CHAPTER II
THEORETICAL BACKGROUND

Learning disabilities is a relatively recently identified and defined area of exceptionality. It has generally been viewed as a 'mild' handicapping condition, because most of the individuals with learning disabilities have normal intelligence but experience problems in academic areas such as reading, writing and mathematics. Recent thinking, however suggests that learning disabilities is a generic label representing a very heterogeneous group ranging from mild forms of retardation, socio-emotional adjustment, language difficulties, subtle clumsiness and, above all, reading disorders - almost the entire field of special education.

Perhaps more than any other area of exceptionality, Learning Disabilities (LD) have controversy, confusion and polarization among contemporary professionals. Prior to the 1960s, educational services for LD children were non-existent.

The term LD was first introduced in 1963 at parent’s meeting in New York city. Kirk (1963) proposed this term as a compromise because of the confusing variety of the labels then being used to describe the child with relatively normal intelligence who was having learning problems. Such a child was likely to be referred to as being minimally brain injured, a slow learner, dyslexic or perceptually disabled.
But parents as well as teachers knew that the label 'brain injured' was virtually useless because damage is difficult to determine.

Learning disabilities is presently defined as delays, deviations and performance discrepancies in the basic academic subjects (e.g., arithmetic, reading, spelling, writing), as well as speech and cannot be attributed to mental retardation, sensory deficits, or emotional disturbances or learning disabilities. It is a general educational term - an umbrella label - that includes a variety of different conditions. Historically, the most influential definition was developed by the National Advisory Committee on Handicapped Children (1968) and later incorporated into Public Law 94-142 with only minor changes. It also provided the basis for the subsequent Children with Specific Learning Disabilities Act of 1969:

"Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation,
Numerous definitions of LD have been proposed. Most of the definitions try to distinguish between the 'learning disabled' and the 'mentally retarded' or 'emotionally disturbed' children. Some authorities have pointed out however that many mildly emotionally disturbed and mildly mentally retarded children are similar to learning disabled youngsters. In that they too do not achieve upto their potential (Hallahan and Kauffman, 1977).

They also maintained that the behavioural characteristics of children in all three areas are quite similar and teaching strategies and materials for many of these students are comparable.

The most commonly accepted definition is the one endorsed by the Federal Government of U.S.A. 'Specific Learning Disability' means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include children who have learning problems which are primarily the result of
visual learning or motor handicaps, or mental retardation, or emotional disturbances, or of environmental, cultural or economic disadvantages (Federal Register, Dec. 29, 1977).

The National Joint Committee on Learning Disabilities (1981) stated that, "Learning Disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbances) or environmental influences (e.g., cultural differences, insufficient or inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences" (Hamill et al., 1981).

Council for Exceptional Children, Division for Children with Learning Disabilities stated that "A child with Learning Disabilities is the one with adequate mental ability, sensory processes, and emotional stability who has specific deficits in perceptual, integrative, or expressive processes which impair learning efficiency. This includes children who have central nervous system dysfunction which is expressed primarily in impaired efficiency" (Siegel and Gold, 1982).
According to Association for Children with Learning Disabilities (1986), "Specific Learning Difficulties is a chronic condition of presumed neurological origin which selectively interferes with the development, integration, and/or demonstration of verbal and/or non-verbal abilities. Specific Learning Disabilities exist as a distinct handicapping condition and varies in its manifestations and in degree of severity, throughout life. The condition can affect self esteem, education, vocation, socialisation, and/or daily living activities."

According to National Joint Committee on Learning Disabilities (1988), "Learning Disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunctions, and may occur across the life span. Problems in self regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not themselves constitute a learning disability. Although Learning Disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbances) or with extrinsic influences (such as cultural differences,
insufficient or inappropriate instruction), they are not the result of those conditions or influences”.

Important concepts in the National Joint Committee on Learning Disabilities (1988) definition include the following:

1. Learning Disabilities are a heterogenous group of disorders (individuals with LD exhibit many different kinds of problems).
2. LD are due to factors within the person rather than due to external factors, such as the environment or the educational system.
3. There is recognition of the biological basis of the problems.
4. Individuals can have several problems at the same time, such as learning disability and emotional disorders.

As the field also gained recognition, many countries throughout the world have developed their own definitions of Learning Disabilities.

Common Elements in the Definitions

Neurological Dysfunction - Although not always stated directly, implied in many of the definitions is the idea that Learning Disabilities are related to a typical brain function. Since all learning originates within the brain, the presumption is that a disorder in learning can be caused by central nervous system dysfunction. Educational and
environmental events can, of course, modify the process of learning and influence brain function, making it worse or better. In many cases, the neurological condition is difficult, if not impossible, to ascertain by medical examination or external medical tests. Often, therefore, the central nervous system dysfunction is presumed and determined through observation of behaviour.

**Uneven Growth Pattern** - This element of definition refers to an irregular or uneven development of the various components of mental ability. Mental ability, or the intellect, is not a single capacity, rather it is composed of many underlying mental abilities. For the individual with LD, these component abilities or sub-abilities do not develop in an even or normal fashion. That is, while some of the components are maturing in an anticipated sequence, others are lagging in their development, thereby appearing as symptoms of the learning problems. The key phrase within federal definition referring to this component is "Specific Learning Disability" which means a disorder in one or more of the basic psychological processes.

**Basic Psychological Processes** - A need exists to cite or interpret new academic areas which may be related to these basic processes. Below is a listing of the educationally relocated areas, with examples of underlying basic psychological processes.

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<th>Academic Areas</th>
<th>Psychological Processes</th>
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<td>1) Verbal expression syntax.</td>
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<td>2) Listening Comprehension</td>
<td>2) Auditory reception</td>
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<td>Auditory discrimination</td>
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<td>Auditory association</td>
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<td>3) Written Expression</td>
<td>3) Eye hand coordination</td>
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<td>Fine motor co-ordination</td>
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<td>Concept formation</td>
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<td>4) Basic Reading Skills</td>
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<td>Sound symbol relationship</td>
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<td>Word recognition</td>
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<td>5) Reading Comprehension</td>
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<td>Concept formation</td>
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<td>7) Mathematical Reasoning</td>
<td>7) Concept formation memory.</td>
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The field of LD was originally developed on the assumption that LD children have deficits in abilities to perceive and interpret stimuli, i.e., they have psychological processing problems. Over the years a strong opposition has developed to the idea that LD children
Exclusion of Other Causes- Many of the definitions state that the problems of learning are not primarily the result of other causes. That is, the students are not mentally retarded, emotionally disturbed, visually handicapped, hearing impaired, or culturally, socially, or economically disadvantaged. Such a limitation is often difficult to implement in practice. When one works with other kinds of exceptional children, we frequently observe that children appear to have two handicaps - their primary impairment, plus learning disabilities. Moreover it is not easy, when evaluating an individual, to ferret out which problem is primary and which is secondary. The incorporation of an exclusion clause into the definition has its origin in the need to establish LD as a separate and discrete category.

Subtypes of Learning Disabilities

There is evidence that learning disabilities is not a "Single Syndrome" and that the learning disabilities population falls within a number of subtypes. During the past decade, terms and classification that relate to causative factors have been identified. Two major areas of emphasis are now emerging. One stresses perceptual motor classification which is discussed by Barsch (1967), Frostig (1973), and Ayres (1972). The other is language classification which is discussed by Kirk and James McCarthy (1968), Bateman (1964), Myklebust and Johnson (1967), Meeker
(1974). Both classifications include overlapping categories and emphasize perceptions.

