estimates for children with academic difficulties in different settings range from 9 to 39 percent (Kapur, 1993; Kumar, 1999; Rozario, 1990; Sarkar, 1990; Shenoy, 1992). Kumar estimated that 10 percent of school children in India have specific learning disabilities. An extensive survey conducted in the State of Kerala, India reported that nearly 10 percent of children and adolescents in the age range of 0-18 years experienced learning difficulties (Suresh & Sebastian, 2003). In the same ongoing research, rural schools have also been studied. A number of these studies assessed academic or learning difficulties; very few assessed learning disabilities (LD).

Most of the work conducted in India is concentrated in the urban schools where English is the medium of instruction (Karanth 2003). Very few studies have been conducted in the rural areas. The assessment tools and remedial procedures are often influenced by the western practice. These tools do not take into account certain cultural dimensions such as bilingualism/multilingualism, literacy support at home, or classroom conditions. India is a multilingual society where children grow up speaking at least two languages. Children who study in schools where the medium of instruction is English have the task of learning an additional language (Karanth 2003). It becomes especially difficult when parent/elders at home do not speak English. It has been found that children who belong to non-English- speaking homes learn slower than those who come from English speaking backgrounds (Loomba, 1995).

At the national conference on LD held in 1998, Dr. M S Thimappa, Registrar of Bangalore University, India, expressed concern over the lack of awareness of LD among professionals, practitioners, teachers and parents. Amongst several recommendations made at the conference was the need to build up resources,

advocacy and legislation to protect the interests of children/individuals with LD (Karanth & Rozario 2003).

In India, literacy support at home varies from zero (illiterate parents) to a fairly high degree (highly educated parents-Post graduation) (Karanth& Rosario, 2003). Classroom conditions are also inadequate. A typical classroom comprises between 50-100 students supervised by a single teacher (Karanth, 2003). Teachers are often inadequately trained and equipped. Often teachers themselves have a lack of understanding about learning disabilities. Under these conditions, identification and remediation of learning disabilities becomes a problem. Even if they are identified, there are not enough trained professionals to cater to all the children with learning disabilities in India (Karanth).

Definition of LD

Today the most widely accepted definition of LD is the one proposed by Diagnostic and Statistical Manual, 4th edition (DSM IV) published by the American Psychiatric Association (APA) in 1994. They state,

> "*Learning disorders are diagnosed when the individual's achievement on individually administered, standardized tests in reading, mathematics or written expression is substantially below that expected for age, schooling and level of intelligence. The learning problems significantly interfere with academic achievement or activities of daily living.*" (APA DSM-IV, 1994)

Co-morbid conditions

The definition of LD eliminates persons whose primary problem is emotional disturbances. If the emotional disturbance is the cause of the learning problems then elimination of the emotional problem will lesson the learning disability. Severe anxiety, need for support as well as feelings of being unloved has been reported amongst children with LD by Bender (1998). The effect of damaged sense of self on the development of many children with LD has become an interesting concern. A child aware of his limited abilities may be unable to act appropriately, may compensate by becoming aggressive or may try to mask his inability by over compensating. Passivity, dependency, aggressive compensation, withdrawal, coping, shame, and guilt are possible reactions to the realization of one's disability.

Stress and tension often raise the frequency of ineffective behavior and forms a vicious circle of disapproval, thought of inadequacy, and leading to more aberrant behavior. Students with LD are poorly accepted by peers and consistently exhibit deficiencies in social behavior. Learning disabilities not only interfere with academic tasks, but also interfere with all stages of psychosocial development, as well as peer and family interactions (Gaur, 2000). Such studies have created interest in the area of emotional and behavior dimensions of children with LD.

Intervention for LD

Children with LD may experience difficulties in one or several of the academic areas such as reading, writing, spelling and arithmetic. While some of these students excel in areas other than the problem area, others may be slow in acquiring the required skills. It has now been understood that there is no single cause for this difficulty (Hirisave, Oommen & Kapur, 2002). Rozario, Oommen and Hirisave

(2002) have talked about four categories of problems namely i) academic discrepancy ii) cognitive problems; iii) biological correlates and iv) social emotional problems.

