A study of the Errors of Spellings in Dyslexic Children learning Hindi & English; at the same time some Case Studies from Public Schools of Delhi.

Dissertation submitted to the Jawaharlal Nehru University in partial fulfillment of the requirements for the award of the Degree of

MASTER OF PHILOSOPHY

By
Moushumi Kalita

Centre for Linguistics & English
School of Languages, Literature and Cultural Studies
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Date: 21/7/05

CERTIFICATE

Certified that this Dissertation entitled "**A study of the Errors of Spellings in Dyslexic Children learning Hindi & English; at the same time some Case Studies from Public Schools of Delhi**" submitted to the Center of Linguistics and English, School of Language, Literature and Culture studies, Jawaharlal Nehru University, New Delhi for the award of Master of Philosophy is an original work and has not been previously submitted, in part of full, for ay other degree or diploma of any University. This may, therefore, be placed before the examiners for evaluation for the award of the degree of Master of Philosophy

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DECLARATION BY THE CANDIDATE

This Dissertation entitle **"A study of the Errors of Spellings in Dyslexic Children learning Hindi & English; at the same time some Case Studies from Public Schools of Delhi"** submitted to the Center of Linguistics and English, School of Language, Literature and Culture studies, Jawaharlal Nehru University, New Delhi for the award of Master of Philosophy is an original work and has not been previously submitted, in part of full, for ay other degree or diploma of any University

July 2005
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Mkalita
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Moushumi Kalita

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Background

Although researchers disagree about both the etiology of developmental dyslexia and valid diagnostic means to identify it, there is wide consensus linking reading difficulties with primary neural deficits. These deficits impede the development of functional neural networks related to information processing in reading.

Dyslexia is typically characterized by an unusual balance of skills. Dyslexia is a syndrome: a collection of associated characteristics that vary in degree and from person to person. These characteristics encompass not only distinctive clusters of problems but sometimes also distinctive talents. The syndrome of dyslexia is now widely recognized as being a specific learning disability of neurological origin that does not imply low intelligence or poor educational potential, and which is independent of race and social background. Although dyslexia seems to be more prevalent amongst males than females, the exact ratio is unknown: the most commonly quoted figures are between 3:1 and 5:1. The evidence suggests that in at least two-thirds of cases, dyslexia has a genetic cause, but in some cases birth difficulties may play an etiological role. Dyslexia may overlap with related conditions such as dyspraxia, attention-deficit disorder (with or without hyperactivity) and dysphasia. In childhood, its effects can be misattributed to emotional or behavioural disorder. By adulthood, many dyslexics will have developed sophisticated compensating strategies that may mask their difficulties. The majority of experts concur that about 4% of the population are affected to a significant extent. This figure is based on the incidence of pupils who have received normal schooling and who do not have significant emotional, social or medical etiology, but whose literacy development by the end of the primary school is more than 2 years behind levels which would be expected on the basis of chronological age and intelligence. However, perhaps as many as a further 6% of the population may be more mildly affected (e.g. in spelling). *(International Psychology Services, 2001,Dr. Chris Singleton, Unversity of Hull,England, www.devdis.com)*

A Dyslexic learns at his/her own level and pace, and typically excels in one or more other area. Some of their experiences include difficulties with concentration, perception, memory, verbal skills, abstract reasoning, hand-eye coordination, social adjustment (low self-esteem is a commonly

observed behavioral characteristic), poor grades, and underachievement. Often, people with Dyslexia are considered to be lazy, rebellious, class clowns, unmotivated, misfits, or of low intelligence. These misconceptions, without understanding dyslexia's effect on the person's life, lead to rejection, isolation, feelings of inferiority, discouragement and low self-esteem.

The first president of the United States, George Washington, was dyslexic. So was Albert Einstein. Dyslexia, which comes from the Greek meaning "difficulty with words," as termed by the British Dyslexia Association is a language-based learning disability. It affects the ability of a person — even one with above-average intelligence — to read, write and spell. Dyslexics also may have problems putting things in order, following instructions, and differentiating between left and right. Thought to be genetic and hereditary, some forms of dyslexia can also be caused when hearing problems at an early age affect a person's language comprehension skills. Doctors still don't know for sure what causes dyslexia, but they say there is a correlation between left-handedness and the learning disability in many families. It is estimated that one in 10 children is dyslexic. And more males are affected than females. Dyslexic children can usually succeed at the same levels as others once they are diagnosed and start receiving extra support and attention at home and school. Children suspected of suffering from dyslexia undergo a series of reading, spelling, drawing, math and intelligence tests, as well as visual tests, laterality tests, visual scanning tests, sequencing and other tests to examine which brain functions are interfering with their acquisition of normal school learning.*(What is Dyslexia in Diagnostic testing by Hilary .J.Luttinger page 1-5 www. beingdyslexic.co.uk)*

Dyslexia also affects adults, but those who receive attention early in life often learn how to compensate for the disability by adulthood. Dyslexic adults, however, tend to continue to have difficulty with language skills throughout their lives. But a dyslexia diagnosis is no barrier to success. Some famous dyslexics include children's book writer Hans Christian Anderson, U.S. Army General George Patton, Italian artist, painter and inventor Leonardo Da Vinci, telephone inventor Alexander Graham Bell and actors Whoopi Goldberg, Henri Winkler and Tom Cruise. (*Dyslexia Basics Diagnostic testing by Hilary .J.Luttinger page vi, www. beingdyslexic.co.uk*)

Psycholinguistic Classifications of Dyslexia

In the 1970s, British psychologists became very interested in reading disorders; literature began to include references to new classifications of reading disorders. The British refer to these disorders as dyslexias, even though they are acquired, not developmental, disorders. These types of reading

disorder classifications have resulted from psycholinguistic models of patient performance on tasks requiring primarily reading aloud of single words. These disorders are known as deep dyslexia, surface dyslexia and phonological alexia. These classifications have become fairly well accepted and the symptoms often identified in patients.

Deep dyslexia is identified by the presence of semantic errors in reading aloud. Reading errors, such as saying child for girl or quiet for listen are common. Derivational errors such as reading invitation for inviting are present as are visual confusions. Deep dyslexia has also been called phonemic, syntactic or semantic dyslexia.

Surface dyslexia is distinguished by poor ability to use grapheme-to-phoneme conversion rules, although the reader relies heavily on these rules. The errors are phonologically similar to the target,and there is great sensitivity to spelling regularity. Therefore, though many nonsense words can be pronounced, irregularly spelled words (like yacht) are impossible for the patient to pronounce correctly. There is little sensitivity to meaning; the patient may not recognize that the word does not fit with the context.

Phonological alexia is characterized by an inability to read nonsense words with some difficulty noted with low-frequency words. Errors are often visual errors. It is assumed that these patients are impaired in the ability to use letter-to-sound conversion rules of the language.*(Russel J Love, Wanda G Webb, Howards, 2001, pgs 70- 75)*

In Literal Dyslexia, also referred to as, "Letter Blindness,"(Orton, 1967) a person has difficulty in identifying letters, matching upper case letters with lowercase, naming letters, or matching sounds with the corresponding letters. In Word Dyslexia, a person may read individual letters of the word but not the word itself, or read a word, but, not understand the meaning of the word. Some dyslexics may read words partially. For example, a person may read the word, "lice," as, "ice" or as, "like." The person may realize that these are incorrect, but cannot read those words correctly. Some dyslexics do better by moving their finger along the outline of a word or, by tracing the letters in the air.

In Phonological Dyslexia, a person has difficulty in converting letters to their sounds. They can read words that are already familiar to them, but have trouble reading unfamiliar or novel words. They also have difficulty in reading a nonword such as, "tord." They may misread this nonword as a real word that looks similar. They sometime also misread actual words as other ones that look similar. The word, "shut" may pose this particular problem, much to a listener's dismay.

In Neglect Dyslexia, a person neglects either the left or the right side of words, a problem particularly highlighted in reading long words. For example, if asked to read, "strowt," he or she may read it as, "owt." Given a word such as, "alphabetically," persons with this particular form of dyslexia will miss some of the first few letters. For example, they may read it simply as, "betically." There may be a problem with compound words. For example, a compound word such as, "cowboy' may be read partially, as, "cow" or "boy."

In Semantic Dyslexia, a person distorts the meaning of a word or incorrectly reads a word because of the confusion in the meaning of the given word. People with semantic dyslexia may say an antonym, synonym, or a subordinate of a word instead of the word proper. For example, they may misread, "dog," as "cat" or "fox." They may misread, "twist" as "twisted" or "buy" as "bought." Some have trouble reading function words such as, "of," "an," "not," and "and."

In Spelling Dyslexia, a person may have a problem reading all types of words and sometimes have trouble identifying individual letters. Their reading is extremely slow and hesitant, particularly on long words. While a normal reader takes about 30 milliseconds for reading each additional letter, a spelling dyslexic may take about a second to do the same. Some dyslexics tend to read words, one letter at a time, even if those are short and familiar.

In Dyslexia without Dysgraphia, a person has problem in reading but not in writing. Sometimes, it is referred to as, "Pure Dyslexia." Some have trouble doing written arithmetic because they have to read the text and the numbers, but the same people may not have any problem in doing spoken arithmetic. Dyslexia without Dysgraphia may never be identified, because, to confuse the matters, a person may have a nearly normal oral language and, his or her writing and oral spelling may be virtually unimpaired.

In Dyslexia with Dysgraphia, also referred to as, "Deep Dyslexia," a person has a problem in writing letters and words, grasping word-meanings, integrating the sounds of letters, and in pronouncing unfamiliar, and sometimes, even familiar words. People in this category face the biggest challenge and need our closest attention for educational and career planning.

Therefore, we can conclude that instead of dyslexia, there are "dyslexias," and all dyslexias are not created equal. A careful analysis must be carried out to help a reader, as early as possible. *(www.dyslexia-inst.org.uk)*

Pirozzolo and Rayner, 1988 categorised dyslexia into **two types**:

Auditory-linguistic dyslexia and visual-spatial dyslexia .

The former is four times as frequent as the latter.

Auditory-linguistic dyslexia:

- average to above average performance IQ
- low verbal IQ (relative to performance IQ)
- developmentally delayed language onset
- expressive speech defects
- anomia, object naming, or color-naming defects
- agrammatism
- reading errors mainly involving the phonological aspects of language
- spelling errors characteristic of poor phoneme to grapheme correspondence
- letter by letter decoding strategy
- normal eye movements
- relatively intact visual-spatial abilities

Visual-spatial dyslexia:

- average to above average performance IQ
- low performance IQ (relative to verbal IQ)
- right-left disorientation
- early evidence of preference for mirror or inverted writing
- finger agnosia
- spatial dysgraphic (poor handwriting, poor use of space)
- reading errors involving visual aspects of text
- spelling errors characteristic of letter and word reversals, omissions, etc.
- use of phonetic decoding strategy
- faulty eye movements during reading
- oral language abilities relatively normal

Reading and perceptual difficulties

These can include:

- early difficulties in acquiring phonic skills
- a high proportion of errors in oral reading
- difficulty in extracting the sense from written material without substantial re-reading
- slow reading speed
- inaccurate reading, omission of words
- frequent loss of the place when reading
- an inability to skim through or scan over reading matter
- a high degree of distractibility when reading
- perceived distortion of text (words may seem to float off the page or run together)
- a visually irritating glare from white paper or white-boards.

Writing problems

These can include:

- an intractable spelling problem
- confusion of small words such as which/with
- omission of words, especially when the writer is under pressure
- awkward handwriting and/or slow writing speed
- an unexpected difference between oral and written expression, with oral contributions being typically of a much higher quality than written accounts of the same subject matter in terms of structure, self expression and correct use of words.

Writing Disorder/Spelling Disorder

Proficiency in written expression skills can be viewed as the culmination of a child's education. Along with reading, expressing oneself in writing is an essential accomplishment of childhood that facilitates the necessary and rewarding tasks of adult life. The ability to write at an age-appropriate level is required for all academic progress For some children, the acquisition of written expression skills is a difficult and enduring problem.

Disorders of written expression often accompany reading or other learning difficulties; less research has been performed in isolated written expression problems than in other learning areas. In fact, whether the isolated disorder of written expression exists is uncertain. Not infrequently, writing is the most significant stumbling block for a child. The diagnosis of written language disorder can help point the way toward necessary treatment and support

Writing is a complex task requiring the mastery and integration of a number of subskills. The process of writing connects cognition, language, and motor skills. Some children have difficulties in one aspect of the process, such as producing legible handwriting or spelling, while other children have difficulty organizing and sequencing their ideas. Difficulties in one area can delay skill development in the other areas, as practice of all writing skills may be impeded.