The classification earlier used is in two groups:

**Group I** - Aphasia, Alexia, Acalculia, Apraxia, Agraphia

**Group II** - Dysphasia, Dyslexia, Dyscalculia, Dyspraxia, Dysgraphia

a) **Aphasia** - It is loss of ability to comprehend, manipulate, or express words in speech, writing or gestures. Auditory aphasia is inability to comprehend the spoken words. Formulation aphasia is inability to formulate sentences properly. Confusion occurs in relationships and tenses rather than in words themselves (it is usually associated with injury or disease in brain centres controlling such processes).

b) **Alexia** - It is loss of the ability to read or write printed language. It is assumed that a person with such problems possess a type of delayed neurological and perceptual development arising from neurophysiological characteristics. In addition they may have deficiency in visual, auditory and perceptual problems.

c) **Acalculia** - It denotes the inability to perform calculations. With this disability a person is without the capacity to understand and interpret numbers and engage in problem solving dealing with numbers. This
disability may arise from disturbance of quantitative thinking or from language or reading disability.

d) Apraxia - It denotes without the capacity to make movement as in writing and drawing.

e) Agraphia - It refers to the total inability to write. It is the inability to copy which differentiates agraphic children from other disorders of writing. The conditions are usually associated with brain dysfunction.

The words in Group II have a prefix of the letter 'dys' which infers a disturbed condition and not a complete lack of ability:

a) Dysphasia - It can be described as a disturbed function in the process of interpreting and expressing language. Learning to interpret and express can occur, but only with great difficulty. When a person is unable to comprehend the spoken word, it is receptive dysphasia, which is believed to be the result of injury, disease or maldevelopment of the brain.

b) Dyslexia - It is a disturbed function in the process of reading or interpreting letters and words. Condition is usually, but not always associated with brain impairment. Dyslexia is mainly due to deficiency in visual and/or verbal association. Dyslexic children
also may have deficiency in visual and/or auditory, perceptual problems, word analysis and synthesis.

c) **Dyscalculia** - It can be described as a disturbed function in the process of understanding and interpreting numbers. It involves a partial inability to perform calculations. It may arise from disturbance of quantitative thinking or from language.

d) **Dyspraxia** - It is a disturbed function in the process of making fine motor movements, as in writing and drawing.

e) **Dysgraphia** - It can be described as a partial inability to write which is due to visual-motor integration disorder that interferes with the memory and execution of the motor patterns needed to write or copy letters, words and numbers.

Kirk and Chalfant (1984) suggested two types of Learning Disabilities:

i) Developmental Learning Disabilities

ii) Academic Learning Disabilities

i) Developmental Learning Disabilities include the prerequisite skills that a student needs in order to achieve better in academic subjects (e.g., attention, memory, perceptual skills, thinking skills and oral language skills).
ii) Academic Learning Disabilities refer to school-acquired learning (reading, arithmetic, handwriting, spelling and written expression).

Other classifications of LDs subtypes were reviewed by McKinney (1984), who reported on eight subtype research studies. McKinney (1984) identified four subtypes of LD in a study using a cluster analysis technique. The following characteristics were found in the four subtypes.

**Sub Type I** - (33 percent) average verbal skills, deficits in sequential and spatial skills, poor in independent and task orientation, conceptual strengths on the intelligence test, (WISC-R), mild learning disability in reading and maths (60 percent male).

**Sub Type II** - (10 percent) poor in general information, arithmetic and picture arrangements on WISC-R, severely impaired in academic areas, rated low by teachers on behavioural scales, judged less considerate and more hostile by teachers, very poor in task orientation.

**Sub Type III** - (47 percent), 93 percent male, above average conceptual skills on WISC-R, mildly impaired in academics, poor task orientation, socially extraverted.

**Sub Type IV** - (10 percent) moderately impaired in academic areas, no evidence of behavioural deficiencies, average verbal skills, deficits in sequential and spatial skills.
There is little disagreement among professionals concerning the presence of academic deficits in children with LD. Indeed such deficits are the hallmark of learning disabilities. Some children have deficits in all scholastic areas - reading, spoken language, written language and mathematics, others have problems in only one or two academic subjects. A learning disabled child is neither damaged nor permanently impaired. The disability is an inability to make use of the unspecialized instruction usually found in the typical classroom. Given proper and specialized instruction, the disability disappears. The problem is, thus, an educational problem and not a medical problem.

One of the most common problems attributed to learning disabled children is reading disability (Norman and Zigmond, 1980). Reading problems are related to many spoken language problems. Reading is the base for all the other academic learning. A child's ability or inability to read affects learning in all school areas: Arithmetic, Social Studies, English and Science. Reading disability signifies disharmony in the life of a child. Reading skills are needed throughout life. Children with reading disability do not fall into set categories. They are found in all age groups, all ranges of intelligence, and all cultural groups and they have all types of physical and personality components. Children who read poorly grow up in diverse environments;
they may live with understanding or punitive parents, in happy or broken homes. Some may be affected by these conditions, others remain untouched. All children with reading disability manifest some disequilibrium in their lives.

A child has a reading disability when there is a significant discrepancy between his reading level and his intellectual potential as measured by standardized tests.

**Theories of Learning Disabilities**

Over the past decades, various views of learning disabilities have been presented, beginning with a psychoneurological view. The presumed psychoneurological base for reading problems has led to various models involving hemispheric laterality and perceptual anomalies. Later researchers began to examine the possibility that reading difficulties and other learning problems may be caused by underlying psychological processing problems.

Later, with the emergence of behaviourism in the United States as a popular theoretical explanation of learning, led to approaches that focused on structuring the learning environment rather than correcting internal anomalies of the individuals with reading problems. As concerns grew over achieving generalized effects using behavioural techniques, and as cognitive psychology gained in states, reading models and practices have developed that
focus on the role of cognition in information processing. As more has become known about cognition and reading, researchers have begun to investigate how and why readers regulate their cognitive capacities in gaining information from written texts. Metacognitive strategies employed by good readers have also emanated from the cognitive model.

Most recently, holism has been proposed as a powerful explanation of reading problems and their remediation. Theorists who operate under a holistic model, view reading as a process of constructing meaning in the context of the reader's perceptions of the world. The prominent reading practices derived from this theory are the whole language approaches, based on socio-linguistics whereby language and its pragmatic uses guide reading instruction.

**Psychoneurological Theory**

An early focus on reading problems involved the perceptual aspects of reading and the role of hemispheric processes in encoding visual information. Researchers have attributed specific functions to each hemisphere (i.e., left: linguistic, analytic, abstract sequential processing or mediation; right: nonlinguistic, spatial and holistic processing, or manual pattern recognition) and have geared their remedial treatments towards overcoming some hypothesized physical insult to the brain by developing the

Orton (1925), credited with much of the early developments in hemispheric dominance theories of reading, assumed that sensory impulses were received by both hemispheres simultaneously forming memory traces in the form of mirrored images. If dominance didn’t exist because of some impairment of the brain, perceptions would be confusing and inconsistent, resulting in reading difficulties.

Accordingly, Gillingham and Stillman (1965) devised an instructional method to increase the contribution of the auditory channel (e.g., phonic element) by employing a multisensory synthetic phonics approach involving a tracing (i.e., tactile kinaesthetic) technique for teaching single letters and their sound equivalents.

Fernald developed a similar technique using the tactile and kinaesthetic modalities to help remediate students’ reading and spelling problems (Lovitt, 1989). She combined a whole word, language experience approach with emphasis on the visual, auditory, kinaesthetic and tactile senses resulting in the VAKT models of learning (Fernald 1943; Miccinati, 1979; Myers, 1978).

Kephart’s (1960,1971) model of the relationship between perception and motor development is one of the most widely recognised. Frostig and others developed a series of
activities designed to assist readers having visual perceptual difficulties (Frostig et al., 1973).

Myklebust (cited in Blau & Loveless, 1982), on the other hand, proposed stimulus overloading as an explanation for perceptual problems. Thus, he believed that when two or more types of information are delivered to the brain, a breakdown occurs resulting in confusing, poor recall or even seizures. Luchow and Shepherd (1981) and Blau & Loveless (1982), provided supportive evidence for the overload theory.