Keeping the specific difficulties of the child, intervention strategies may be planned. A variety of intervention programs have been developed over the years such as Fernald method, Gillingham approach, programmed reading, reading drills, neurological impress method, distar, multisensory method for writing, fading model, Fernald's multisensory approach, self-regulated strategy design, POW-WWW How 2 What 2 and so on (Gillingham & Stillman, 1973; Graham & Harris, 2003, 2005; Hofmeister, 1981; Otto, McMenemy & Smith, 1973).

Children with LD often exhibit behavioral and emotional problems. Intervention programs should also involve behavioral and cognitive behavioral approaches (Graham & Harris, 2003; Hirisave, Oommen & Kupur, 2002). Research supports the effectiveness of behavioral intervention for a variety of behaviors including attention problems. Contingency contracting, peer-mediated interventions, token economy, time-out, positive reinforcement and other reductive procedures based on reinforcement have been successfully utilized to deal with such problems (Abramowitz & O'Leary, 1991; Brown, 1986; Barkley, 1990; Cooper et al., 1987; Fiore et al., 1993; Friend & Bursuck, 2002; Lerner et al., 1995). Cognitive behavioral instructions involving self-monitoring are found to be a very effective strategy (Goodman, 1971).

Subtypes of LD

Along with co-morbid conditions, DSM-IV also describes the subtypes of LD. The subtypes of LD are as follows:

1. Disorders of listening and oral expression.
2. Disorders of reading: (Dyslexia)
3. Disorders of written language: (Dysgraphia)
4. Mathematical disabilities: (Dyscalculia)

Amongst the subtypes of LD, reading and mathematics have caught the attention of researchers in India. Researchers have studied the occurrence, the cognitive profiles, the linguistic base, the impact of different intervention strategies, the neuropsychological aspects, and the co-morbid conditions of these two subtypes of LD (John, 2003; Karanth, 2003; Karibsappa, Nishanimut & Padakannaya, 2008; Kohli, Malhotra, Mohanty, Khehra & Kaur, 2005; Padakannya, 2003; Sankaranarayanan, 2003).

Differences in the neuropsychological profiles amongst the subtypes of LD have been found. Children having problems in all the areas of academic skills (reading, writing and mathematics) have been found to have greater dysfunction (Kohli, Malhotra, Mohanty, Khehra & Kaur, 2005). Very few studies have been conducted on writing disabilities. Even DSM IV raises concern over the lack of research in the area of writing disabilities (APA, 1994).

Reading Disability: Reading disabilities are commonly known as "dyslexia". Children with reading disability read slowly, often reversing letters, words or numbers. Additionally the child may have poor vocabulary and poor comprehension.

The DSM-IV criteria states that the reading level of child should be two levels below the chronological age, given the age, intelligence and the appropriate level of education. Approximately 4 to 10 percent children in a normal class room and about 10-15 percent of the general school going population experience difficulty in reading (Mann & Brady, 1988; Mercer & Mercer, 1985). In the past several studies have been done on children with reading disabilities (Mann & Brady, 1985; Gaur, 2000; Rosner, 1991; Rozario, 1991; Wedge & Prosner, 1973).

Mathematics Disability: Students with mathematics disability experience difficulty mastering arithmetic and mathematical skills and concepts. These children face difficulty in a variety of tasks such as sorting objects by size, matching objects, understanding the language of arithmetic, grasping concepts of rational counting etc. In higher grade levels children with LD may have trouble with computational skills, fractions, decimals and measurement. These children may also experience difficulty in performing basic calculations such a addition, subtraction, multiplication and division (Hirisave, Oommen & Kapur, 2002). Mathematics disabilities are understood to be a result of incomplete concept formation (Ashlock, 1982).

Writing disabilities: Writing disabilities have been noted consistently in children with learning disabilities (Johnson & Myklebust, 1967: Myers & Hammill, 1976). According to these researchers there are three main types of difficulties in written language:

(a) Disorders in visual-motor integration.