Children with written expression difficulties can find essential activities at school, such as note taking, to be insurmountable tasks. Note taking requires listening, comprehending, retaining information while continuing to process new information, and summarizing the important points into a useful format. The physical acts involved in writing notes must occur simultaneously with these cognitive processes. All of this must be accomplished with sufficient speed, automaticity, and with a quality of production leading to writing legibly enough for the notes to be useful later.

Evidence suggests that disorder of written expression is accompanied by language and perceptual-motor deficits and occurs in combination with reading disorder and/or mathematics disorder. Some research points to preschool-aged and early school-aged difficulties with language and phonological skills in children who later are diagnosed with learning disorders, which may include written expression. Difficulties with phonological awareness appear to underlie spelling difficulties and may be related to, or concurrent with, other aspects of a disorder of written expression.

To allow for sufficient formal instruction, a disorder of written expression usually is not diagnosed until after the end of a child's first grade year in school. The poor progress with writing and, often, reading usually is apparent in the first grade; most often, a diagnosis can be made by second grade. Written expression problems often persist throughout school and can continue into postsecondary and adult years. College students with learning problems have difficulty with speed and automaticity of writing.

The writing skills of children with other learning disorders often are similar to the writing skills of children of a younger age group, as much as 3-6 years younger. That is to say, a 12-year-old child with learning disorders may write similar to a 6-year-old or 9-year-old child who does not have learning disorders rather than to a 12-year-old child without learning disorders. Children with other learning problems perform at levels below their peers without learning disorders in written expression at every age. The gap between the writing of children with learning disorders and their peers without learning disorders widens with age.

Frequently, learning disorders are comorbid with behavior disorders and attention deficit/hyperactivity disorders (ADHD). Clinical experience with children with ADHD often reveals that they have poor written expression skills. Writing is a task that requires planning, organizational skills, and persistence of attention and effort. The nature and direction of the relationship of learning disorders, behavior disorders, and disorders of attention is not clear and may differ in gender specific ways

Learning disorders of all types are associated with other mental health problems. The DSM-IV mentions low self-esteem, demoralization, and social skill deficits as associated with learning disorders. The school dropout rate is significantly higher for children with learning disorders than for children without learning disorders. Some research points to an increased incidence of subsequent substance abuse problems and lower levels of employment. Viewing these as factors that can occur with the disorder of written expression but also as factors that can be positively impacted by appropriate treatment of the academic and associated issues is important.

Components of written expression

Components of written expression usually are considered to include handwriting, capitalization and punctuation, spelling, vocabulary, word usage, sentence and paragraph structure, production (amount) overall quality, automaticity or fluency, and understanding of types of written material (text structure). In one analysis of the essential components of writing that require mastery, Baker and Hubbard included the child's level of knowledge about the writing process.

Writing as a process

In remediating poor writing skills, using the methods of teaching writing that have proven most effective is helpful. Recent educational research in this area has pointed to benefits of teaching writing as a process. This contrasts with more traditional approaches, which emphasized adherence to the conventions of mechanics (eg, grammar, punctuation, spelling, penmanship). Teaching a process to a child can be referred to as metacognitive because it requires reflection upon cognitive skills as they are being used.

The process of writing includes prewriting activities, the writing itself, and postwriting activities. Prewriting begins with planning, which includes analyzing the purpose of the writing and generating and organizing ideas. To develop prewriting skills, the child is taught to recognize types of recurring patterns and structures that relate to types of text. Narrative text (eg, a temporally ordered story) differs from expository text. The child is taught to include elements that match the identified text structure. Discussion and interaction appear to benefit the development of prewriting planning skills. In some instructional approaches, teachers model brainstorming or think-aloud techniques.

Etiologically, children with learning disorders are a heterogeneous group and manifest a number of specific learning problems. The concept of disordered learning hinges on comparing children's functioning in a specific academic area with their overall intellectual functioning. The consideration of learning problems has a background in the medical and educational fields. Acquired brain injuries in adults and the impact of such injuries on cognitive skills were considered early in the twentieth century. This consideration was extended to include children's learning difficulties. In the 1960s, the term minimal brain dysfunction was used to refer to children with learning problems of implied neurological basis. Today, the etiology of learning disorders includes consideration of intrinsic, perinatal, and extrinsic (environmental) factors. Intrinsic factors include neurobiological, biochemical, genetic, and other medical conditions. (Bradley-Johnson S, Lesiak JL)

Recent Findings:

Neurobiological factors

Neurobiological factors are assumed to underlie some cases of disorder of written expression and other learning disorders. Studies have compared electroencephalograms (EEGs) of dyslexics with

control groups and found a significantly higher prevalence of abnormal EEGs in the former group. Other studies have used functional neuroimaging techniques to compare children who are learning disabled and children who are not learning disabled. It has been suggested, based upon using computerized tomographic (CT) scans and magnetic resonance imaging (MRI), that deviations from normal brain symmetry occur in dyslexics, and that unusual patterns of brain asymmetry also may be related to expressive language dysfunction.

Neuropsychological factors

Neuropsychological research suggests that abnormalities in cognitive processes (eg, visual-motor, linguistic, attentional, memory) underlie learning disorders. Measurement of these neuropsychological process deficits is not accepted universally as reliable and valid; however, the following subtypes of written expression disorders based on neuropsychological performance patterns may be useful to consider: fine-motor and linguistic deficits, visual-spatial deficits, attention and memory deficits, and sequencing deficits.

Genetic factors

Evidence for a genetic component in learning disorders is suggested by family and twin studies The mode of inheritance has not been determined. Perinatal exposure to infections and toxins, early nutritional deficits, and other medical conditions possibly are related to learning disorders. Conditions highly associated with learning disorders include lead poisoning and fetal alcohol syndrome (FAS). Still, many children with learning disorders have no history of medical or neurological conditions. The notion that food allergies are related to learning problems is controversial and, except rarely, appears to be incorrect. Mega vitamin treatment of learning disorders is unproven and may be unsafe.

Poor school performance does not always indicate a learning disorder. Environmental factors alone can impede learning, but evaluating the contribution often is not simple. In reality, a range of causes exists with the interactions of the physical, psychological, and environmental. While further understanding of the etiology of a learning disorder such as written expression disorder is relevant to determining the best interventions, current educational practices may be slow to adopt new research findings. *(Russel J Love, Wanda G Webb, Howards, 2001)*

Developmental dyslexia

Although researchers disagree about both the etiology of developmental dyslexia and valid diagnostic means to identify it, there is wide consensus linking reading difficulties with primary neural deficits. These deficits impede the development of functional neural networks related to information processing in reading.

Several types of developmental dyslexia have been identified indicating that the reading deficit is not a homogeneous condition. For example, Castles and Coltheart (1993) classified two type of dyslexia based on the pattern of reading impairment: Phonological dyslexia which is characterized by a severe deficit in grapheme to phoneme conversion, expressed in particularly impaired non-word reading and surface dyslexia in which regularization errors dominate. Phonological deficits have been related to problems with speech perception. Numerous studies have shown that children and adults with dyslexia are less able to discriminate and recognize speech sounds of which formant transitions differ minimally from each other (tested by constructing a speech continuum from, for instance,\ba\ to \da\).

Developmental dyslexia is also called Alexia which is the inability to comprehend the written or printed word as the result of a cerebral lesion. In current usage Alexia is an acquired reading disorder in contrast to dyslexia, an innate or constitutional inability to learn to read. Although this distinction in terms is not universal ,it is becoming popular. The classic term word blindness is rarely used in Neurology and Speech Pathology. When employed it implies difficulty in reading words while letter recognize is more intact. The term critical Alexia means inability to recognize letters, verbal Alexia indicates that letters are recognized but words are not. Pure Alexia is a reading disorder without a writing disorder (agraphia).

Writing is a complex learned motor act that involves a conversion of oral language symbols into written symbols. It is assumed that the language symbols to be written originate in the posterior language areas in the dominant hemisphere of the brain. These oral symbols are translated into visual symbols in the inferior parietal lobe. The linguistic message is then sent forward to the frontal lobe for motor processing. Lesions in any of these language areas or pathways may produce the writing disorder called agraphia.

A rare agraphia has been described in which there is a writing disturbance in the left hand only. Patients with lesions of the anterior corpus callosum display the syndrome. The lesion disconnects the

right motor cortex in the frontal area from the posterior language area of the left hemisphere. Writing with the right hand is normal because of intact connection between left motor cortex and the left language area. The callosal lesion disrupts language messages going to the right motor area which controls the left hand.

Also known as central alexia or parietal alexia, this syndrome was classically described as an almost total reading disorder, with limited writing ability, only minimal aphasia and acalculia. In clinical practice the language symptoms vary more widely than in alexia without agraphia. Some authors separate alexia with agraphia into different types, one being the classical syndrome just described and the other being the reading and writing disorder that we discuss as aphasic alexia below. In most accounts of the syndrome there is some aphasia and it is always a fluent aphasia. The Gerstmann syndrome is sometimes present. A right homonymous visual field defect is frequently reported but not consistently present.

Deficits in reading letters, words and musical notes are usually seen. Number reading is disordered, and defects of calculation are frequently observed. Writing disturbance is variable in severity but not severe enough to preclude writing of letters. Patients often cannot copy letters, unlike patients with alexia without agraphia, who copy laboriously and slowly. Also unlike pure alexics, these patients do not comprehend words spelled aloud. Dejerine localized the neuropathology in alexia with agraphia to the angular gyrus of the dominant parietal lobe, and this localization has been universally confirmed since 1891. Dejerine surmised that the angular gyrus in the inferior parietal lobe was essential for the recall of written letters and that its destruction results in disturbances in reading and writing in adults.

Word-encoding differences among acquired dyslexics:

Recent studies of acquired dyslexia have focused less on localizing the site of brain damage and more on analyzing the precise nature of the disruption in the reading processes. Behavioural experiments attempt to determine the functional organization of various language-related processes. The initial results from this new approach have suggested the category of alexia with agraphia itself contains at least two (and possibly more) distinguishable types of acquired dyslexia (Marshall& Newcombe,1973). The two groups differ in the processes used to pronounce words: One group depends primarily on pre lexical speech recoding, while the other group depends primarily on

directly accessing the representation of the pronounced word using a visually based, word-level representation.

In the first group the patients pronounce words using a prelexical speech –recoding process; that is, they retrieve sounds associated with letters or a subword unit , such as letter clusters. Such patients have been referred to as surface dyslexics as mentioned earlier. These readers do not appear to store and retrieve a lexically based representation of the word's pronunciation that would permit direct retrieval of irregular words. For example, pronouncing *pint* as though it rhymed with *lint*.

The second group include patients who have difficulty recoding letters or letter clusters into sounds to check their pronunciaton of an infrequent word or to generate the pronunciation of a nonword (Marshall & Newcombe,1973). Such patients have been referred to as phonemic dyslexics (Patterson & Marcel, 1977). They often make errors pronouncing non words, such as *dake* or *jub*, or infrequent words. Their pronunciation errors sometimes appear to result from visual confusions. For example, they may pronounce *chair* as *charm* or *origin* as *organ* .

The word-recognition processes of phonemic dyslexics appear not to be based on word shape or any global cue. Other acquired dyslexics make meaning-related errors when pronouncing words. Such a dyslexic might say *pony* when reading *horse*.

Comparison between acquired and developmental dyslexia:

Some of the acquired dyslexia syndromes are similar to developmental dyslexia. Like the phonemic dyslexics, children who are identified as developmentally dyslexic often have difficulty with the grapheme-to-phoneme translation that is required to pronounce unfamiliar words. This is one striking similarity between the acquired dyslexics and the most general characteristic of the developmental dyslexic. In addition, one might argue that there are similarities between the surface dyslexics' problem and the problems experienced by developmental dyslexics who remain slow in visually encoding words. In fact, it has been proposed that different acquired dyslexic syndromes may parallel different subtypes of developmental dyslexia *(Frith, 1985)*.

On the other hand, there is every reason to be cautious about such a parallel. There are differences among patients even within these groups. At this point, the typologies for acquired dyslexia are not entirely established or agreed upon. In addition, although studies have been done on acquired dyslexics and on developmental dyslexics, there are few direct comparisons.

In addition to these practical difficulties, there are theoretical reasons to be skeptical about the parallel between developmental and acquired dyslexia. First, direct electrophysiological

investigations of developmental dyslexics have not been consistent in identifying brain abnormalities (Benton, 1975; Jorn, 1983). Second, the structures necessary to acquire a skill like reading may not be the same as those involved in its execution. There are intriguing dissociation between the same skill when it is the focus of conscious attention and when it is performed automatically under aroused conditions.

Perhaps the most important reason to be cautious in drawing parallels is the neural differences between children and adults. One such difference is that a child's developing brain has more potential for one site to take over the functions of another damaged site. For example, right-handed adults who lose their left hemisphere almost always suffer severe language impairment, whereas young right-handed children who lose the left hemisphere can still acquire language and learn to read.