The models of psychoneurological theory help demonstrate the extensiveness and complexity of the theory. Because of the complexities of the theory, reading programs generated from psychoneurological models are less applicable and more difficult for teachers to apply in the classroom settings.

**Psychological Processing Theory**

During the previous decades, psychoneurological testing and programming failed as a system to differentiate readers with and without brain dysfunction. Many researchers began to analyze the psychological processes which would be considered to play key roles in school related learning activities based on the hypothesis that if the underlying psychological processes used in academic learning could be identified, a treatment program could be designed and used by teachers to remediate these processes. The terminology
used to describe the presumed nature of the problem also changed to reflect the shift in the dominant theory. Thus, the term "brain damaged" and "minimal brain dysfunction" were replaced by 'perceptually handicapped'. Ultimately, Kirk coined the term 'learning disabled' in 1963.

In 1960s, Kirk, McCarthy, and Kirk began to develop the Illinois Test of Psycho-linguistic Abilities (ITPA). Thus, it was believed that if language processes are defective, they may be the cause of reader's learning failures and can be remediated. Ultimately, therefore, classroom learning can be improved by strengthening weak areas through psycho-linguistic based instruction.

The Peabody Language Development Kit (Dunn & Smith, 1965) is probably the most widely used set of materials developed from the Psycho-linguistic model.

The concepts fundamental to the psychological processing theory are that students differ in their underlying mental abilities to process and use information and that these differences affect a student's learning. The theory suggests that students with auditory processing dysfunction would encounter difficulty with instructional approaches such as phonics. Similarly, students with visual processing dysfunction are likely to experience obstacles in learning to read by methods that are primarily visual, such as the so called sight method.
Proponents of the theory have designed three different teaching plans, all based on knowledge of the student’s processing abilities and disabilities.

The first teaching strategy is to help the students to develop and build those processing functions that are weak. The second strategy is that instruction should be based on teaching methods and treatment procedures that take advantage of the student’s strengths and circumvent his or her processing weaknesses. The third teaching approach based on the processing concept combines aspects of the two previous methods.

**Behavioural Theory**

Specially, behaviourists have approached learning disabilities from a perspective of ineffective interactions between learners and various instructional antecedents and consequences external to students. The assumption is that academic behaviours are learned through a history of learning facilitated by associations of antecedents, behaviours and consequences (Wolery, Bailey & Sugai, 1988).

In general, behaviourally based reading programs focus on overt behavioural responses (not cognition) and on continuous monitoring of changes in behavioural responses. Classroom variables in the reading setting are manipulated to provide appropriate physical facilities, promote engagement, use functional and interesting materials and
activities, provide multiple opportunities for learning, and communicating expectations (Wolery et al., 1988).

Application of behavioural principles was further prompted by the curriculum development work of Lovitt (1981) at the University of Washington and Becker and Englemann at the University of Oregon. Through the 1970s, Lovitt was a dominant force in promoting the use of systematic diagnosis and treatment of learning problems through data based monitoring of academic behaviour change. Contingent skipping is an example of a reading programme resulting from this thrust.

One of the more controversial developments which emerged from a behavioural frame work is the Direct Instruction (DI) procedure and curriculum developed by Englemann and his associates at the university of Oregon.

As behavioural scientists began to focus on antecedent events in shaping behaviours, the influences of developments in cognitive psychology began to be felt. The blend of behavioural learning principles with an emphasis on monitoring overt behavioural responses and verbal mediation strategies devised by cognitive psychologists has led to a hybrid of the two models in the form of Cognitive Behavioural Modification (CBM).

CBM techniques enable students to become less dependent on others in controlling their behaviours.
Individuals capable of independently engaging in task appropriate behaviours enhance teacher's ability to manage groups of students (Wolery et al, 1988).

Early CBM procedures were developed to train students to control behaviour that interfered with performance of academic tasks through self verbalizations. Thus, students using CBM techniques improve reading and other academic task performances.

Cognitive/Metacognitive Theory

Torgesen (1977) found that although students with learning disabilities seemed to demonstrate the same cognitive capacities as peers without learning disabilities, they failed to apply various metacognitive strategies that aid in the use of cognitive faculties.

Jacobs and Paris (1987) defined metacognitive strategies as those mental activities that entail self appraisal of cognition and self management of thinking. Appraisals of cognition include the use of declarative knowledge, procedural knowledge, conditional knowledge, and metacognitive knowledge. Applied to reading, meta-cognition is defined as the planning, monitoring, revising and repairing of activities used for comprehension (Brown, Day & Jones, 1983).

Theorists have conceptualized metacognitive training in various taxonomies. Sternberg (1977, 1979, 1983) delineated three forms of training. Micro component training
focuses on information processing skills related to specific curricular content. Macro component training entails the development of complex processing systems such as note taking and outlining in reading study skills, and meta component training involves engineering executive control mechanisms that can be applied flexibly to specific problem solving situation in reading with a degree of speed (Derry & Murphy, 1986).


The most widely applied example of metacognitive based strategies in learning disabilities is the Strategies Intervention Model (SIM) conceptualized at the University of Kansas (Deshler, Schumaker, Lenz, 1984).

The SIM includes structures for how to teach and what to teach. Specifically, the "how to teach" component is based upon the behaviourally oriented Direct Instructional (DI) model involving teachers modeling, leading, and testing students through the acquisition stage of learning. The "what to teach" component draws from the metacognitive needs of adolescents with learning disabilities; that is, teachers promote awareness and regulation of the information
processing demands of the secondary school setting. Other characteristics of SIM include: explicit delineation of treat outcomes, their importance, and techniques to be applied, use of self verbalization, active participation by students in training, and an emphasis on generalization at all stages of learning (Deshler et al., 1982; Deshler and Schumaker, 1984).

**Holistic Theory**

A more radical view of learning disabilities has been proposed by advocates of applying holistic thought and procedures to the field of learning disabilities. Proponents of holism (Heshusius, 1986, 1989; Poplin, 1987, 1988; Smith and Heshusius, 1986) argued that positivistic and empiricists traditions underlying earlier theoretical models (i.e. psychoneurological, behavioural and cognitive) are not adequate to understand human behaviour.

The basic tenets of the holistic view are derived from phenomenological thought, which "sets forth the importance of understanding a person's direct experience of her world, irrespective of how she conceptualizes and categorizes it" (Heshusius, 1986). In reading, self directed learning is more motivating than teacher directed learning, which imposes the problem and the solution. Reading programs for students with learning disabilities designed without considering the context of purpose, use and desired social
relations fail to provide motivating and meaningful environments conducive to self-directed learning.

The conceptualization of students as self-directed learners emanates largely from the work of the Soviet Psychologist Vygotsky and Luria, who hypothesized that socialization and motor behaviours are functions of a child internalizing the interpersonal instructions of adults or older siblings. In order to perform the task, there must be supporting environment in which the reading teacher provides assistance by modeling self-guiding verbalizations and guided students responses so that the learner can carry out some simple aspects of the reading task through observing and imitating the teacher.

In the whole language or literacy approach, the principles of holism are applied to reading instruction by having students engage in activities such as story reading and journal writing that are purposeful to them. The pleasure and enjoyment of literature is developed through positive experience with books. Young children acquire an intrinsic reinforcement system that is illustrated in the amount of time that they spend independently interacting with books.

Palincsar and Brown (1984) developed a more narrow application of holistic principles to reading comprehension. Their model Reciprocal Teaching, was designed to assist
students in what Holdaway (1979) referred to as "operational factors of literacy". Students learn to use two comprehension strategies: self directed summarization and self directed questioning. The former entails students monitoring their progress through reading. If comprehension is faulty, some remedial action is triggered.