(b) Disorders in revisualization

(c) Deficiencies in formulation and syntax.

Disorders in visual-motor integration (handwriting difficulties) are viewed as a result of the fact that the student cannot transduce visual information to the motor system (Johnson & Myklebust, 1967). The child has great difficulty writing, or copying letters, words, and numbers. This type of disability is called Dysgraphia.

Disorders in revisualization (spelling disorders) according to Johnson and Myklebust (1967) may occur in students, who can speak, read, and copy with a fair degree of competence but who have visual memory problems. There are degrees of revisualization difficulties, ranging from total inability to revisualize to partial inability. The degree of inability is important in order to recommend appropriate remedial activities.

Disorders of deficiencies in formulation and syntax (written expression) may be seen only after the student has developed some elementary level of reading and spelling skills. Deficiencies in handwriting skills of many learning disabled students are the result of never actually learning to write legibly because of more basic learning deficits. In addition to difficulties generated in simply interpreting such handwriting, it often has related effects in spelling and reading.

Diagnostic criteria for writing disabilities

The international classification of mental and behavioral disorders ICD-10 classifies the disorder as F81.8 Disorder of written expression (WHO, 1999).APA's DSM IV classifies it as 315.2 Disorder of Written Expression. The DSM IV criteria for the diagnosis of writing disabilities are given in Table No. 1.1.

Table 1: Disorders of Written Expression 315.2

1. Written skills, as measured by individually administered standardized tests (for functional assessments of writing skills), are substantially below those expected given the person's chronological age, measured intelligence, and age-appropriate education.
2. The disturbance in Criterion A significantly interferes with academic achievement or activities of daily living that require the composition of written texts (e.g. writing grammatically correct sentences and organized paragraphs).
3. If a sensory deficit is present, the difficulties in writing skills are in excess of those usually associated with it.

Coding note: If a general medical (e.g. neurological) condition or sensory deficit is present, code the condition on Axis III (APA 1994)

Although difficulty in writing (e.g. particularly poor handwriting or copying ability or inability to remember letter sequences in common words) may appear as early as the first grade, disorder of written expression is seldom diagnosed before the end of the first grade because sufficient formal writing instruction has usually not occurred until this point in most school settings. The disorder is usually apparent by second grade. Disorder of written expression may occasionally be seen in older children or adults, and little is known about its long-term prognosis (APA,1994).

Signs and symptoms of writing disability

1. May have illegible printing and cursive writing (despite appropriate time and attention given the task)
2. Shows inconsistencies: mixtures of print and cursive, upper and lower case, or irregular sizes, shapes or slant of letters
3. Has unfinished words or letters, omitted words
4. Inconsistent spacing between words and letters
5. Exhibits strange wrist, body or paper position
6. Has difficulty pre-visualizing letter formation
7. Copying or writing is slow or labored
8. Shows poor spatial planning on paper
9. Has cramped or unusual grip/may complain of sore hand
10. Has great difficulty thinking and writing at the same time (taking notes, creative writing.)

Assessment

There are two broad categories involved in the process of assessment of writing. The first one is the performance of the students on the copy written passage and the second is written expression. Both these areas have to be assessed at the age and grade appropriate levels. Writing may be assessed by formal or informal methods.

Informal Assessment

Many skills deficiencies can be individually assessed through various informal, teacher made tests. The analysis of errors on informal measures provides the teacher with pertinent diagnostic information that may be directly utilized in an

instructional program. Otto, McMenemy and Smith (1973) provide examples of screening instruments and informal tests for written language.

Direct observation of written language skills will provide the teacher with exacting data in knowing precisely what a child can and cannot do in this area. The teacher should be particularly observant of the following

1. Consistent difficulty in copying or revisualizing specific letters
2. Patterns of linguistic errors in the spelling of specific words.
3. Misapplication of various spelling rules.
4. Pencil grasp and body posture problems
5. Consistent syntactical or grammatical errors in the written expression of ideas.
6. Difficulties with the writing form (manuscript or cursive) being used.