Thus, research showed that the two hemispheres had different cognitive strengths. The left hemisphere plays a larger role in semantic and syntactic analysis, including English morphology. The right hemisphere is more visual or spatial; it can recognize words, but its linguistic skills are limited. Still, the children with only the right hemisphere did learn to read and understand.

The cognitive characteristics of dyslexia

Dyslexia is a variable condition and not all people with dyslexia will display the same range of difficulties or characteristics. Nevertheless, the following characteristics have been widely noted in connection with dyslexia.

- Inadequate phonological processing abilities, which affects the acquisition of phonic skills in reading and spelling so that unfamiliar words are frequently misread, which may in turn affect comprehension. Not only has it been clearly established that phonological processing difficulties are seen in the majority of children with dyslexia, but recent research has also indicated that this occurs in many adults with dyslexia.
- A marked inefficiency in the working or short-term memory system, which can affect many aspects of speaking, reading and writing. These difficulties can include problems in retaining letter-sound associations (which will affect acquisition of phonic skills), errors in the processes of accessing the mental lexicon (which will result in incorrect words being used or read - 'lexical access errors') and/or delays in access to the mental lexicon (which will tend to slow down the rate of reading and writing). Memory problems may also cause problems in retaining the meaning of text (especially when reading at speed), failure to organise learned

facts effectively in examinations, disjointed written work or in omission of words and phrases in written examinations, because the individual has lost track of what s/he is trying to express.

- Difficulties with automatising skills. It has been found that dyslexics do not tend to automatise skills very well, with the result that a high degree of mental effort has to be expended by the dyslexic when carrying out skilled tasks that non-dyslexic individuals generally find requires little effort. This is particularly the case when the skill is composed of several subskills (e.g. reading, writing, driving). In the classroom situation this might mean that the dyslexic child cannot concentrate on both the mechanics (spelling, grammar, punctuation) and the content of written work. The dyslexic individuals is likely to experience difficulties in listening to the teacher with understanding whilst making notes.
- Problems connected with visual processing, which can affect reading generally, but especially when dealing with large amounts of text. Such problems can include binocular instability and susceptibility to visual discomfort. Visual discomfort is a generic term for the effects of hypersensitivity to the irritating effect of strong visual contrast or rapid flicker (e.g. where parallel lines of text create the appearance of a black-and-white grating or consciously or subconsciously perceived flicker of fluorescent lighting or some computer monitors). Movement and colour illusions can be perceived, or the text may appear unstable or obscured. Reading for any length of time may cause headaches and eyestrain, and so can be done only in short bursts, which can disrupt the comprehension process. In some medical conditions (e.g. epilepsy and migraine) susceptibility to visual discomfort is generally more extreme than is usually seen in cases of dyslexia. This syndrome is also known by other names, e.g. 'Irlen Syndrome', 'Scotopic Sensitivity Syndrome' (a misnomer), 'Pattern Glare'. Although there appears to be a statistical association between dyslexia and visual discomfort, not all persons with dyslexia are highly susceptible to visual discomfort and not all persons who suffer from visual discomfort will necessarily exhibit the typical characteristics of dyslexia outlined above. There evidence that use of coloured overlays or filters (e.g. by use of acetate sheets or tinted lenses) can be beneficial in alleviating the symptoms of visual discomfort in a fair proportion of cases.

Empirical evidence suggests, however, that dyslexics have different kinds of difficulties.

One of the initial means of classifying dyslexics is type of reading error. Most research deals with errors of native speakers which, however, cannot automatically be transferred to foreign language

learners. We have no normative tests for reading English as a foreign language, and reading achievement tests for native English speaking children would not be relevant to the older foreign learners. Moreover, word frequency lists, which form the basis of reading syllabi and tests, would not necessarily be relevant for our student population.

A little research has been carried out on dyslexics learning to read in a second or foreign language. It is reasonable to expect that dyslexics, who have difficulty reading in their native language, will find reading in a second or foreign language even more frustrating. According to most theories of dyslexia (phonetic awareness, lexical processing, visual-perceptual-- eye-movement and magno-cellular), the direction of scanning for dyslexics tends to be from right to left, indirectly benefitting native speakers of Hebrew and Arabic. During the teaching of either English (left to right scanning) or Arabic (right to left scanning) to native speakers of Hebrew, our own empirical evidence points to the sheer difficulty of learning another language no matter what the direction.

Developmental precursors of dyslexia

At the pre-school stage many dyslexic children are already showing early signs of their disorder. The key is usually an uneven developmental profile, particularly in cases where there is a family history of speech or literacy difficulties, or where there is evidence of significant birth difficulties. Characteristic difficulties include one or more of the following:

- Delays in the development of speech and language.
- Difficulties in learning simple patterns of sequential activity, such as remembering the order of simple instructions or reproducing a pattern of coloured beads or bricks.
- Difficulties of fine or gross motor co-ordination.
- High distractibility and poor concentration.

The emphasis here is on detecting an uneven developmental profile where there is no evidence of primary medical, social or emotional causes for the child's difficulties. A similar approach needs to be taken on school entry. The dyslexic child will usually be distinguished from children with general developmental delay by obvious abilities in other areas. A typical case would be the child who, at 5 years of age, appears bright, alert and who is able to converse intelligently but who nevertheless is unable to write his or her own name, copy simple letters or shapes, or cope with fine motor tasks. Alternatively, the child may be able to copy and draw well for his or her age, show skills in

construction and modelling, but be unable to repeat a short sequence of digits, have difficulty in learning nursery rhymes and have relatively immature language development.

These are characteristic types of dyslexic children that could often be identified much earlier than is typically the case at present. Unfortunately, there are no generally accepted objective procedures for identifying such children at an early age. Thus, even if a teacher is alert to these early signs and symptoms, this will still usually be insufficient to provide a case for specialist help for the dyslexic child. Education authorities require more objective evidence in order to make special provision. There is therefore a need for formal assessment procedures that are not inordinately costly or time consuming but which are sufficiently reliable to justify taking action.

Cognitive precursors of dyslexia

There is substantial evidence that both phonological processing and short-term memory are important factors in dyslexia. It is now well-established that phonological processing ability is very closely related to reading development. Children who, when they start school, show good phonological awareness (i.e. are aware of syllables and can detect rhyme and alliteration) are the ones who are most likely to make good progress in learning to read. On the other hand, children with difficulty in carrying out these types of phonological tasks when they begin school are the ones who are most likely to have difficulties with learning to read even though they may overcome their difficulties with speech sounds as such. In general, it is argued (a) that phonological processes underpin the development of a phonological decoding strategy in reading, and (b) that working memory plays a significant role in this strategy, enabling constituent sounds and/or phonological codes to be held in short-term store until these can be recognised as a word and its meaning accessed in long-term memory. Dyslexics, who tend to have weaknesses in phonological processing and short-term memory, will thus tend to have

Whilst researchers have generally agreed on the importance of the roles of phonological processes and memory in dyslexia, for some years the issue of subtypes of dyslexia has been the subject of controversy. Many discussions in the literature refer to two broad subtypes: auditory dyslexia and visual dyslexia. The visual dyslexic tends to have problems with visual discrimination, visual memory, visual sequencing, left-right scanning and in rapid visual recognition of words. The auditory

dyslexic tends to have problems with discriminating speech sounds, in sound blending, auditory sequencing and serial memory, and in phonological awareness. In a classic study, Boder (1973) reported that 63% of her dyslexic sample could be described as auditory dyslexics, while only 9% fell into visual dyslexia category, leaving about 22% with mixed difficulties (both visual and auditory problems), and 6% of her sample undetermined.

Psychological research on acquired dyslexia (i.e. the condition of impairment in literacy skills in adults as a result of a stroke or other neurological damage) has tended to confirm the existence of two broad sub-types. These involve (a) patients displaying difficulties with whole-word reading (variously referred to as 'surface dyslexia', 'morphographic dyslexia', or simply 'visual dyslexia'), and (b) patients displaying difficulties with phonological processing and non-word reading (variously referred to as 'deep dyslexia', phonographic dyslexia', or simply 'auditory dyslexia'). The question arises whether the same (or similar) subtypes also exist in developmental dyslexia, which would have important implications for assessment and teaching. However, research knowledge in this area is still sketchy and the concept of subtypes of developmental dyslexia remains in professional and academic dispute.

The value and validity of early identification of dyslexia

Without early identification procedures the teacher may easily assume that the child is lazy or simply requires more time for reading skills to develop. When children are diagnosed as dyslexic late in the school career, a typical complaint made by parents is that they felt there was something wrong from their child's earliest years at school. However, when the parents expressed these misgivings to the teacher, the response was often: 'Don't worry, s/he will pick it (i.e. literacy) up in time'. In these particular cases the child did not 'pick it up' and consequently required specialist remediation some years later after the problem was eventually diagnosed. By this time the child will often have lost motivation and even become difficult or disruptive in class. This state of affairs is often the focus of strong parental resentment and dissatisfaction with the education system.

The cognitive precursors of dyslexia, summarised above, can be assessed in young children before beginning to learn to read. In the particular case of the dyslexic the value of early identification is enormous. Instead of waiting several years for children to fail, with all the misery and frustration which that inevitably entails, and only then trying to remediate, proper educational provision for

these children can be made right from the start. There is good evidence that when diagnosis of dyslexia was made early in school most children with dyslexia can be brought up to their normal classroom work, while identification delayed until late in the primary stage resulted in successful progress by less than half the children. If delayed until secondary school the percentage of successful remediation drops to 10-15%.

Difficulties other than Written Disorders:

Further important factors in dyslexia include the following:

- Early speech and language problems. Many dyslexic children have received speech therapy, usually for phonological difficulties, especially between the ages of 3 and 7.
- Glue ear (Otitis media) is common in children with dyslexia and usually affects the acquisition of auditory discrimination skills, which in turn impacts on development of phonics in reading.
- There is a high incidence of immune system disorders (e.g. asthma, eczema) amongst children with dyslexia. The reason for this is not understood at present.
- Oral skills. Although many dyslexic children are fairly articulate, others demonstrate a lack of logical structure in speech as well as in writing. Oral skills can be further compromised by difficulties in word retrieval or by mispronunciation and spoonerisms. A delay in producing a response may actually be due to a slight lapse between hearing what is said and understanding it - an inefficiency in aural processing possibly connected with the working memory system.
- Numeracy. In about 60% of cases, dyslexia affects numeracy skills. This can take the form of unexpected inaccuracy in calculation or copying of digits, failure to remember calculation procedures, difficulties with remembering multiplication tables. Gifted dyslexic mathematicians and scientists are sometimes found to have unusually weak computational skills.
- Co-morbidity with other developmental disorders, e.g. AD/HD or dyspraxia. A range of characteristics, under the general heading of attentional dysfunction (i.e. attention-deficit disorder with or without hyperactivity - ADD, AD/HD), can have a significant overlap with dyslexia. A short attention span and/or a high level of distractibility can undermine the whole educational process. Associated characteristics are an inability to get started when faced with certain mental activities and also trouble switching from one type of activity to another. Additionally, or alternatively, dyslexic problems can overlap with dyspraxia (sometimes referred to as the 'clumsy child syndrome', or 'developmental co-ordination disorder').

- Social and emotional factors. High levels of anxiety and stress have been identified as the most indicative behavioural correlates of dyslexia; these are bound to affect performance. A 'panic' reaction is experienced by some dyslexic people when placed in situations where they cannot cope. The cumulative effect of tiredness, necessitated by additional effort at every educational level, should not be underestimated.
- Organisation. Disorganisation, a poor sense of clock time (often associated with underlying memory problems) and/or a poor awareness of space (often associated with dyspraxia) tend to make effective time management very difficult for many people with dyslexia.
- The secondary effects of dyslexia. Although significant discrepancies between obvious ability and unexpectedly poor academic performance should alert teachers to the presence of dyslexia at an early age, the problem may go unnoticed for several years. Under-achievement in literacy despite normal schooling and satisfactory oral and intellectual skills may persist through childhood. This gives rise to the secondary affects of dyslexia, which include loss of confidence, low self-esteem and frustration. Older students find that years of humiliation in the classroom and constant fear of being 'shown up' take their toll.
- Compensatory strategies. Because of the development of compensatory strategies, by adulthood, literacy skills of many dyslexics can appear superficially adequate, especially if the person is very bright. However, these strategies are likely to break down when the individual is confronted with tasks that are more challenging than previously experienced (e.g. when going to college). This has been referred to as the 'dyslexia fuse effect': i.e. the dyslexia 'fuse' blowing as a function of the educational and/or information processing load placed upon it (Martin Turner).