Teaching procedures for self directed summarization and self directed questioning are based on the concepts of proleptic teaching and expert scaffolding. Specifically, the teacher provides a model of a comprehension strategy being taught through a natural dialogue with students and gradually allows the student to take over the steps and procedures involved in applying the strategy.

However, critics of the theoretical assumptions of holism argue that they are contradicted in classroom reading practices. For instance, holistic maintain that the whole is more than the sum of the parts; therefore knowledge of the isolated parts cannot lead to knowledge of the whole. A related criticism is that holists have not presented a workable format for evaluating student progress in reading. Furthermore, Licht and Torgesen (1989) suggested that other forms of students evaluation that entails children's subjective views of their skills are not necessarily ignored in reductionistic programs (e.g., attribution theory).

Despite the concerns of the proponents of a scientific approach to instruction, holists have directed
teachers and researchers to consider the many critical variables in reading instruction that otherwise have been de-emphasized in other programs. It is hoped that the debate over the merits of whole language versus more reductionistic approaches to reading instruction will continue to motivate careful reflection of theories and practices in reading instruction.

What is Dyslexia

The concept of dyslexia has undergone essentially the same changes as that of "Learning Disabilities", and dyslexia is now usually considered a sub classification of this category. By 1950 the term dyslexia was being used by neurologists who had followed Orton's Theories of lateral dominance (Thompson, 1966). The word "dyslexia" is a Greek term and its literal translation is "dys"-difficulty, "lexis"-words. Hence difficulty with words. A dyslexic is a person who has a dyslexia. The term "dyslexia" is used to cover a wide range of learning problems; from spelling difficulties to complete illiteracy. It can be defined as a specific difficulty in learning, either constitutional or acquired in origin, in reading, spelling and written language, which may be accompanied by difficulty in number work.

Other terms such as specific reading retardation, specific dyslexia, specific learning disorder, specific
learning difficulties and many others are used interchangeably to describe the same syndrome, but often confuse matters. Critchley (1970) cites two definitions drawn up by the Research Group on Development Dyslexia of the World Federation of Neurology in 1968. Dyslexia was defined as "a disorder in children who, despite conventional classroom experience, fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities". It is also suggested that dyslexia is a cognitive language disorder of development (Snowling, 1987). He distinguished the terms "Developmental Dyslexia" and "Acquired Dyslexia". The word developmental implies that the child does not acquire reading, writing and spelling very easily and the problem is in the initial learning. However, "acquired dyslexia" appertains to individuals who could have learnt to read, write and spell normally, but who lost their capacity due to some kind of environmental factors.

Perhaps the simplest modern definition of dyslexia is that it is difficulty in learning to read and write particularly in learning to spell correctly and to express their thoughts on paper which affect those who have had normal schooling and do not show backwardness in other subjects (Hornsby, 1984).

More recent definitions have attempted to further specify the nature of the language and processing
impairments. A large body of research conducted within last 10 to 15 years indicates that individuals with dyslexia often have difficulty in performing tests that require the processing of phonological information (Stanovich, 1985).

Dyslexia has a number of symptoms which accompany the basic difficulty in learning to read, write and spell correctly. These symptoms are so diverse that they do not all occur together in one person. One dyslexic child may have a very different set of dyslexic characteristics to another, but will share with all dyslexics the specific difficulty of learning to read, write and spell. The child may not, therefore, be intellectually disabled.

There are almost 30 scholastic symptoms (e.g., poor handwriting, poor spelling ability, difficulty in distinguishing essential and trivial information, difficulty in defining words, awkwardness in self expression, poor retention of material studied, passivity in class etc.). Plus an even greater number of behavioural symptoms (e.g., social immaturity, frequent crying, poor coordination, tendency to digress, nailbiting etc.). None of these appear in any predictable combination (Trumbull, 1991). However dyslexia varies in severity from person to person.

A dyslexic child reads very slowly and hesitantly. He follows text with his finger, mispronounces words, adds affixes, omit suffixes, substitutes another used for other
words, confuses the short vowel, reading 'beg' as 'bag', puts letters in the wrong order, reading 'felt' as 'left', 'reserve' as 'reverse', ignores punctuation, misreads words of similar visual appearance. A dyslexic child may have difficulty in differentiating between left and right, in learning to tell time, he may have been a late walker and not well coordinated (Hornsby, 1984).

Definition of dyslexia which is adopted by Orton Dyslexia Society (ODS) Research Committee and National Institute of Health (1994) is "Dyslexia is one of several distinct learning disabilities. It is a specific language based disorder of constitutional origin characterized by difficulties in single word decoding, usually reflecting insufficient phonological processing abilities. These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities, they are not the result of generalized developmental disability or sensory impairment. Dyslexia is manifested by variable difficulty with different forms of language, often including, in addition to reading problems, a conspicuous problem with acquiring proficiency in writing and spelling".

Subtypes of Dyslexia

Obrzut and Hynd (1986) that researchers have sought to delineate different subtypes from a number of approaches and that the majority of those who have attempted to draw conclusions on the basis of measures of reading or from
psychological measures have failed to integrate their findings with psychoneurological variables. Early models of subtypes (Boder, 1973; Boder & Jarrico, 1982) suggested three types:

1. The one which Boder described as 'dysphonetic', involving difficulties with sound - symbol relations.
2. The second termed 'dyseidetic', involving difficulties with visuo-spatial aspects.
3. The third type in which both types difficulties are observed.

Other researchers, such as Marshall and New Comb (1973, 1980) and Singleton (1987), put forward more complex models. These models are built up using psycho-linguistic information processing approach to encompass the range of literacy difficulties observed. Different authors propose different numbers of subtypes, which are seen as 'ideal forms' and it is recognised that there is considerable overlap concerning the actual difficulties experienced by any particular individual.

Subtypes of Acquired Dyslexia

1. Deep Dyslexia

Individuals with deep dyslèxia have difficulty with phoneme grapheme conversion and with more abstract words. They have characteristic errors in their reading that show common or semantic substitutions. They can usually read
familiar words, particularly concrete nouns, but more abstract nouns, adjectives and verbs are found difficult. Non-words are found almost impossible. Saffran et al. (1980) and Coltheart (1984) argue that such people may not be able to use the reading systems within the left hemisphere at all. Rather, they use right hemisphere processes to aid global and pictorial recognition in conjunction with semantic and contextual cues.

2. Phonological Dyslexia

They have difficulty with non-words and great difficulty in sounding out words. In some cases difficulties are also shown with multisyllabic words where prefixes and suffixes are omitted, added or substituted (Funnel, 1983). Such individuals appear to be able to avoid the semantic errors characteristics of deep dyslexia by using a strategy of visual similarity. For example the non word 'role' may be read correctly through analogy with a known word, such as 'pole' (Kay and Marcel, 1981). This type of strategy enables the avoidance of semantic errors but gives rise to visual errors where errors are visually similar substitutions.

3. Surface Dyslexia

This subtype includes individuals who display ability in reading phonetically regular words and non words but have difficulties in reading irregular words, whole word recognition and the use of contextual cues (Patterson, Marshall and Coltheart, 1985). Apparently such individuals
cannot make use of visual analysis to recognise whole words. The reading of irregular words result in errors that show that the reader is over relying upon phonological strategies. Reading can be painfully slow, involving the deliberate sounding out of words. Not surprisingly, the comprehension of text is poor.

4. Direct Dyslexia

This subtype is often termed 'hyperlexia'. Typically individuals display competent accuracy in oral reading skills but have very poor comprehension of the text read. They are often able to read material beyond their normal vocabulary usage. It appears that while they are able to read print via phonological and whole word recognition strategies, their semantic analysis seems to be unable to make sense to the text read (Schwartz, Saffran and Marin, 1980).