Written expression is an important part of writing skills. Teachers often focus on the basic mechanical skills such as handwriting, grammar and spelling while assessing students writing skills. Mykelbust (1965) proposed that to assess a students ability in written expression, the students should be asked to write a story. This story should be evaluated for productivity, correctness and meaning. The number of words, sentences and words per sentence can be as indicators for productivity, capitals, word usage, word endings and punctuation may be used to compute correctness while the story content may be appraised for meaning. Potato (1980, 1994) talked about the development of idea or ideation, which is the essence of the expression of ideas and feelings in written expression. Following the same theory, Scott and Vitale (2000) studied the use of idea development as an informal tool for the assessing of written expression. This method assessed student's performance on five areas: audience

awareness, organization, content development, cohesiveness and unity. Graham, McArthur, Schwartz & Page-Voth (1992) have also reiterated the importance of these five areas in assessing writing skills of students with LD. Informal assessment depends on the subjective judgment of the person assessing the student.

Formal Assessment

According to Beninger and Whitaker (1994), assessment of writing can be either product oriented or process oriented. Product oriented measures typically involve the use norm-referenced psychometric instruments measuring IQ-achievement discrepancy and a standard battery. The wide range achievement test-revised (WRAT-R), Woodcock Johnson psycho-educational battery-revised (WJR), and the test of written language (TOWL) are examples of product oriented tools (Schrank, 2006). Product oriented tools measure the product of writing and the process oriented approach measures the writing process contributing to the product (Berninger, Mizokawa & Bragg 1991). Tools for the formal assessment of writing disabilities can be classified into three groups: handwriting, spelling, and written expression. Most of the tools for assessing handwriting focus on legibility, quality of handwriting product, slant, proportionality of letter, spacing of letters and relative legibility of letter formation (Graham 1986). The Copy Test of the Monroe Sherman Test (1986) assesses handwriting fluency by assessing the ability to produce legible words under time constraints. Tests such as the spelling subtest of the WRAT-R and the Test of written spelling-2 (TOWL-2) can be used to assess performance on spellings. Written expression may be assessed using the TOWL-2 and the two writing subtests (writing samples and writing fluency) of WJR. It is very important to keep the cultural context of the student while assessing for writing disabilities.

Remediation of Writing Disabilities

According to Graham and Harris (1997), intervention for writing difficulties should focus on both prevention and remediation. The instruction should be tailor made for the specific needs of each child. These authors also suggest the use of formal as well as informal methods to address the writing problems of children with writing disabilities (Graham, 1998). As mentioned earlier, writing problems may occur in any of the three areas of the writing process, handwriting, spelling, or composition and hence writing instruction should be designed with a balance between meaning, process and form (Graham & Harris, 1997a, 1997b). Writing is essential for learning to read and spell for most students with LD, hence its importance has been stressed upon. Diagnosis of the pattern of the specific disability or problem should be made and suggestion on an appropriate remedial programme should be made. According to Berninger et al (1992) the process of learning to write should focus on the two components of the writing process, the low-level and the high level. Examples of low-level processes comprise creating letter representations in memory, motor planning, and motor production, and that of high level process comprise strategies for planning, generating language at the sentence and text levels, and reviewing and revising written text. Instructional methods should be aimed toward improving skills at both these levels (Berninger et al).

Often children with LD face difficulties with the basic mechanics of writing such as handwriting and spelling (Berninger et al, 1998; Graham, Harris & Fink, 2000; Graham, Berninger, 1989). These mechanical skills are very important for the writing quality and fluency. Hence, it is of potential value and it is essential for professionals/educators to pay close attention to the handwriting of students with LD. The most common and the most primary remedial procedure involve the mastery of