Literature Review

The neurological bases of dyslexia are now well established and reflected in current definitions of the condition. For example, the International Dyslexia Association (formerly the Orton Dyslexia Society) published the following definition of dyslexia:

> *"Dyslexia is a neurologically-based, often familial disorder which interferes with the acquisition of language. Varying the degrees of severity, it is manifested by difficulties in*

receptive and expressive language, including phonological processing, in reading, writing, spelling, handwriting and sometimes arithmetic. Dyslexia is not the result of lack of motivation, sensory impairment, inadequate instructional or environmental opportunities, but may occur together with these conditions. Although dyslexia is life-long, individuals with dyslexia frequently respond successfully to timely and appropriate intervention" (Orton Dyslexia Society, 1994).

The Research Committee of the International Dyslexia Association also produced the following definition of dyslexia, couched in more scientific terminology:

"Dyslexia is one of several distinct learning disabilities. It is a specific language-based disorder of constitutional origin characterised 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 generalised developmental disability or sensory impairment. Dyslexia is manifest by variable difficulty with different forms of language, often including, in addition to problems of reading, a conspicuous problem with acquiring proficiency in writing and spelling." (Orton Dyslexia Society, 1994)

The British Dyslexia Association has also published a definition of dyslexia that reflects the neurological bases of the condition:

"Dyslexia is a complex neurological condition which is constitutional in origin. The symptoms may affect many areas of learning and function, and may be described as a specific difficulty in reading, spelling and written language." (British Dyslexia Association, 1995).

The biology of dyslexia has been investigated in a range of studies that have confirmed a difference in brain anatomy, organisation and functioning. The latest brain imaging techniques, as well as encephalographic recording of the electrical activity of the brain, and even post-mortem examination, all reveal a range of functional and structural cerebral anomalies of persons with dyslexia.

Although dyslexia is legally recognised as a 'disability', it is not a 'disease' nor can it be 'cured'. Indeed, the neurological differences found in dyslexia may confer advantages for some individuals (e.g. in visual or perceptual skills), which may to some extent explain the apparent paradox that some

individuals who have problems with elementary skills such as reading and writing can nevertheless be highly gifted in other areas.

> *The deficit model of dyslexia is now steadily giving way to one in which dyslexia is increasingly recognized as a difference in cognition and learning.*

Although most definitions of dyslexia found in the scientific and educational literature take this 'neurological approach', not all do. For example, the British Psychological Society's Working Group on 'Dyslexia, Literacy and Psychological Assessment' published the following working definition:

> *'Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty.'* (BPS, 1999).

This focuses on literacy learning at the 'word level' and implies that the problem is severe and persistent despite appropriate learning opportunities. The authors believe that this definition provides the basis for a staged process of assessment through teaching (see later under 'Identifying children with dyslexia'). It must be pointed out that this definition has been criticised by several authorities on various grounds, including being too wide.

The purpose of the studies that have been carried out in this field have been mainly to evolve and develop theories which will help us understand the cognitive processes underlying this language disorder.

While these provide the teacher with a starting point they do requires further explanation. In fact the U.K. report goes on to suggest a number of hypotheses which can be associated with dyslexia which include; Phonological Deficit Hypothesis; Temporal Processing Hypothesis; Skill Automatisation Hypothesis; Woking Memory Hypothesis; Visual Processing Hypothesis; Syndrome Hypothesis ; Intelligence and Cognitive Profiles Hypothesis ; Subtype Hypothesis; Learning Opportunities Hypothesis and Emotional Factors Hypothesis.

These hypotheses each refer to different or overlapping theoretical approaches expounded by academic researchers to explain dyslexia from a causal perspective. The authors of the report suggest that the phonological deficit hypothesis provides the main focus because of the "broad empirical support that it commands" (pg. 44) and because of the impact of phonology on the other hypotheses, particularly temporal order hypothesis, skill automatisation and the syndrome hypothesis. This view

is supported by Snowling (2000) who suggests that although dyslexia can manifest itself in many ways there may be a single cause -a phonological deficit. She asserts this is the 'proximal cause of dyslexia' (An Overview of Current Research in Dyslexia
Gavin Reid, University of Edinburgh ,pg138).

The word dyslexia is derived from the Greek 'dys' (meaning poor or inadequate) and 'lexis' (words or language). Dyslexia is a learning disability characterized by problems in expressive or receptive, oral or written language. Problems may emerge in reading, spelling, writing, speaking, or listening Dyslexia is not a disease; it has no cure. Dyslexia describes a different kind of mind often gifted and productive that learns differently. Dyslexia is not the result of low intelligence. Intelligence is not the problem. An unexpected gap exists between learning aptitude and achievement in school. The problem is not behavioral psychological, motivational or social. It is not a problem of vision; people with dyslexia do not "see backward". Dyslexia result from differences in the structure and function of the brain. People with dyslexia are unique; each having individuals strengths and weakness. Many are creative and have usual talent in various such as Art, Architecture, Athletics, Graphics, Electronics, Mechanics , Drama, Music or Engineering. Dyslexia often show special talent in areas that required visual, Spatial, and motor integration. Their problem in language processing distinguish them as a group. This means that the dyslexia has problems translating language to though(as in listening or reading) or though to language (as in writing or speaking) CEC, April 2001

"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 manifest by variable difficulty with different forms of language, often including, in addition to problems reading, a conspicuous problem with acquiring proficiency in writing and spelling."
(International Dyslexia Association)

The first president of the United States, George Washington, was dyslexic. So was Albert Einstein. Dyslexia, which comes from the Greek meaning "difficulty with words," is a language-based learning disability. It affects the ability of a person — even one with above-average intelligence — to read, write and spell. Dyslexics also may have problems putting things in order, following instructions, and differentiating between left and right.

Thought to be genetic and hereditary, some forms of dyslexia can also be caused when hearing problems at an early age affect a person's language comprehension skills. Doctors still don't know for sure what causes dyslexia, but they say there is a correlation between left-handedness and the learning disability in many families. It is estimated that one in 10 children is dyslexic. And more males are affected than females.

The definition of specific developmental dyslexia accepted by the World Federation of Neurology reflects both the ambiguity and the consensus:

1. A disorder manifested by difficulty in learning to read despite conventional
2. Instruction, adequate intelligence, and socio-cultural opportunity. It is dependent
3. Upon fundamental cognitive disabilities which are frequently of constitutional origin (Critchley, 1970 in Stark et al., 1991).

A working definition is expanded by Stark et al. (1991) to include the following criteria, all of which must be met to allow a diagnosis of dyslexia:

- Reading ability in the first language at least two years below age norms if over 10 years old (less of a discrepancy is permitted for younger children)
- Normal intelligence
- Normal vision and hearing, allowing success in school
- No gross neurological deficits
- No primary emotional disturbance
- Adequate educational opportunity
- Originally good motivation
- Adequate socio-economic and cultural environment

It refers to disturbance in the acquisition of reading and spelling skill. Reading is a complex skill and there may be many reasons why children fail. Converging evidence suggests that developmental dyslexia is a language disorder which critically affects the phonological skills compared to their age matched but also to their reading level matched peers. Phonological processing entails the segmental analysis the words, as well as the metaphonological skill required for analysing the sound structure of speech into the phonemic components represented by the alphabet. In this way it is related to reading development and therefore, reading breakdown.

CHAPTERIZATION:

Chapter one deals with an introduction to the subject where it talks about the learning disability dyslexia. Then there is some discussion on the writing disorder and other problems associated with it. Lastly, this chapter includes the literature review on dyslexia.

Chapter two mentions the methodology employed for conducting research in this field over the years and the research conducted on dyslexia. It also mentions the methodology that has been used to carry out these case studies.

Chapter three deals with the data that were collected during the research and analysis.

Chapter four deals with a brief summary and main findings of the study.

CHAPTER-II

METHODOLGY

CHAPTER-II

METHODOLGY

1. **The conventional approach**

2. Behavioral approach

The conventional approach

Conventional methods for diagnosing dyslexia in the child who is failing in literacy development have remained largely unchanged for the past 30 years. Essentially, these involve establishing that:

- The child's reading and/or spelling age is significantly behind his chronological age (usually 2 or more years behind).
- The child's intelligence is not significantly below average.
- There are no social, emotional or educational causes for the reading difficulty.
- The child is not suffering any sight defect, hearing loss, frank brain damage or serious problems of general health.
- The child exhibits some 'positive signs' of the disorder, such as phonological difficulties or memory problems.

The first three of these points comprise the discrepancy criterion and the exclusionary criterion. Together, these imply that dyslexia can only be identified when there is a significant discrepancy between intelligence and attainment and when all other potential causes of reading disability are excluded. Unfortunately, this has unwittingly had the effect of making dyslexia a condition observed mainly in bright, middle-class children, which has in turn given cause for some professional disparagement of the condition over many years. It also results in diagnosis being delayed until a 'significant' discrepancy between intelligence and attainment can be demonstrated. In some areas, resourcing policy may force educators and psychologist to ignore a child's problem until that child has slipped below some arbitrary threshold (e.g. two years behind expected literacy skill level). Despite the fact that the child may clearly be falling progressively behind, remediation is not offered until the predetermined threshold is exceeded, with the explanation being given to the parents to the effect that their child's difficulties are not serious enough at the moment for help to be provided.

There are many children with reading difficulties who do not satisfy these criteria (e.g. they may also come from disadvantaged home backgrounds and/or have emotional problems) and yet may nevertheless have some brain anomaly. In such cases, however, we would be unable to give a proper diagnosis were we to rely upon traditional diagnostic criteria. It is clear, therefore, that we have to move to a much more satisfactory definition and more reliable diagnostic criteria if we are to be able to identify dyslexics accurately.

It has long been believed that sub-test profiles of individual intelligence scales can reveal the cognitive deficits of dyslexics, although the subject has not been without its controversies. In the so-called 'ACID profile' on the WISC-R (Wechsler Intelligence Scale for Children, Revised) the letters A-C-I-D refer to those sub-tests which are often found to be depressed in the dyslexic, i.e. Arithmetic, Coding, Information and Digit span. However, the ACID profile is not a reliable or unique identifier of dyslexia and recent inquiries have tended to reject it (see the BPS report 'Dyslexia, Literacy and Psychological Assessment', 1999).

The disadvantages of conventional assessment and diagnostic procedures may therefore be summarised as follows:

- They rely on waiting for the child to fail.
- They often come too late in the child's educational career.
- The use of exclusion criteria tends to confine identification artificially to relatively bright, middle-class children.
- They are relatively expensive and time-consuming: it generally takes four or more hours of an educational psychologist's time to carry out and analyse the necessary tests and compile a report.
- They are not widely accessible: the assessment instruments used are mainly restricted psychological tests and there is a general lack of availability of educational psychologists.
- They do not always give detailed information on the child's underlying cognitive difficulties which could help the specialist dyslexia teacher or learning support teacher to formulate an appropriate package of learning activities for the child.
- There are scientific doubts about the accuracy of psychological approaches based on looking for an ACID profile on the WISC.

Behavioural Approach:

It is in very general terms the focus on the patient's behaviour. Detailed description and analysis of the patient's behaviour are produced and the profile of behaviour is then compared to what is identified as normal. Behavioural model is essential to treatment planning for the speech and language therapists. It is not alternative to the medical or conventional approach, as each model focuses on different aspects of the diagnostic-treatment process of language pathology.

According to David Crystal(1984),the study of language pathology involves five independent stages:

1. The description of the linguistic behaviour of the patient, and the corresponding behaviour of the clinician and other who interact with them.
2. The analysis of these descriptions, with a view to demonstrating the systematic nature of the disabilities involved.
3. The classification of the patient behaviour, as a part of the process of differential diagnosis.
4. The assessment of this behaviour, i.e. plotting the kind and degree of the abnormality with reference to normal behaviour.
5. The formulation of hypotheses for the treatment of this behaviour, and evaluating the outcome of all hypotheses as treatment proceeds.(Crystal;1984:pgs 33-35)

In this way of looking at things, a large amount of preparatory work goes into process of treatment. Before treating a patient's linguistic disability, one must have first reasoned out in advance what particular aspect of grammar , pronunciation or vocabulary would be the best to start(Stage5). In order to decide this, a systematic assessment of this disability would have been carried out (Stage4). It needs to be found that how or in what way, which abnormal feature of behaviour differentiate the patient from normal language users, and from other types of patient(Stage3). This means that some kind of pattern, or system, in the abnormal behaviour has been identified (Stage2). It definitely is impossible to work out a system, if the object of study hasn't been described first(Stage1).

The second branch of behavioural approach to language pathology is to examine communicative disabilities from the perspective of psychology. Psychology involves scientific study of human behaviour . Just as observable linguistic behaviour hence allowing speaker's intuitions about their

language as linguistics does not confine itself to the study of valid object for study, so psychology studies invisible mental events as well as overt behaviours.