Prevalence and Incidence

Estimates of the prevalence of learning disabilities have varied widely, from as low as 1 percent to as high as 30 percent. For many years the Federal estimates of learning disabilities in the school age population hovered around 2 to 3 percent. In the late 1970s and early 1980s, however, there was a rapid growth in the number of students being identified as learning disabled.
The U.S. Department of Education (1987), reported that 10.5 percent of all post secondary students in the nation are disabled, approximately 1.3 million out of a total of 12.5 million students including those enrolled in community colleges, professional schools, and doctoral programs. Of the 1.3 million disabled students, 12.2 percent (approximately 160,000) reported having a learning disability.

In U.S.A. various studies have estimated the number of children who fail at reading to be 20-25 percent of the school population (Stedman and Kaestle, 1987). A teaching leaflet produced by Hornsby (1989) quoted approximately 25% of the child population as falling into this category. As with Great Britain, a great variety of prevalence figures have been quoted by various workers in the field. Some cover a very wide range such as those quoted by Klasen (1972) who showed that estimates of dyslexia in the western would vary between 2 to 25 percent of the population. Rubin and Balow (1971) estimated an incidence of 24-41 percent and Eisenberg (1966) quoted 28 percent of sixth graders who were reading two to more years below grade level. Silver and Hagin (1960) likewise suggest a variation of between 5 and 25 percent.

In Canada the Commission on Emotional and Learning Disorders in Children (CELDIC, 1970) reported that between 10 and 16 percent of school age children in Canada were
believed to be in need of specific diagnostic and remedial help.

Figures for Europe and Scandinavia are not difficult to obtain probably because of language barriers. Tarnopol and Tarnopol (1976b) report an incidence range of from one percent in China to 33 percent in Venezuela in replies to a survey questionair received from 16 countries with a median of eight percent.

Farnham-Diggory (1978) suggests a 'typical' age distribution of 4 percent of six year olds, 10 percent of seven year olds, 67 percent of eight to eleven years olds and 18 percent of twelve to sixteen year olds. The overall incidence figures are by no means so unequivocal. Most studies have concentrated on the age range eight to eleven, and there is considerable variation in the incidence figures given for this age group, from 3 to 28 percent, but with a greater stress on the distinction between severely retarded readers and generally backward readers, giving the usual clusters from 2 to 5 percent of retarded readers and between 5 to 25 percent for the rest.

Research in India has paid no attention to the condition of learning disabilities. In very few studies, using non uniform operational definitions and samples restricted to the school setting only, the picture of learning disabilities in India is obscure.
Ramaa (1985) identified 14 dyslexic children out of 550 school going children (age range 9 to 11 years).

Mukerjee et al. (1995) estimated prevalence of Learning Disability range from 2 to 30 percent. Radha Krishnan (1995) estimated that about 10% of school going children are dyslexics in Madras. The figures of learning disabled children have been quoted as 20 percent in Delhi by Sodhi (1995).

Sufficient studies are not available with regard to incidence in India. But research in LD in India may help to clarify the definition, find more homogenous diagnostic groups, and promote better ways to make decisions on teaching and placement.

Factors Associated with Dyslexia

When we carefully evaluate the child, the family and the community, we see multiple factors in action. In some segments of the profession, determining causation (and also classification) in LD has been viewed from a rather pessimistic standpoint. Lynn, Gluckin, and Kripke (1979) noted that "infact, the causes of LD are unknown. If we knew what caused a learning disability, we would call it by another name". These authors further stated that no honest classification of LD can be based on causes, because the causes are unknown.

When there are consistent individual differences in a certain type of behaviour, three broad types of causes for
these differences are often distinguished. They may be innate, there may be biological factors in the environment which differentially affect individuals, and there may be influences in the psychological and social environment which determine these differences.

Though much of the evidence lacks precision, it seems likely that genetic, biological and social influences all play a role in the causation of reading retardation.

**Genetic Factors**

From the earliest reports of children with severe reading retardation strong claims have been made about the genetic basis of the disorder. Hinshelwood (1917) and Orton (1937) also reported a strong tendency for the condition to run in families and interpreted this as a genetic effect. This emphasis has continued to the present day and 'constitutional origin' forms part of the definition of 'specific developmental dyslexia' adopted by the World Federation of Neurology (Critchley, 1970).

These studies generally show that when one twin has a reading disability, the other one is more likely to also have a reading disability if he is an identical twin rather than a fraternal.

However, evidence is accumulating all the time that a tendency to dyslexia is largely inherited. Critchley (1964) described studies by others which indicated that in
30 to 88 percent of cases of developmental dyslexia, other family members had reading problems.

Vernon (1957) stated that there is no specific inheritance of reading disorder, but there is an inherited predisposition in certain cases toward the occurrence of the related difficulties of reading disabilities, speech impairment, motor coordination and attention span.

A genetic factor in at least some cases of reading retardation remains likely if unproven. To a degree, the extent to which genetic factors are responsible for these children’s problems is not of great practical importance. It may be better to concentrate on understanding the nature of the disorder so that we are better able to teach them to read.

Physiological Factors

Perinatal physical factors (such as maternal infection, drugs taken during pregnancy, labour, or delivery and twinning) stress the physiology of the new born that may result in changes in brain physiology. It is now suspected that dyslexic’s brain cells may be arranged differently from those who have no difficulty with reading or writing and that this usual structure of cells affects to a varying degree the normal functioning of one area or another in the brain. Dyslexia is caused by changes in the brain resulting from illness or accident, normal before, during or just after birth. Many specialists now believe
that dyslexic difficulties could arise when someone's language areas are split more evenly between the two halves of the brain. The source of problem seems to lie in the connection between the two hemispheres.

Lyle (1970) in a questionnaire study of mothers found no relation between reported perinatal factors and reading retardation. It appears that although overt brain damage can cause reading retardation, most children retarded in reading do not show any definite neurological symptoms.

Psychological Factors

In considering the psychological mechanisms responsible for reading retardation three broad approaches can be discerned. First is the view that visual perceptual or memory deficits are responsible. A second approach is that there may be a specific deficiency in the integration of visual and auditory information, such as is required in learning to read. A third approach has looked for evidence of auditory perceptual and general language impairment as causes of reading difficulties.

Environmental Factors

Environmental causes are difficult to document. There is much evidence showing that environmentally disadvantaged children are more prone to exhibit learning problems. Certain factors that have been named as possible
environmental causes of dyslexics are (1) poor schooling and poor teaching; (2) poor health.

1. **Poor schooling & poor teaching**

   Constant changes of school, particularly if this also involves drastic changes of teaching methods, may well retard child’s ability to acquire the basic skills in reading, writing and arithmetic. The extent to which school teachers and children are compatible are important features in a child’s life, especially in his early years.

   Many do believe that if teachers were better prepared to handle the special learning problems of children in the early school years, many learning disabilities could be avoided.

2. **Poor health**

   The child who is in constant poor health and who never feels really well will have difficulty concentrating on learning at school. Common causes of continuous illness are respiratory tract infections, such as bronchitis or common cold which lead to stuffy noses, head aches, sore throats and congestion of the middle ear. These in turn may lead to accompany problems of intermittent hearing loss or ‘glue ears’ which is due to congestion, and is bound to affect satisfactory school performance.

**Assessment**

Assessment is the process of evaluation that takes place in forming judgements about students. The major reason
for assessment is to gather pertinent information about a specific student for making the crucial decisions about placement and teaching. The data about the way a student performs certain tasks are synthesized, analyzed and interpreted (Lerner, 1985).

Salvia and Ysseldyke (1981) specify five purposes of assessment that are pertinent for learning disabilities:
1. Screening: to detect pupils who may be eligible for learning disabilities services.
2. Placement: to aid in decisions about the most appropriate environment for teaching identified students.
3. Program planning: to assist in the design of education programs for individuals or groups.
4. Program evaluation: to measure the effectiveness of a program.
5. Review of student progress: to monitor a student’s achievement and progress.