the manuscript or the cursive writing. Strauss and Lehtinen (174) recommended cursive writing saying that the wholeness involved in teaching cursive writing of words and the fact that children learning cursive writing automatically learn about spacing, make it the best procedure. On the contrary, Johnson and Myklebust (1967) recommended manuscript arguing that it is less complex and it has fewer reciprocal movements and changes in letterforms. Graham and Miller (1980) suggest a neutral procedure involving the use of manuscript in the initial stage and then gradually switching over to cursive method. Other methods for developing handwriting skills are tracing folds, drawing roads, tracing with copy paper, dot-to-dot- figures and reversals. Berninger et al (1997) used handwriting treatments which evaluated five alternatives for learning how to write lower case letters of the alphabet. This method also proved to be beneficial for the compositional fluency of the children with writing difficulties. Graham, Harris and Fink (2000) also used supplementary handwriting treatment which involved naming, identifying and writing the lower case letter of the alphabet as well as repeated writing exercises designed to increase handwriting fluency. Graham, Harris and Larsen (2001) have emphasized the role of early intervention in the prevention and remediation of writing problems. If low level skills such as the mechanics of writing become automatic, the children have resources such as memory free for tasks requiring high level skills (Berninger et al 1997). Neurodevelopment training can also be used for handwriting problems. This training involves activities designed to increase hand strength, kinesthetic awareness in the finger and hand, dexterity, eye-hand coordination and motor planning (Berninger, Rutberg, Abott, Garcia, Youngstorm, Brooks & Fulton 2006).

Several methods for improving spelling skills have been developed by researchers from the US. Strategies using one or more of the sensory modalities such

as the multisensory fading model, or activities such as the sensory modality preference, the cover and write method or spelling games could be used for students with spelling difficulties (Fernald, 1943; Gillinghan & Stillman, 1968; Westerman, 1971).

Strategies for improving written expression skills may include instructions for narrative as well as expository writing. Instruction should focus on the components of written expression such as fluency, vocabulary, structure and content (Hirisave, Oommen & Kapur, 2002). Methods such as the step-up method and the hamburger methods have been used effectively in classrooms. Process approaches uses acronyms as mnemonic devices that refer to the processes involved in writing. Examples of such approaches are POWER, EMPOWER, six Trait approach and 6+1 Trait approach (Culham 2003; Englert & Mariage, 1992; Singer& Bashir, 2006). The six traits approach has been found to be very effective in teaching writing (Culham 2003). All these strategies require self-regulation on the part of the student. It has been found that struggling writers are less self regulated than students who are good writers (Graham & Harris 2003). Intervention strategies based on self regulation include tasks for planning, organization and revision. Self-regulation is also important while using technology to teach students with writing problems (Graham & Harris).

In the past few years, technology has been used to improve the writing skills of children with LD. These tools help the children by minimizing the writing difficulties and by providing them with additional support to overcome other difficulties. Tools such as the word processor, provides help in planning, revision, formatting, spell check, style, alleviates fine motor difficulties via typing and also provides motivation (MacArthur 1996). According to Graham and Harris (2003),

knowledge and self regulation are important in the process of learning to write and without these the impact of these technological tools may be restricted (Graham & Harris).

Remedial program should also involve methods to enhance motivation, and reinforcements. According to Graham and Harris (), it is important to identify and address academic as well as non academic roadblocks in children with LD. Maladaptive behaviors such as low tolerance to failure, attention difficulties, impulsivity, disorganization, inflexibility lack of persistence, frequent absences have been observed in children with LD (Harris 1982; Gaskins 1998). Intervention can be designed to address the maladaptive attributions of children with LD (Graham, Harris & Sexton 1998). Children can also be taught to self-monitor their daily behavior by maintaining a daily report and by plotting graphs. Graham et al (1994) observed a 50% increase in on-task behavior and in the written compositions of children with LD.

Summary

The history of writing disabilities dates back to the last two decades. Several studies have investigated the writing problems of children. However, there is still a need for further exploration in the area of writing, whichis a complex process (Hayes, 1996). Learning disabilities are often found with co-existing behavior problems (Graham, Harris & Larsen, 2001). Remediation of LD should include intervention for the co-morbid behavior problems (John, 2003).

In the first chapter, the researcher provided a brief introduction on learning disabilities, the status of learning disabilities in India and the purpose of the present

study. The following chapter presents the literature review relevant to the problem under study. The third chapter discusses the methodology of the study. The fourth chapter presents the findings of the research. The fifth chapter presents the conclusion, limitations, suggestions for future studies and the implications of the study.