According to The National Joint Committee on Learning Disabilities, solutions to dyslexia can adhere to the different ways, which can be systematically dealt with. The approaches that can be focused are:

Developmental Approach:

Developmental approach intensifies the normal learning. This is achieved partly by paying more individual attention to the student and partly by slowing down the class so that it is easier for the child to learn. Usually the class consists of children with similar learning disorders.

Corrective Approach:

Corrective approach focuses on strength and abilities of the dyslexic. The problem is in a sense ignored but at the same time, some good is accomplished by giving the child some hope and self esteem.

Remedial Approach:

Remedial approach is similar to developmental approach but dwells more on the deficiencies. This is very hard to do since each dyslexic has a slightly different level of deficiency. To accomplish this approach it would almost require a 1:1 ratio of student to teacher (NJCLD,1988:1)

Aim and Objective:

The aim and objective of the present study is to study the difficulties and the kind of errors made in writing by children aged between 7-15 years, learning two languages (Hindi& English) simultaneously in inclusive school setting. We know the studies for this area can be either cross-linguistic or a longitudinal study. But for each of these studies, it is the detailed case profiles of dyslexic children that will contribute in achieving the theoretical and applicational goals. Since the

cases taken would be from the same social and linguistic background the study would be a cross-sectional one.

Longitudinal studies & Cross-sectional studies:

In this kind of method one, selects a group of children on the basis of some specific criteria, determines the span over which the group will be studied and then samples a particular behaviour at certain times during the study. This is a common method used for determining the natural history of many developmental disorders in childhood. It forms basis of developmental language problems.

If the object of study is to discuss trends in the evolution of behaviour, which can be generalized to other groups of children, the sample size will be important. The criteria on which the children are selected will depend on the question to be answered. If the developmental pattern is being investigated, then right age becomes the most important criteria. Similarly the time span may influence the way of conducting the study. The frequency of testing will depend upon how much is already known about the problem. The advantage of a longitudinal study is that with careful planning, sampling can be spread out or occurs in blocks depending on the researchers' preference. Armed with the information about natural history one is in a better position to consider the appropriate timing of therapy or measure the effect of intervention.

Case descriptions/Profiles:

A case description is just as the name suggests- the description of case. The method of reporting clinical observations is commonly used in many branches of medicine, including child development, clinical genetics and psychiatry. The range of human behavior is very wide and previously unreported phenomena do appear from time to time.

To prepare a case description, the most compact information about the child needs to be available because this method makes no attempts to control variables, it is important to document what all the possible variables in each case might be. Most case descriptions form the initial basis for identifying a condition or behavior, or for describing a possible management strategy so that it can be further defined, evaluated or tested through a more stringent procedure. It is also important to remember the limitations of the method. Firstly, the clarity of the description may be open to a range of interpretations. Secondly, where a response treatment is described, it must be remembered that this has not been validated against controls.

Single case designs:

This is a variation of the case description, and may provide possible alternatives, which include some control of the variable needed to evaluate the effectiveness of language therapy in children. The basic premise underlying the various types in this group is that the subject acts as his or her own control. Thus, the periods of treatment are placed in sequence with periods of non-treatment, and the progress with treatment was significantly better. The advantage of this method is that the number of cases involved at any time can be as small as one. It is possible to use a single case design with the whole group. The major disadvantage of the method is that a number of assessments are required during the course of study to demonstrate and then reconfirm any treatment effect.

Treating a child's problem is more a question of carefully detailing how the conditions unfold and what is the child's response to therapy program. It is therefore necessary to know how severe is the problem and what are the child's strengths and weaknesses. This is the process of assessment and the process of assessment generally starts with recording of a case history. It is important to establish rapport with the child and the family. The best way to do that is to informally interview or rather chat with the whole family

A case history will contain name of the child, a description of child's activity, the size of the family, linguistic background, family history, if any ,history of development of the child, any past medical history (prior to or during pregnancy or after birth), the child's transitions to school, his social relations etc.

During the course of my study, I did not have access to the medical background or history of the child because the school/institute is subject to the confidentiality policy wherein the medical information of a child cannot be revealed to anyone. Therefore, I have mentioned the behavior of the child in school and his relation with friends and teachers.

Random Sample

Children with special learning needs in the age group 7-15 years would be observed. In order to draw a detailed linguistic profile of each parameter, these children would be bi/multilingual speakers. Since

the study is confined to the Delhi region, most of the children would be either Hindi, English or Punjabi speakers.

Select Sample

Further selection would be done in terms of severity of the disability. From the random samples the cases would be reduced to about 6. And these 6 cases would be studied in details. The parameters taken into account for the selection of cases are as follows:

*Age

*Extent of problem/needs

*Written/spoken language need

*Background

History, if any, of

1.Therapeutic, or 2.Medical intervention.

Attend

1.Normal Mainstream schools or 2.Special/Integrated school.

*Language Structure/Functional level

Hypothesis Formulation

By reviewing the data including the child's writing ability, by means of word dictation and sentence dictation as well as his writing done in school , the hypothesis can be formulated. To find out the category of errors the individual formulate in writing, cases in isolation or in clusters would be taken.

The models for conducting assessments in the area of dyslexia haven't stressed much on the writing part. In my study I am trying to look into the writing difficulties for which the data have been collected from the patients' normal school writing curriculum.

The development of Spelling:

Frith's Model

Stage 1 : The Logographic Phase

This phase is characterized by the child's very earliest attempts at spelling. These are very crude attempts at words based on knowledge of letter names or salient visual features. Thus the name 'Elsie' might be spelled 'LC'. Later, the child may begin to use the beginning and end sounds of the words or the silent sounds in the words but typically only one or two letters are used.

Stage 2 : The Alphabetic Phase

This is the phase when children begin to realize that sounds can be represented by letters in a fairly consistent way, i.e they begin to learn the phoneme-grapheme correspondences. In the early alphabetic stage , the phonetic realizations of the spellings are simplified and inaccurate e.g. 'flint' may be spelled as 'fit'. However as the child's segmentation and sequencing skills improve, so their spelling will improve until they are able to spell with complete phonetic accuracy.

Stage 3: The Orthographic Phase

This stage is the stage of automatic spelling where the speller has automatic access to the precise letter-by-letter structure of words. Since phonetic accuracy does not guarantee correct English speech, notably irregular words and homophones. This allows fluent and accurate spelling at most times.

It must be stressed that these stages are not mutually exclusive. The child does not suddenly jump from one stage to another but makes a steady progression. Further, more a child does not need to 'complete' one phase before entering the next. Thus, a child who is predominantly using some

logographic strategies may have areas of orthographic knowledge. This is why perfect example of any one phase of spelling development cannot be seen or achieved.

The links between spelling and reading development:

Frith's models for the normal development of reading and spelling consist of the following 3 phases:

1.Logographic Phase

2. Alphabetic Phase

3.Orthographic Phase

Frith(1985) suggests that the development of reading and spelling phases is not exactly parallel.

Reading	Spelling
Logographic Phase	Logographic Phase
Alphabetic Phase (b)	Alphabetic Phase (a)
Orthographic Phase (a)	Orthographic Phase (b)

The child will enter the alphabetic stage for spelling before he moves into the alphabetic phase for reading. It seems likely that the skills involved and developed for spelling are then translated across to the reading process.

However, the child will move on to the orthographic phase of reading before he does so for spelling. This, again, seems logical as the complexities of English word structure are far easier to decode (recognize) than to encode(reproduce) precisely.

In summary, it would not seem sensible to regard reading and spelling as being one process or even parallel processes. However, the 2 skills are closely interlinked and the development of the other in a fairly predictable way. Thus, the 'normal' child will learn to read and spell fluently and accurately.

Evaluation of written expression

Children's writing always should be evaluated with an awareness of skills that developmentally are appropriate. Evaluation of the child's mastery of the mechanics of written language is more straightforward than assessing quality. When assessing handwriting, consider the child's posture, pencil grip, and paper position along with any issues related to hand dominance of the child. Evaluate the writing for letter formation quality, size, spacing, slant alignment, rate, and overall legibility. Expectations of punctuation and capitalization skill mastery coincide with developmental levels. For example, Greene and Petty have formulated punctuation and capitalization rules that are mastered by each year of elementary school. Measurement of spelling skills should include not only a percentage of errors, but the types of errors made; therefore, a determination can be made if the child has mastered word analysis skills, including phonological techniques.

An assessment of sentence and paragraph formation evaluates adherence to conventions of grammar, logic, and success in communicating ideas. Attempts to evaluate quality of content are less quantifiable; these are aspects of the assessment that often are considered informal Methods such as the scoring of included traits of the writing sample and holistic assessments of the functional success of the writing sample have been used. Mather and Roberts provide a thorough review of informal writing assessment and, also, instruction in written expression.

A significant difficulty in written expression can interact with other aspects of the child's functioning. An ecological approach to assessment is recommended for the design of the most effective treatment approach, which considers children in their environments and evaluates not only written expression issues, but other learning, psychosocial, family, and community issues.

Source: The following tests has been suggested by the 'Online Magazine Offering New Perspectives on Dyslexia' to assess a student for dyslexia.

Area Tested	**Type of Skill Tested**	**Specific Tests Administered**
Reading	Letter and Word Decoding	Woodcock Reading Mastery Test
Words	Real words in lists	Woodcock-Johnson Psychological Battery
	Nonsense words in lists	Weschler Individual Achievement Test
	Knowledge of phonic patterns	The Decoding Skills Test

	Decoding new words in context	The Kaufman Test of Educational Achievement
Pre-Reading Skills	Phoneme Awareness Rhyming, blending, segmenting, identifying syllables and speech sounds	Lindamood Auditory conceptualization Test Rosner Test of Auditory Analysis Skills Torgesen-Bryant Test of Phonological Awareness (TOPA) Test of Phonological Skills (Linguisystems) Yopp-Singer Sound Blending Test
	Alphabet Knowledge	Slingerland Screening Test Emergent Literacy Survey Woodcock Reading Mastery Test
Reading Fluency & Compre-hension	Oral Reading	Gray Oral Reading Test Informal Reading Inventory
	Silent Reading Comprehension	Woodcock Johnson Nelson-Denny Weschsler Individual Achievement Test Kaufman Test of Educational Achievement
Spelling	Writing Words to Dictation	Test of Written Spelling Wide Range Achievement Test Qualitative Inventory of Spelling Development
Oral Language Skills	Listening Comprehension Word knowledge Understanding sentence structure Passage or paragraph understanding	Test of Language Development Test of Adolescent Language Clinical Evaluation of Language Fundamentals
	Expressive Language Speed of naming Sentence production Describing	Test of Written Language Rapid Automatic Naming Weschsler Individual Achievement Test

	Summarizing	
Writing	Composing a Story or Narrative	Test of Written Language Weschsler Individual Achievement Test
	Knowledge of Symbolic Conventions	Test of Written Language Test of Written Expression Woodcock-Johnson
Intellec-tual Ability	Verbal Reasoning	Weschsler Intelligence Scale for children – III Test of Nonverbal Intelligence Woodcock-Johnson Test of Cognitive Abilities
Visual-Motor Skills	Form Copying	Bender Gestalt Test Visual Motor Integration Test
	Writing	Rey Complex Figure Drawing Slingerland Screening Test

CHAPTER-III

CASE STUDIES AND ANALYSIS

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Introduction:

The present study may be called an empirical study and also a descriptive one due to the detailed case profiles. It is not really longitudinal because of the time constraint. However, for every child at least 5-8 recordings were made to see her/his progress. The number of cases I have taken is six. The six case profiles are selected on the basis of these parameters –Age, Extent of problem, Written/Spoken language need, Background & History, if any. Therefore, the study can be considered a cross-sectional one.

These children are undergoing remedial- teaching based on the multi-sensory techniques. This includes reading, writing, listening & comprehension with the help of sight-words& phonics lists. With each child the study is different as no two dyslexics have similar manifestation of the problems. Each one has his/her own kind of problem at the surface level. The subjects are studied and observed for almost 3 months and the frequency of recording was 2 per month. In every sitting their writing & reading improvement is also examined.

The 1st recording of every child and the final recording of the frame child were both considered for comparison with the other children.

Let us now have a look at the cases one by one.