According to Lerner (1985), to assess the child, information can be obtained through five major (Methods) ways:

1. Case history or interview
2. Observation
3. Informal Testing
4. Formal Standardized Testing
5. Criterion - referenced Testing
In practice, these five methods are not separated but are often used simultaneously, e.g., one may compliment the other/s.

1. **Case History** - The case history provides information, insights and clues about the student's background and development. The following kinds of information are obtained, usually from the parents: learning problems of other members of the family; the child’s prenatal history, birth conditions and neonatal development; the child’s age when developmental milestones such as sitting, walking and talking were attained; and child’s health history, including illness and accidents. Additional information, such as the school history can be obtained from teachers and guidance counsellors.

2. **Observation** - An observation of the student is required as part of the assessment of learning disabilities. Many attributes of the student are inadequately identified through either standardized test instruments or through interview. The skillful diagnostician, however, is able to detect many of these characteristics through astute observation of the student’s behaviour and through the proficient use of informal test. Further, informal tests and observation of behaviour provides an opportunity to corroborate findings of the other two areas of assessment.
Many of the clues that can be used in planning the instructional programs are best detected by observing the pupil’s everyday classroom behaviour.

In applied behaviour analysis, assessment data are obtained, directly through daily observation and measurement, rather than indirectly through tests (Lovitt, 1975).

3. Informal Methods - Informal measures to assess student performance can be very useful. A practical approach is to test the student on the ordinary materials and procedures that he or she is currently working with in the classroom. For example, a teacher can select items from the student’s texts. Informal measures have not been tested on large populations, nor are data available to permit comparison of a student’s performance with that of a normal sample population. However, informal tests do have many advantages (Zigmond, Vallecorsa & Silverman, 1983). They permit freedom in administration and interpretation, for example, a teacher can encourage the student or give the student more time to complete the test.

Such adjustments put students at ease and help assure that they give their best efforts. Moreover, informal tests can be given more frequently than formal measures, can be administered over a period of time rather than in a single session. In addition, they can be given during
regular instruction period and are less expensive than formal tests.

4. **Formal Standardized Tests** - Formal tests are commercially prepared instruments that have been used with and standardized on large groups of students. When formal tests are given, strict procedures in administration, scoring and interpretation are required. These tests are called norm referenced because they have scores derived from their administration to a large group of children.

The student with learning disability, however, can not wait until we have flawless diagnostic tool. Inspite of the doubts raised by such critical reports, formal tests can be useful in obtaining information that helps formulate an evaluation when the tests are widely used. It is important for the diagnostician to know the limitations of the test and to use the information in proper perspective. Any single score, of course, gives only a small part of the information and it should always be interpreted with extreme caution.

5. **Criterion-referenced Tests** - Criterion-referenced tests are suggested as an alternative to formal norm referenced tests for several reasons; (1) the shortcomings of standardized norm referenced test, (2) the increasing demand for accountability and (3) the growth of behavioural psychology concepts that advocate using criterion referenced tests because they are closely related to
The basic purpose of criterion-referenced measurement is to determine the extent to which the pupil has met specific instructional objectives. For example, does the child recognize ‘ing’ endings? Can the child use the initial digraph ‘sh’? Does the child know the meaning of prefix ‘dis’? Criterion referenced tests are a way of measuring mastery levels rather than grade levels; they describe rather than compare performance. The linking underlying this approach is similar to that of applied behaviour analysis discussed earlier.

**Some Specifically 'dyslexic' modes of diagnosis and assessment**

The specialists working with dyslexic children have developed their own diagnostic and assessment habits. Diagnosis Assessment will frequently call on a battery of tests, and procedures of the kinds discussed earlier.

Miles (1974) regards the following as ‘signs’ of dyslexia.

1. **Discrepancy between intellectual level and performance in spelling.**
2. **Bizarre spelling**
3. **Confusion of b and d in either reading or writing or both.**
4. **Difficulty in distinguishing between left and right.**
5. **Difficulty in repeating polysyllabic words, such as preliminary, philosophical or statistical.**
6. Difficulty in repeating digits in reverse order.
7. Inability to do subtraction except with 'concrete' aids.
8. Difficulty in memorizing mathematical tables.
9. Losing the place when reciting tables.
10. A history of clumsiness, late walking or late talking.

These are signs which could be picked up in the classroom and from discussion with parents.

Newton et al. (1979) adopted behavioural symptoms similar to those of Miles:
1. Mirror imaging of letters of words
2. Inability to perceive, code and subsequently retain a consistent meaningful image.
3. Persistent reversal and disordering of letters (e.g., b and d, p and q), syllables, words (saw/was, on/no) and word order when reading, writing and occasionally speaking.
4. Severe spelling disorders.
5. The consequent inability to retrieve and express a relevant, meaningful symbolic image.
6. Late development of spoken language in early childhood.
7. Non resolution of hand, ear and eye dominance.
8. Difficulties with sequencing, order and direction.
9. Sometimes motor clumsiness, sometimes hyperactivity and sometimes superior ability in spatial skills in direct contrast with the disability in linguistic skills.

**Intervention Strategies**

Intervention strategies for learning disabled individuals have changed somewhat in recent years as professionals have begun to view this area as a constellation of specific problems rather than a generic category. Practitioners often tend to become wedded to a restricted number of teaching approaches. Various intervention strategies for specific learning disabled children have been used with apparent success.

Bateman (1967), Lerner (1976); Ysseldyke & Salvia (1974) have divided intervention approaches into medical process and behavioural categories.

Kirk (1978) presented special methods called specialized remedial reading methods, for teaching reading. These methods are not ordinarily used by the regular classroom teacher, nor are they included in the developmental approach. These methods are reported to be effective with some severely disabled readers. These methods include the VAKT approach, the Fernald method, the Gillingham method, the Hedge-Kirk-Kirk approach, the Neurological Impress procedure, the Edmark method, the
Distar method, the Close technique, the Rebus approach, and the Glass Analysis method.

Llyod et al. (1982) have grouped interventions into three categories and called these as behavioural, instructional and cognitive approaches.

Lerner (1985) presents reading methods and materials for teaching students with learning disabilities into four groups. In the first group he includes the adaptations of standard reading methods, which can be very effective if appropriate modifications are made i.e., Basal Reading Series, Phonic methods, Linguistic Approach, Language Experience approach, Individualized Reading and Computer Instruction in Reading.

In the second group, he discussed special remedial interventions to the teaching of Reading i.e. Visual Auditory Kinaesthetic Tactile (VAKT), The Fernald Method, The Gillingham Method, Reading Instruction, Glass Analysis, Neurological Impress Method, Repeated Readings, Hedge-Kirk Remedial Reading Drills, Initial Teaching Alphabet (i.t.a.).

In the third group methods for teaching reading comprehension, which include comprehension strategies from several perspectives and reading i.e., strategies for expanding vocabulary, Language Emphasis strategies and Metacognitive Learning strategies.
Since the present study is centered around dyslexic primary school children. Only these direct instructional techniques would be dealt with in detail.

The Alphabetic Phonic Method

In the Phonic Alphabetic Method the children first learn the sounds of the letters, then how to substitute initial consonants in known words in order to figure out new ones, and finally how to blend separate sounds together in words.

First selected sounds are introduced by presenting them in upper and lower case with picture whose content is mature in format. Some children can learn as many as four or five sounds in a single lesson. Each object’s name should be pictured to avoid possible confusion. For example "fence" for "gate" or "boat" for "ship". When teaching several sounds in succession, care is taken to use those which differ markedly in appearance and sound (for example, b and d are easily reversed and hence confusing). The order of letters are chosen according to most suitable child’s needs.

The children are told the name and sound of one letter at a time. Vivid associations are given wherever possible. The children listen to words beginning with one sound and then are asked to distinguish a word that begins with a different letter sound. Then children pronounce the name of letter and its sound. The teacher then pronounces
other words that begin with same letter and sound and asked the children to listen carefully to the beginning sound. Then children are asked to volunteer additional words beginning with same sound. Dyslexic children often have difficulty in thinking of examples.

Children's auditory discrimination might be further developed by pronouncing groups of four words, three of which begin with same sound. The children are asked to listen carefully and to indicate the one that does not begin with the sound being taught by clapping or raising their hands. The teacher does not go on to a new group of four words until the children have identified the word that begins differently. This is continued until sufficient auditory discrimination has been attained. Other letters are then taught in the same way.

When the children have learned several consonants and one short vowel sound, they are shown how to blend them together into words. Consonant blends are taught in the same way as single consonants, practice in word families is presented to children in context instead of isolated lists wherever possible. Large number of blends fall into similar patterns such as tr, gr, br but the consonant digraphs which represent a single sound as entirely new sound, such as sh, ch, have to be taught separately. Th has two sounds: 'th' (as in thimble) and 'th' as in (these).
Vowel sounds are taught in the same way as consonant sounds. Although there are many different sounds for each vowel. Only the short and long sounds are taught at the outset to children with reading disability. As the child’s mastery of reading increases, diphthongs and other vowel combinations are taught.

Once short vowels have been mastered, the sounds of long vowels are introduced. After that the rule of double vowel is taught. When two vowels come together in a word, the first one is usually long and the second one is silent as in paid, coat and seat. Different words are presented and children are encouraged to figure out the rule for themselves. If auditory perception is stronger than visual perception and kinaesthetic, the remedial teaching based on phonics would be a successful programme for a dyslexic child.

**Whole Word Methods**

The Fernald Method (Fernald, 1943) is the supreme example of the whole-word approach. The method is basically kinaesthetic and whole word rather than phonic. Fernald pioneered the use of the Visual-Auditory Kinesthetic-Tactile approach (VAKT). In VAKT approaches they employ techniques for learning through muscle movement and touch.

The VAKT approach makes use of Kinaesthetic and tactile senses in addition to the visual and auditory senses
in teaching individuals to identify words. This technique has an added advantage; it is much more difficult for the student’s attention to be diverted when he is concentrating on correctly identifying a word by using all four senses. Sometimes poor readers have a tendency to day-dream when they are presumably working to improve their reading. With the VAKT approach, daydreaming is greatly reduced. Fernald described four stages in her approach.

**Stage one**- The teacher writes a word to the learned one on a piece of large paper, using crayon and writing in large letters. The student traces the word, touching it with either one or two fingers and pronouncing the word as a whole or in syllables as he does so. The child traces it until he can write the word on a piece of paper correctly, without looking at the teacher-written word.

**Stage two**- At this stage teacher writes the word and the child looks at it, sending it to himself. He then writes it without looking at the original copy made by the teacher, saying the word as a whole or by syllables blended together as he writes it. The student again uses the word in writing a story.

**Stage three**- Same procedure is followed as in stage two, except that the teacher does not write the word. Instead, the child looked at the word in print, repeats it to himself and then writes it without looking at the printed word. At this level, the child is allowed to start reading from books.
he likes, and is free to read as much as he wants. The words which he did not know, he was allowed to repeat themselves and then write them. These words are reviewed later to check retention.

Stage four - During this stage, the student is taught to recognize new words by their similarity to familiar words and syllables. The child is encouraged to pre-read difficult materials, scanning quickly for words that are unfamiliar. In the early levels of this stage, the child pronounces these words and writes them before reading. Later, if during reading, a word is not recognized, the teacher pronounces it for the child, enabling him to maintain the flow of thought and interest in the passage.

Fernald emphasized that (1) the child should never be allowed to look at the original copy of the word while trying to write it. (2) The word should always be written in context after the student learned to recognize it. (3) The teacher should never do the reading for the students (4) Child should not be asked to sound out a word.

Multisensory Structured Linguistic method
Multisensory approach - The names of Fernald, Gillingham, Stillman and Orton usually come to picture when multisensory approaches are mentioned. Basically all of these educators have advocated methods which use as many channels of input to the learner as possible.
Remedial practitioners would try anything that worked. Multisensory methods, based on the use of all available channels, naturally do their purpose and they use them for remedial teaching. The method usually involved the learner finger-tracing over the letter shape or word shape to be mastered while at the same time saying and hearing the auditory component and seeing the visual component.

Hooton (1976) stresses the need to teach, right from the beginning, by the multisensory method utilizing the advantages of phonics, whole word and reading experience methods. All the while there must be constant underpinning with plentiful writing experience. If all three channels of learning and memory are stimulated, she claimed, then a child with perceptual weakness in one area will compensate from the start.

Multisensory methods involve correction of a child's problems by using a combination of the child's sensory system in the training process. The assumption is that the child will be more likely to learn if more than one sense is involved in learning experience.

**Structure** - Basically, a structured programme is one that is almost totally teacher directed - that is, the most activities are determined by the teacher. The programmes are introduced in a certain order. Each one is presented in all its forms: capital, lower case, printed and written. The
child is taught how to arrive at the written form over the printed one. The child then learns to acquire an accurate image for recall by using all his sensory pathways simultaneously: by looking at its shape, listening to its sounds, saying its name and writing it.

When the first phonogram is secured and the child could recognise it for reading and recall it for spelling, then proceeds to the next one which is learnt in the same multisensory way and linked it to the first syllable. In this way child learns all syllables and he progresses towards sentences. As child works through the structure and as the appropriate phonograms are learned, spelling rules and probably ways of spelling sounds are incorporated.

A careful record of progress through the structure is maintained. Nothing is taken for granted, and recall is based only on what has been included in the individual’s programme. There is no confusion, only certainly and steadily increasing confidence in the pupil’s own ability to learn is incorporated.

Linguistic - Linguistics is the study of language, and only recently have linguistic turned their attention to the area of reading and reading improvement. In actuality, there is no ‘Linguistic Approach’. Since all reading relates to language. Therefore, all reading approaches are linguistic approaches in that sense.
Linguistic approaches control the introduction of word structures, beginning with simple sentences in which certain patterns are employed, such as: The man ran to the tan van.

Such pattern are intended to teach students that the words are alike except for the initial letter or phoneme and that, therefore, the words can be identified by distinguishing between these various phonemes.

In general, irregular words are taught as sight words, and students are asked to discriminate only between regular word forms. The progression of pattern is carefully mapped, and students encounter increasingly difficult patterns as they advance. Repetition allows students to master the various patterns.

**Behaviour Modification Method**

Bandura (1969) indicated that behaviour modification is an encompassing term and includes such areas as vicarious learning, self-control, and other cognitive procedures.

For years, behaviour modification has been used successfully to work with inattention and hyperactivity as well as with specific academic behaviours. (Hallahan & Kauffman, 1975).

Kauffman (1975) defined behaviour modification as a "systematic control of environmental events to produce
specific changes in observable behaviours". Environmental events preceding behaviour in question (i.e., instructions, cues, models, prompts etc.) as well as events following the behaviour (i.e., positive reinforcers or aversive stimuli) may be arranged to modify an individual's performance. Furthermore, procedures which strengthen appropriate behaviour are equally as important as techniques designed to eliminate undesirable behaviours.

Lovitt has used behaviour modification to improve arithmetic performance (Lovitt and Curtiss, 1968; Smith and Lovitt, 1975; Smith, Lovitt and Kidder, 1972) and linguistic skills (Lovitt and Smith, 1972).