Details of the Case Studies

S. No	Name	Languages	DOB	Dates of Elicitation of data							
1	Sameera	H,E	11.5.90	11.8.04	15.9.04	28.9.04	3.11.04	12.2.05	21.3.05	31.3.05	11.4.05
2	Ishan Gautam	H,E	30.11. 95	5.2.04	23.3. 04	1.4. 04	9.8. 04	18.8. 04	11.10.04	26.10.04	13.12.04
3	Siddharth Nath	H,E	4.7.95	4.11.04	8.11.04	15.11.04	23.11.04	27.11.04			
4	Romita Sharma	H,E	21.9.94	21.12.04	11.1.05	18.1. 05	27.1.05	3.2.05	8.2.05	15.2.05	31.3.05
5	Shristi	H,E	15.8.93	21.3.05	24.3.05	2.4.05	11.4.05	15.4.05	26.4.05		
6	Lakshya	H,E	29.12.93	22.3.05	29.3.05	4.4.05	12.4.05	26.4.05			

* H-Hindi, E-English, DOB –Date of Birth

List of symbols used in the transcription of the Indian English data.

VOWELS	EXAMPLE
i	Beat, meet, eat, three.
ɪ	Bit, shit, tip, fit, it.
a	Aunt, uncle, sun, much.
e	Egg, get, take, name.
o	For, road, though.
ɔ	Four, call, hall, ball,
u	Rude, mood
u:	You, mew, use
æ	Back, man, apple
ə	Mother, over, saw

CON SONANTS	EXAMPLE
p	Paper, pet, shop
b	Boy, black, crab
t	Treat, toy, together
d	Dog, date, dance
k	Kite, cat, clean
g	God, go, forgive
s	Cease, sound
z	Size, rose, close
š	Shoe, shine, bush
ž	Measure, pleasure
f	Rough, enough, for
v	Very, every
n	Name, nine, none
h	House, hinge, hear
r	Regard, rest, rough
l	Lime, lack, cold
ɵ	Three, thank, thin
ð	That, though, there
ŋ	Thing, ring, finger
y	You, mew, lie
w	What, wine

Case Study: I

Age: 15 years
Languages Spoken: Hindi, English

General Observation:

Sameera is a 10th standard student whose level is actually of a 5th standard child. She is a severe dyslexic with both reading and writing problems. She is academically lagging behind her friends. It is known from her teachers that she is made to do a lot of household work by her mother and sister. As a result she is always tired and stressed out in the class. Her writing and reading activities have been observed. The writing and reading responses are represented with the help of table 1 & table 2

In school, Sameera is given remedial teaching classes where they use a sight word list for reading. This is how she spelt and read the words from this list.

Table 1: Reading

Word	Phonemic	Student's response
Often	ofɛn	often
Children	šilren	šilren
Uncle	aŋkl	aŋkel
Idea	aydia	aidæ
Aunt	ant	anti
Watch	wəš	huəš
Indian	ɪndiən	indɛn
Real	riəl	rɛl
Girl	gərl	grəl
Music	mjuzɪk	muzɪk
train	tren	tɛn
Magazine	mægɔzɪns	mægzɪns
Because	bɪkəz	bɪkuz
Grammar	grəmər	grɛmər
Trouble	trəbəl	trəbɪl
Country	kɔntri	kontri

Cough.	kəf	kof
enough	inəf	ɪnof
Though	ðo	ðə
Hinge	hɪnz	henz
Gentle	zentl	zente
Friend	frend	fren
Park	pərk	prək
Believe	bɪliv	bilɪv
None	nan	nan
Since	sɪns	sins
different	dɪfrent	difrent
Mountain	mɒnten	monten
Whole	hol	hol
Stomach	stomək	stom
Pencil	pensɪl	pensɪl
Terrace	tɛræs	tɛrs
Cycle	səykəl	saykel
Again	ɔgen	ɔgen
Raise	rɛz	rɛs
Straight	stret	strɛt
Doctor	doktər	dotər
colour	kələr	klər
Edge	ež	æž
Bridge	briž	brež
Fudge	fəž	fənž
Smudge	sməž	smæž
Citizen	sɪtɪzen	setzen

recent	rɪsent	risent
Parcel	pərsel	pəse
Energy	enərzi	enzi
Angel	ænzel	ænžel
Intelligent	intelɪzent	intəli
Algebra	ælzebra	æzena
Strange	strenz	strɛnz
Necessary	nəsesəri	nesæri
Decent	dɪsent	disent
Except	eksept	eksept
Accept	əksept	æspekt
Medicine	medɪsin	medesin

Table 2: Writing/Spelling

Word	**Student's Response**
Let's	lest
begin	being
cannot	cannowt
mother	marther
great	grat
football	footdoll
colour	clour
pass	paas
trouble	trauble
India	Indea
friends	frinds
ship	sip
leave	leve
around	aeround

paint	point
rudeness	rudeless
emptiness	empteness
loneliness	loneless
sourness	sourless
deafness	deafless
edge	adge
bridge	bredge
hinge	hindge
fudge	fundge
smudge	smadge
citizen	secten
cycle	cicely
recent	recege
parcel	pacese
energy	enger
angel	angl
intelligent	interting
algebra	algena
Strange	strings
necessary	nesscery
decent	dicnty
except	exceep
accept	accpet
medicine	madesene
again	agani
raise	race
straight	straght
doctor	dotor
different	differen
mountain	mountant

whole	hole
stomach	stoumc
pencil	pencile
terrace	terrce
cycle	ciecle
gentle	gente
park	parc
believe	belivie
none	nont
since	sinc
cough	cofe
country	contry
enough	enoght
though	Thore
often	oftern
children	chelder
idea	idae
aunt	untae
uncle	unlac
watch	whach
Indian	Iindan
real	rael
girl	gril
music	musin
train	trian
magazines	Magazines
Delhi	Dileh
Holi	Hoile
Dussehra	Desheara
Diwali	Diwail

Creative Writing:

My Country

The national bird is peacock

The capital of this country

Is Dileh

They are some many festivals is

Hoile, Desheara, Diwail

Taneis, Hockey, Cricket

France,Chaina,U.S.A, Japan

I live near the Tilaknagar .Festivals food are rice Rajma, Dal, Chole

Sentence Formation:

1. Some are *more* dry the clothing
2. The bird are *sing* in the moning
3. I have *different* pens on the table
4. Have you seen a different *picture*
5. Why don't you *change* your dress
6. Can you *spell* the words
7. Air is *alround* the word
8. There are so many *animals*
9. My house is *very* far from my school
10. You can *point* a tree

* The subject was asked to make sentences with the words given in Italics

Copying:

Base ball cards you can buy packs .Of new baseball cards at many stores you can also buy and sell older cards through trading magazines and organizations, and at collectors show or you can form a baseball card club and trade cards with your friends. What should you look for, when trading cards? first you should take into consideration the conditions of the cards whether the card is rare or common, it is worth more if it is in good shape. It is worth less if it is worn and torn.

Table3: Analysis of Reading

Words	Metathesis/Reversal	Substitution	Addition	Deletion

ofɛn			often	
aŋkl			aŋkel	
aidia		aydɛ		
ant			antɪ	
wɔš	huɔš			
ɪndiən		i:ndian		
riəl				rel
gərl	grəl			
myuzɪk		muzik		
tren		trɛn		
bɪkəz		bikuz		
grəmər		gramər		
kəntri		kontri		
kəf		kof		
inəf		Inot		
ðo		do		
hɪnz		hinz		
zentl			zentel	
frɛnd			frenid	
pərk	prak			
mɒnten		monten		
stomək				stom
tɛræs				ters
əgen		egen		
rɛz		res		
stret		strat		
doktər				dot ɔr

kələr				kl ər
ež		æž		
briž		brež		
f əž			fanž	
smǝž		smæž		
sɪtɪzen				setzen
səykəl		saykel		
rɪsent		risent		
pərsel				parse
enərzi		enazi		
ænzel				ændze
intelɪzent				i nter
ælzebra		elzebra		
strenz		strinz		
nəsesəri				nesæri
əksept	ækspet			
medɪsin		mædesen		
mægəzɪns				mægzɪns
dɪfrent			dɪfərent	

Table 4: Analysis of writing

Word	Metathesis/Reversal	Substitution (prefix,suffix,infix)	Deletion	Addition
Great		Grat		
Pass		Pase		
Trouble		Trouble		
Indian		Indea		

Friends			Frinds	
Let's	Lest			
Begin	Being			
Cannot				Cannourt
Mother		Marther		Marther
Football	Footdoll			
Colour			Clour	
Pass		Paas		
Ship			Sip	
Leave			Leve	
Around				Aeround
Paint		Point		
Rudeness		Rudeless		
Emptiness		Empteness		
Loneliness		Loneless		
Sourness		Sourless		
Deafness		Deafless		
Edge		Adge		
Bridge		Beredge		
Hinge				Hindge
Fudge				Fundge
Smudge		Smadge		
Citizen		Secten		
Cycle		Cicely		
Recent		Recegc		
Energy	Enger			
Angel			Angl	
Intelligent		Intersting		
Algebra		Algena		
Strange		Strings		
Necessary	Nesscery			

Decent		Dicnty		
Except				Exceepy
Accept	Accpet			
Medicine		Madesene		
Again	Agani			
Raise		Race(semantic error)		
Straight			Straght	
Doctor			Dotor	
Different			Differen	
Mountain		Mountant		
Whole			Hole(semantic)	
Stomach		Stoumc	Stoumc	Stoumc
Pencil				Pencile
Terrace			Terrce	
Gentle		Gente		
Park		Parc		
Believe	Belivie			
None		Nont		
Since			Sinc	
Cough		Cofed		
Country			Contry	
Enough			Enoght	Enoght
Though			Thore	
Often				Oftern
Children	Chelder	Childer	Childer	
Idea	Idea			
Aunt	Unite			
Uncle	Unlace			
Watch		Whach		
Indian	Indian			
Real	Rael			

Girl	Gril			
Music			Musin	
Train	Trian			
Magazine	Magazines			
Delhi	Dileh			
Holi	Hoile			
Dussehra	Desheara			
Diwali	Diwail			

Description of Reading :

From the above analysis it is found that Sameera is a severe dyslexic who has really severe problems with both reading and writing. It was found that when she was asked to read even a familiar word she would take more than 1 minute to pronounce it. Similarly, when she was given dictation she was not able to perceive the word at once. She takes some time and only when she pronounces herself the word correctly then only can she write the word. She needs lot of efforts to spell a word correctly.

Let us look into the errors she has made while reading.

a. There are many substitutions errors which may be phonetic or semantic for example; she read/ ankl/as/ankel/, /rɛl/as/rel/,/bikəz/as / bikuz/, /kəf/ as /kof/.The words like /kəf/and /ankl/are pronounced by phonetic substitution. The reason may because of the influence of her mother tongue which is Hindi.

b. Another substitution error can be classified as semantic which the learner misunderstands for something else. Like, for eg, /rez/ as /res/, /ež/ as /æz/. It seems, from the type of errors she has made that Sameera has severe problems with alphabet-sound sequencing.

c. Again she has deleted certain alphabets in the final position. Eg /ænzel/as/enze/. She also deletes the vowel 'ə'in / kələr/as/ klər/.

Description of Writing

a) In writing, Sameera has mostly committed errors of reversal for example 1) /childar/. she reverses 're' as 'er' and deleted the 'n'. 2) uncle as unlace. She writes cle as lac and change e to a 3) /idea/ as idae, where she reverse ea into ae 4) girl as gril (ir to ri) 5) real as rael 6) in train she changes 'ai' to ia.

From the above assessment it is observed that she has a tendency to reverse vowel diagraphs and le & re. For example in words like *uncle*, she tends to reverse double consonant after short vowel 'u'. There is a rule in English that after a short vowel there is always double consonant for example in words like –humble, purple, angle. However there are certain exceptions like 'al' 'el' or 'il' after n, m,v,w,r,u. Sameera fails to retrieve this rule in her memory and she goes for exception and tends to reverse /cle/ as /lac/

b) In many cases, it is seen that she tends to write 'r' as 'e' and 'e' as 'r' for example, in *circle* she tend to write ciecle. She also writes 't' for 'e' when it is in the final position. For example, she writes none as nont.

c) In the semantic category, Sameera is seen to be very much influenced by the structure of words; for example, the word *intelligent*, she confuses with *interesting* and represents it as '*interesting*'. Again the word *paint* is represented as *point*. Since only one alphabet or phoneme is different in these 2 words she gets confused and writes 'o' instead of 'a'. This may be because of her visual sequencing which is affected and the shapes and sequences of letters or numbers appear to be changed or reversed. Again, it may be so that some speech sounds are different to make; for example, diagraphs like /sh/,/th/, /ugh/. She changes /sh/to /s/ and /ught/to oght or something else. She also has trouble sequencing numbers or alphabets in the right order.

Another most common reversal is that of 'b'and 'd'. She writes *football* as *footdoll*

Finally, it is observed that Sameera gets on to write the initials of a word very correctly. It is only in the middle of the word that she gets terribly messed up and need a lot of effort to write it correctly. And sometimes she fails completely.

Sameera is a class X student though her level of spelling and reading is very low. I felt very sorry for her. The problem she is suffering from is very traumatic. She speaks very good English and a normal girl who is capable of understanding the subjects (SST, H.Sci) taught. But once she is asked to spell a word or read a word she is terrible, becomes nervous and embarrassed. I feel her short term memory is not active. Her memory span is confusing and covers different dimensions. On the first day of elicitation, she writes *India* as *Indea* and on the next day, she writes the same word as *Iinda.*

Another aspect of writing is creative writing. She is asked to write on 'My country'. From the above paragraphs, it is observed that she is not at all focused. The first sentence she writes is /the national bird is peacock/. Then she writes of the capital

1. Her sequencing of thought is not correct. She is unable to sequence which should come first.

2. In the third sentence, she represents 'there are' as 'they are' and uses 'some' and 'many' which cannot be used together. She wants to write-*there are many festival in India.* And she writes *they are some many festival* .....

She writes the names of the festivals; the spelling of which are erratic, in the same sentence. In the same sentence, itself without any punctuation marks she continues to write the names of games, without any logic and semantics. She writes the names of certain countries like France, China etc. There is complete loss of sequence and she is not able to concentrate on the topic. However she knows that she has to write about the food, the festivals, the games and the capital of the country. But she fails to put them in order and in proper sentence. Her knowledge of word order S-V-O is very limited.

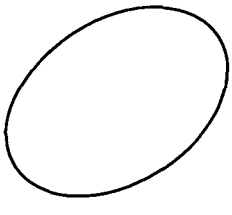
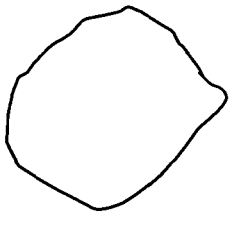
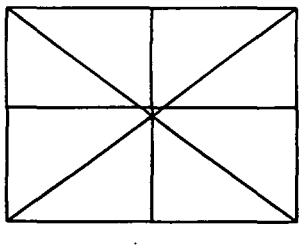
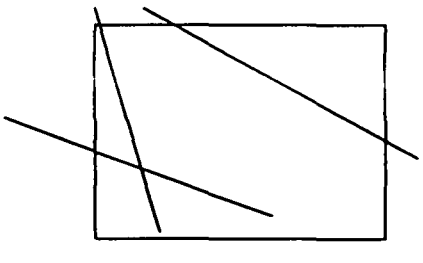
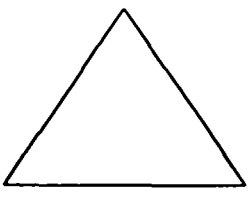
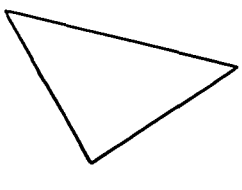
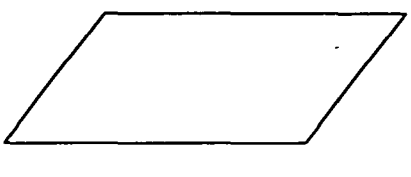
Similarly, in sentence formation we find that her knowledge of grammar is very low and she is unable to bring the meaning of the word with the help of a sentence. For example, the sentences, *Some boys are move dry the clothing. The bird are sing in the morning.* She tends to make questions with the words *change, spell n different.* It is because she hears questions like a) *why don't you change the dress*? b) *Can you spell the words* and c) *Have you seen a different picture* at home or in school. Therefore, she forms these question-sentences correctly. There is this sentence- *there are so many animals*, which is an exclamatory sentence used commonly.

In copying Sameera has scored hundred percent. It may be because she is made to cross-check the paragraph herself.

In sentence -dictation, the errors made seems to be due to lack of proper attention or hearing problem. She writes the sentence 1) *lets begin our lesson* as *lest being are leantes* 2) *Some children play footdoll in the prak.* She writes *footboll* as *footdoll* and *park* as *prak.* The change from 'b' to 'd' may be a semantic error as she thinks of something to play-whether a ball or a doll.

SHAPES

SHAPES (Sameera)

Shapes	Student's Response
	
	
	
	
	
	

Case Study II

Name : ISHAAN GAUTAM

Age: 10 years 2 months

Language: Hindi & English

General Observation:

Ishaan is a fifth standard student and he is studying in a regular school with a special educator. He is quite bright academically. The only problem is a cleft palate problem due to which he cannot read or produce the proper sounds. Ishaan is very active in his extra-curricular activities. He has lot of friends and is a favorite amongst the teachers. However, he is obese and is restrained from having sweets and oily food.

Ishaan was under my observation for almost 3 months. Here is the representation of his reading and writing responses observed in these three months. Ishaan does the same level for all subjects like the normal learners, besides, Mathematics. In Maths, he does remedial work.

Table -5 Reading

Word	**Phonemic**	**Student's response**
Red	red	led
Ran	ræn	læn
Blue	blu	blu
Play	pley	pley
Real	rɛl	lɛl
Were	wer	wel
Car	kar	kal
Came	kem	kem
Must	məst	məst
three	ɵri	ɵili
Tree	tri	tili

Little	litl	litl
Ride	rayd	layd
Soon	su:n	su:n
That	ðæt	ðæt
Want	wɔnt	wɔnt
After	əftər	aftər
Under	andər	əndə
Brown	brəwn	bron
Black	blæk	bæk
Fly	flay	fay
Him	hɪm	hɪm
Green	grin	gin
Back	bæk	bæk
First	fərst	fast
Cold	kold	kold
Of	of	of
Read	rid	rid
Sing	siŋ	siŋ
Walk	wək	wək
Nine	nayn	nayn
Good	gu:d	gud
Thing	θiŋ	θiŋ
Stop	stop	stop

Table -6 Writing:

Word	Student's Response
Cleaner	cleanner
Hungriest	hungrest
Naughtier	naughtir
Treatment	treatwent
Independence	indedependenice
Security	secwrity
disown	disown
Lifestyle	liefestyle
Respecting	respecling
Elders	eldess
Problem	probleem
Have	haeve
Potato	poteto
Wrote	worte
Important	importent
As	is
quick	wick
Wednesday	wendesday
Advice	acvice
Is	si
in	ni
Of	fo
was	saw
Liked	likey
Choice	choece
One	once
Caste	castel
That	tit
Lost	tost

She	sehe
Gets	got
Want	want
Qualities	qualites
Beginning	begning
You	yoy
There	taeir
Ordinary	ordynery

Sentence Formation (copying) :

1. Limbs:-arms and legs

After playing cricket my arms and legs paining.

2. Advance: the enemy army advance towards the castel.

3. Event: Founders Day is a important event in school.

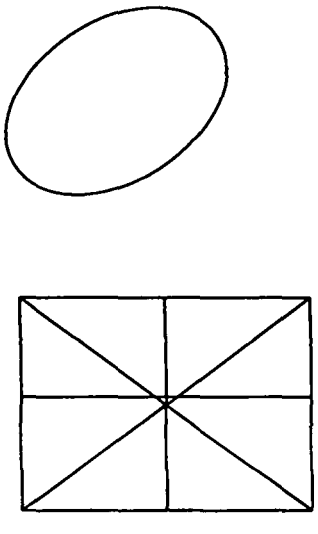
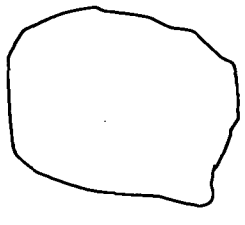
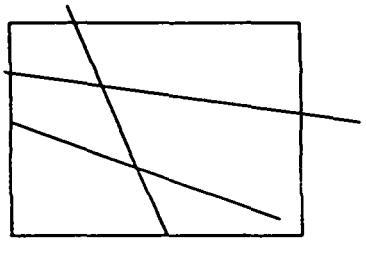
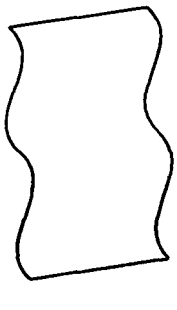
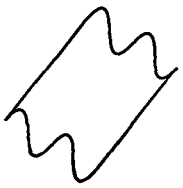
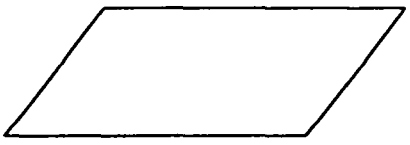
4. His sais that he bought a new car

5. Ishaan asked that mita liked go her school.

SHAPES:

Interestingly, Ishaan reverses geometrical pictures for e.g. : when he was asked to draw these figures, he did this.

SHAPES (Ishaan)

Shapes	Student's Response
	
	
	
	
	
	

Maths

Ishaan has a real problem with Maths. His level is very low. He can't even do simple addition and substraction. He has problems with sequencing. For example, when he was asked to write from 1 to 20, he wrote it as

1,2,3,4,5,6,7,8,6,10,11,_,_,14,15,16,17,18,19,20

Reversals

6 -9

12-21

45-54

38-83

Paragraph:

We sometimes wont to say something. About some particular people their good qualities & bad qualities. Their habits, their Achievements & faliuer's etc. They could be important people or odysesy people. There are also people from the past. Take the story yoy have just studied. How would you describe the king in the tomrind drum? In the beginning he is the handsome young man he loves no one except him.

Table-7 Analysis of Reading:

Words	Reversal	Substitution	Deletion	Addition
red		led		
ræn		læn		
riəl		lɛl		
wer		wel		
kar				kal
ɵri				ɵili
tri				tili
rayd		layd		
wənt		want		
aftɔr		afta		
brəwn		bron		

blæk			bæk	
flay			fay	
grin			gin	

Description of reading:

a) He commits certain errors of substitution due to his cleft palate problem. He tends to reverse 'r' into 'l' in all the three positions – initial, final and medieval. For example, he pronounces /red/ as /led/ and /ræn/ as /læn/ in the initial position. In words with medial 'r' like /əri/, /tri/ he sums to substitute 'r' with 'l' and add a vowel 'i' as /əili/ and /tili/ respectively.

b)The errors of deletion are also found in words like /brawn/ which he reads as /bron/. He deletes the vowel diagraph and substitute it with a vowel 'o'. Again in /grin/ he deletes the 'r' and reads it as /gin/ and in /stop/ he reads it as /top/ deleting the 's'. From the above, it is clear that Ishaan has difficulty in pronouncing the constant clusters and so he deletes one of the consonants from the cluster in each case.

c)Errors of addition are almost none. He represents the word /siŋgl/ as /siŋgel/. This may be the influence of his mother-tongue Hindi or it may be due to the fact that he is not comfortable with cluster as we have discussed in the previous point.

Table-8 Analysis of Writing:

Word	**Metathesis/Reversal**	**Substitution**	**Addition**	**Deletion**
Cleaner			cleanner	
Hungriest				hungrest
Naughtier				naughter
Treatment		treatwent		
Independence			indedependenice	
Security		secwrity		

disown				dison
Lifestyle			liefestyle	
Respecting		respecling		
Elders		eldess		
Problem			probleem	
Have			haeve	
Potato		poteto		
Wrote	worte			
Important		importent		
As		is		
quick		wick		
Wednesday	wendesday			
Advice		acvice		
Is	si			
in	ni			
Of	fo			
was	saw			
Liked		likey		
Choice		choece		
One			once	
Castle	castel			
That				tit
Lost		tost		
She			sehe	
Gets		got		
Wants				want
Qualities				qualites
Beginning				begning
You		yoy		
There				teir
Ordinary		ordynery		

Description of writing:

In writing, he has made all kinds of errors – addition, deletion, substitution and reversion.

a)Firstly let us look into the substitution errors, which are maximum in number. He substitutes 'a' for 'e' and vice versa in many cases. For example in words like *potato*, he writes it as *poteto* and *as* as *es* He has also substituted 'a' with 'o' in words like want and paint. He also writes get as got. From the above examples it may be concluded that Ishaan has problems with the shape of these vowels – 'a' , 'e' and 'o'. He substitutes one for the other. I say only with the shape because during the reading exercise, he had read or pronounced these sounds correctly. He is obviously, then confused with the shapes of these 3 vowels.

b) Secondly, let us consider the reversals. In the word, *treatment* he reverses the 'm' into 'w'. Again in the word *disown*, he reverses the 'n' into 'm'. He thus has confusion with 'w' 'm' and 'n'. There are other reversals as well. He writes '*Wednesday*' as '*wendesday*'. Here he reverses the *dn* cluster into *nd*. Again in advice he reverses the *d* into *b*. In the word *lost* he reverses the 'l' into 't' to make it *tost*. In the word *castle* the cluster '*le*' is reversed as '*el*'.

c) However, there are not much errors of deletion. The vowel between two consonants '*gn*' in beginning is deleted and also the cluster '*nn*' is written as 'n'. Again, in the word *qualities*, the 'i' in 'ies' is deleted. This may be because of his unawareness of the 'ies' rule of plural formation. In words like *naughtier*, he seems to delete the 'i' from 'ier' and in *hungriest* he deletes the 'i' from 'iest'. Therefore, from the observation, it is found Ishaan has difficulty with final 'ie' words.

d) Lastly in addition, he has made quite a few errors in words like *Independence, security, lifestyle, problem, have and she.*

In the word, *Independence* he adds a 'de' after the 'de' and 'i' before final 'ce' the 'de' addition is due to the lack of concentration. And the 'i' addition may be because of his difficulty in cluster production. The word *security* is written as *secuwirty* where he adds the 'w' after 'u'. This may be because of his inability to distinguish the 'u' and 'w' sounds. In the words like *lifestyle, problem, have* and *she,* he tends to add a vowel in each case as *liefestyle, probleem, haeve* and *sehe.* Interestingly, in the first 3 words he adds the vowel 'e' along with the existing vowels. This may be

due to the fact that he finds easier to write an 'e' and whenever, there is another vowel, he adds an 'e' after it.