Frank Hewett's Santa Monica Project is important as an example of behaviour modification applied to children with attentional problems (Hewett, 1967,68). Hewett devised the "engineered class room", in which the teacher reinforces children with tokens or checkmarks that can be turned for prizes. The programme is based on building a developmental hierarchy of skills in the child, beginning with attending abilities.

The child with attention problem is given a number of highly structured activities that require attending skills. Once the child becomes relatively successful at attending to the task at hand, he or she is moved up to the next level in the hierarchy. Hewett's programme has been found to be successful in increasing task attention.
Hall et al. (1968) demonstrated that child's "on-task" behaviour could be increased dramatically if the teacher simply ignored non attending responses and responded only to on-task behaviour. Then child will learn more efficiently.

Collette-Harris & Minke (1975) support the Stott's 'Learned behaviour' explanation for specific learning difficulties. Both dyslexic and non dyslexic subjects receiving the behaviour intervention improved in reading achievement and the dyslexic subjects improved in several perceptual and attention measures as well.

Stott (1978) in his diagnostic remedial strategy affirmed the importance on strengthening student motivation and boosting up child’s self-esteem. The aim should be to correct faulty teaching habits and induce the child to bring his capabilities into play. Rather than seeing the child as having certain deficits Stott sees learned behaviour as the root of the problem. An optimistic view of the teacher, coupled with systematic teaching, promises success. The learner should be rewarded by success - a feeling of effectiveness should come to the disabled learner.

The main reinforcement should arise from the exercise of competence within the activity itself. Remedial activities should be so loaded with effectiveness, enhancing opportunities that the child should find them as enjoyable as spontaneous play.
Combined Approach or (Eclectic Method)

Eclectic means not following any one system, but selecting and using what are considered the best elements of all systems. Remedial students are taught by whatever means seem most suited to their individual needs.

An Eclectic approach need not be composed of all possible approaches, methods, techniques and variations. A teacher may choose two or three approaches that provide broad-range remedial instruction - that is, instruction that can afford a basis for teaching almost any aspect of reading such as sight words recognition, word analysis skills, use of context clues, comprehension, fluency and so on. With these broad-range approaches as a base, the teacher may add two or three variations that are essentially supplementary methods to be used compatibly with one or more of the broad-range approaches. Then, if an approach seem to fail with a student, the teacher can delete that portion and use a compatible supplementary method to teach the skills needed.

In Eclectic approach, teachers select and use what in their judgement is best in a given situation rather than follow a prescribed course of action. Frieder (1970) gets it all together when he says: "Many alternatives are currently available to the prescribed in the area of media and strategies; but despite the advances in diagnosis and instruction, research has provided little concrete
information about the prescriber’s task-putting diagnosis and instruction together to reach objectives”.

Bracht (1970) and other contemporary educational psychologists suggested that no single instructional process provide optimal learning for all students. Given a common set of objectives, some students would be more successful with one instructional program and other students would be more successful with an alternative instructional program. Consequently, a greater proportion of students would attain the instructional objectives when instruction is differentiated for different types of students.

An Eclectic approach is not a hit or miss, trial and error fumbling, but careful selection of the treatment that appears to be most appropriate for a given student at a given point in time. It is a psychological individuality which is of the greatest importance to education. Each student in a class-room, no matter how carefully selected as a member of "homogenous" group, would react in his own unique way to the situation. There are differences in talents and aptitudes, in interests and motives, in habits and response styles, in emotional needs and vulnerabilities. So no single approach or focus is likely to be adequate to deal with the vast range of individual differences in any school situation.
The selection of treatment for pupils is what Harris (1970) is talking about in the introduction to his Case Book on Reading Disability.

A combination of teaching methods was used with most of these children, teaching visual recognition of common words while also teaching phonics and devoting part of the lesson to oral and silent reading. The Gillingham method of phonics instruction was sometimes combined with Kinaesthetic procedures. The Fernald Kinaesthetic or VAKT method was employed in several of the cases, usually with some modification or with some other instructional method.

Most professionals would heartily agree with this opinion that no single approach or focus is likely to be adequate to deal with the vast range of individual differences in any school situation.

LEGAL RECOGNITION OF LEARNING DISABILITIES

Early in the 1960s the State legislature began recognising the category and started providing additional financial aid for programmes so designated in U.S.A.

By 1970 no area of special education was receiving as much attention as that of learning disabilities. In 1975 PL. 94-170 included the learning disabled among the handicapped for whom special education services were required.
About 12.59 million children in school going age in India are disabled (NPE, POA, 1992) child with LD in the age group of 5-14 figures in 3.60 million in India (POA, 1992). Yet conditions like dyslexia which is purely academic oriented do not get detected in very many individuals and they are merged in the society. Survey on dyslexic children has not been done due to probably the inconspicuous nature of the disability. Such children who go to school continue to stay and struggle in the mainstream without detection.

At the end of 1991-92 about 30,000 children with disability were availing special benefits under scheme of Integrated Education for Disabled Children (IEDC). In addition, about 60,000 children with mild disabilities received resource support with special benefits. A large number of children with disability are also receiving Education in Special Schools which number about 1035, (NPE, POA, 1992).

In above figures no special attention is paid to learning disabilities. The NGOs have to be encouraged to implement IEDC, particularly to deal with children who are facing specific learning disabilities.

Recently, in India some non-profit organisations are established to work in the study and treatment of specific learning disabilities. Educare in Delhi was founded in 1987. Alpha to Omega learning centre in Madras has been
helping children with learning problems from 1988 onwards. Madras Dyslexia Association is also working for the learning disabled children. Efforts are being made in some universities in Deptt. of Education, for training teachers to handle multicategory disabilities. (NTDC Uni, Bombay, Kurukeshtra University and NIMH, Hyderabad).

National Agenda for children with LD was prepared for submission to Ministry of Human Resource Development, NCERT, CBSE, and Departments of Education of various state governments in Nov., 1995 at National conference on LD, held in Delhi. The main stress was on recognition of the problem, definition of Specific Learning Disability (SLD), identification and certification of the problem, adaptation of examination system, creation of a body of professional remedial teachers. It was recommended that the year 1996 be declared a year of the child with specific learning disabilities in order to create awareness among the people. In Feb., 1996 a conference on LD was held by Department of Education in Panjab University, Chandigarh to make educationists and professionals aware of the problem of LD.

The need of the hour is to recognise and include the learning disabilities in the list of disabilities by School Boards all over the country and certain provisions to be given to the students appearing in the Board Examinations.
Only the Maharashtra State Board of Secondary Education has sent a circular to state schools in Maharashtra recognising children with learning disabilities under the head of Dyslexia, Dysgraphia and Dyscalculia and has offered some additional facilities while writing the exams:

1. **Dysgraphia and Dyslexia** - These children have been exempted from third language, but English has to be one of the languages. They can opt for one subject from work experience instead of the language.

2. **Dyscalculia** - Can have a writer facility. Arithmetic paper is of 150 marks, out of which 75 is from 7th Std. level. Additional time of 30 minutes is also given.

3. **Dyslexia and Dysgraphia** - Writer facility is allowed. Additional 30 minutes time is provided.

Taking the lead from Maharashtra if all other States Boards, ICSE and CBSE, follow the same procedure it will open new vistas and a ray of silver lining for the learning disabled.

The government needs to address the issue of LD, bring out its importance and make relevant policies and recommendations that are sensitive to the children with LD. It must also attempt meet the manpower needs in this area by introducing good quality training programs in Regional Colleges of Education and Department of Education in the Universities.
Non Government Organisations could first be sensitized to the issue of LD and later be encouraged to adopt identification and awareness programs in their work areas. Different funding agencies should also be alerted to the consequences of learning disabilities and to the need for carrying out different treatment programs for children with LD. If resources are appropriately channelized, a number of children with LD would stand to gain and those from the poverty setting would be given a choice of better living.