Description of Sentence formation :

There was not much data on sentence formation, since he is a fifth standard child. He was asked to form a sentence with ' limbs' The meaning of 'limbs' was given as 'arms' and 'legs' .

He represented 'limbs' with the meaning itself. He missed the verb 'are'

Advance – The enemy army advance towards the castle

Ishaan copied this sentence from the black board. He missed the 's' in *enemy's* and copied the spelling of *castle* as *castel.*

By looking his class note books, it may be conjectured that Ishaan often misses out infinitives, prepositions, verbs, etc, while copying. That is, he misses out the function words. This may be because he is unable to grab the syntax or grammar that a normal learner has in his LAD.

In writing, it was found that Ishaan has problems with the shapes of alphabets like a, e, o, w, m, n, etc. Therefore, we tested him on his ability to draw figures.

Description of paragraph writing:

Ishaan was dictated the above paragraph. He listened to it and reproduced it as the above. Here, it is found that he is not at all concerned about the context. He just reproduces whatever he hears, because of his lack of concentration , he fails to write the correct spelling of the words. For example, he writes sometimes as 'some times' want as 'wont' for '*ordinary*' he writes *odysesy*, *there* as *their*. All these errors are semantic errors committed due to lack of contextual understanding.

However there are also certain errors of reversal. He seems to write *failure* as '*faliuers*' . In this word he has reversed 'il' into 'li' and 're' into 'ir'

Description of Shapes and Maths:

He made the parallelogram into a trapezium without any conscious effort. He seems to have no clue about the difference between an oval and a round one. He reverses the patterns making them mirror images. In the last figure- he goes completely hay way and creates a completely different figure. This shows that he has great difficulty copying a figure which has different patterns.

As mentioned earlier Ishaan is weak in Maths and he does remedial work in Maths. When he was asked to write the numbers from 1 to 20 in a sequence, he missed out the numbers 13 & 14.

Again when he was asked to write the missing numbers like –
6 7 8 he made reversals like 8 6 10 he wrote '9' as '6' and 11 21 13 reversed 12 as 21.

He also was confused with tens, hundreds, and ones. Though he was given repeated lessons on ones, tens and hundreds, he seemed to make mistakes for example, if he is asked about 8. Whether it is a ten or a one he will tell one but if you give three options he will say tens.

Thus, Ishaan is a dyslexic with lot of writing reversal problems. He seems to be a surface dyslexic in reading and writing. However he has real problems with figures and Maths.

CASE STUDY -III

NAME: SIDHARTH NATH

AGE:9 YEARS 4 MONTHS

Language spoken:Hindi and English

GENERAL OBSERVATION:

Siddharth like Ishaan, also is a 5th standard child. He is attending a regular school with a special educator. Siddharth is a slow learner. He is physically weak and is inactive in extra- curricular activities. He needs to be pushed to do his class work. i.e. to read and write. Siddharth cannot write for too long. He needs help from the special educator. He has illegible handwriting and takes a long time to complete a task of writing. In reading also he is too slow. He needs at least 1 min. to read a word.

Siddharth seems to be a loner. He is not friendly with other students of his class. His only friends are Ishaan and Karan with whom also he hardly talk. He is somewhat afraid to meet or talk to his other class mates.

Table-9 Reading:

Word	**Transcription**	**Student's Response**
Some	səm	som
Your	yor	yur
Defining	difayniŋ	difayniŋ
Accustomed	ekəstəmd	ekəstomd
Drifted	drɪfted	drifted
That	ðæt	ðæt
School	sku:l	ku:l
Open	əpən	əpən
Put	put	pu:t

Does	d əz.	d əz
Gave	gev	gev
Found	fəwnd	fond
First	fərst	farst
Its	its	its
Cold	kold	kəld
Call	kəl	kol
With	wiɵ	wið
Buy	bay	boy

Table-10 Writing:

WORD	STUDENTS RESPONSE
Defining	Deafining
Accustomed	Ecustombed
Drifted	Driffted
Nocturnal	Nockternal
Aggravate	Adravait
Ceased	Seased
Collapsed	Colapsed
Naughtier	Naughter
Wrote	Worte
Always	Always
That	Tat
Labour	Labor
Obedience	Obedience
Generosity	Genersity
Happiness	Hapiness
Scarcity	Scaricity

Studied	Stuied
Wants	Want

Table-11 Analysis of Reading

During the reading test Siddharth seems to have scored more than 60%. But the amount of time he took to read was really long. It took approximately 1 min per word. The reading errors can be divided as follows:

Word	Metathesis/Reversal	Substitution	Addition	Deletion
s əm		som		
yor		yur		
drɪfted		drifted		
sku:l				ku:l
put			pu:t	
daz		dəz		
fəwnd		fond		
fərst			farst	
its		ɪts		
kəwld		kold		
kəl		kol		
wiɵ		wið		
bay		boy		

Description of Reading:

a) From the above table it is clear that the maximum number of errors is in the category of substitution. Siddharth like Romita seems to delete the vowel diagraphs or diphthongs. He replaces the vowel diagraph with a single vowel, e.g. in words like tɔwld, kɔwld, ɔvar, fɔwnd etc, he replaces the vowel (ə)with (o). Again there are substitutes for long and short vowels. If a word has a long

vowel as in (gu:d) he substitutes it with a shorter (u) as (gud). Again if a word has a short vowel as in (put) he replaces the short 'u' with a longer one. There is an interesting error he made while reading the word (rayt). He read it as (ræt). Because he was unable to process the sound of the diphthong (ay), he replaced it with (æ) though it sounds completely different from the sound (ay). Again he is confused with the sounds 'a' and 'o' and reads 'sam' as 'som'.

In another instance, he reads (ðæt) as *(tæt) which may be due to the fact that his short term memory has not stored the 'ð' sound and he therefore associates it with the orthographic representation and reads 'ð' as 't'. Similarly in the word (wiɵ) he replaces the 'ɵ' with 't'. Since he is unaware of these sounds 'ɵ' and 'ð' he replaces them with 't' as in the orthographic representation consist of 't'

b)There are not much errors of reversal. However, he makes a 'b'-'d' reversal. While reading the word (sabstæns). Again two errors of semantic category can be observed. When he was asked to read (mæn) he read it as (nem) and when he was asked to read (nem), he read it as (mæn). The reason for this may be due to the concept he has of name and man in his mind. As every man is associated with a name, he reverses the two words.

c)The errors of deletion are a few in his case. Siddharth is also unable to produce the sounds of certain consonant blends and he seems to delete the blend. For example, in the words (stop) and (sku:l) he deletes the 'st' and 'sk' and reads them as (top) & (ku:l) respectively. In both cases he has deleted the first 's' from the blends.

d)Siddharth has made only one error of addition. He has read the word (fərst) as (farst) which may be due to his mother tongue which is Hindi. Also there may be another reason, for this i.e. since there are two words which are homophonous but orthographically different – *first & fast.* He gets confused between the two words and reads it as (farst) to let us know that the word he has read is *first.*

Table-12 Analysis of Writing:

Word	Metathesis/Reversal	Substitution	Addition	Deletion
Defining			deafining	
Accustomed		eccustomed		
Drifted			driffted	
Nocturnal			nockturnal	
Aggravate	aggravait			
Ceased		seased		
Collapsed				colapsed
Naughtier				naughter
Wrote	worte			
Always				alway
That				tat
Labour				labor
Obedience				obdience
Generosity				generrity
Happiness				hapiness
Scarcity			scaricity	
Studied				stuied
Wants				want

Description of writing:

a) There were only 2 errors of reversal. He wrote the words 'aggravate' and 'wrote' as 'aggravait' and 'worte'.

b)Errors of substitution are maximum in number. Siddharth has mostly substituted vowel for vowels e.g. in words like 'accustomed', 'subdued', 'proportion', 'wipe', 'played', 'hugged', 'taught', 'caught', etc, he has replaced the 'a' as 'e', 'u', as 'e', 'e', ' o' respectively. Therefore, it is clear that he is not at all familiar with the sounds of all the vowels. In most cases, he seems to reverse 'e' into 'o' in writing.

Substitution of consonants is a few; in words like *threw, were, poured,* he seems to reverse the 'r' into 'n'. This is due to his motor problem. He is unable to make the hand movement which is required to form an 'e' or 'r'. Since 'r' and 'n' are somewhat similar in shape he replaces the 'r' by 'n'.

c)There are certain errors of deletion which are also typical of dyslexics, e.g. Siddhartha deletes the consonant cluster 'll' , 'pp' in the words 'collapsed' and 'happiness'. One interesting error he has made is in the word 'always'. Siddharth deletes the 's' in 'always'. Siddharth deletes the 's' in 'always'. This may be a case of generalization. Since, he has in his mind that final 's' means plural and therefore he cannot have a final 's' unless and until it is a plural. Another error of substitution is that of the word ceased where he replaces the 'c' by's'. He generalizes the sound of 'c' as 'k' so when the teacher pronounced it as /siZd/ he wrote 's' instead of 'c'.

Another word, which shows that Siddharth was totally confused, is the word 'generosity', which he writes as *generrity*. He could right the word till the first 2 syllables but gets confused in the 3rd, 4th and 5th syllables. Since this is a multi syllabic word Siddharth gets confused after the second syllable.

Next he seems to delete vowel diagraphs in words like *naughtier, labour* etc. He writes these as *naughter* and *labor* respectively. Interestingly, he also seems to be deleting the vowel between two consonant blends in words like *obedience* and *prairies*. He replaces these 2 words as *obdience* and *pairies*. In the word 'school' he deletes the's' and writes it as 'chool'. Siddharth is unable to retrieve in his memory three consonants together and deletes the 's' .

Again in the word 'that' he deletes the 'h' which also is due to the difficulty with blends and the sound of 'th' which is 'ð'.

d)Lastly, Siddharth added certain vowels to make a vowel digraph. For e.g. in the word 'defining' he added an 'a' to make it 'deafining' and 'ea' becomes a vowel diagraph or a long vowel. He has generalized since the word is phonetically represented as (difainiŋ) he thought orthographically also it should be a longer vowel and replaced it as 'ea' instead of 'e'.

He also adds a 'f' in the word 'drifted' to make the blend 'ff'. This is also a case of over-regularization. Another example of addition is that of the word 'nocturnal' which he writes as 'nockturnal'. This he must have generalized with words like *rock, mock, clock* etc.

Again, he makes another vowel addition to form a vowel cluster 'ee' in the word 'darkness'as *darkneess.*

Description of Shapes & Maths:

Siddharth as said earlier is a slow- learner. His Maths is of a very lower level. He has difficulties with sequencing, e.g. when he was to unite the numbers from 1 to 50, he left the numbers – 13, 14, 21, 25, 34,36, 43,44. While, he sometimes seems to write '5' as '3', he also reverses 2 and 3 digit numbers. For examples if he is asked to write 24, he will reverse it as 42 or if he is asked to write 103, he will write 301. Even while writing the dates, he reverses the numbers, for example, if the date is – 15.2.05 he will write it as 15.2.50.

Thus Siddharth has difficulty with numbers. However, he does not seem to have much difficulty with figures like circle, triangle, square etc. But when he is given a maze, he is confused like all other students of his age.

Description of Creative Writing:

Siddharth is too slow and always needs the help of a special educator. Therefore, I could not test him on his sentence formation and creative writing. However, I asked him to orally say a few lines on how he spends his Sunday.

At first he was not able to speak a single line. Then I gave him certain points like-

1. In the morning – do your homework
2. In the evening –
3. Play with friends.
4. Watch cartoons, play videogames.

After this he could say the following:-

On Sunday I wake up late in the morning. After waking up I do my homework. In the evening I play with my friends – Ishan and Karan. At night, I watch cartoons and sometimes play videogames.

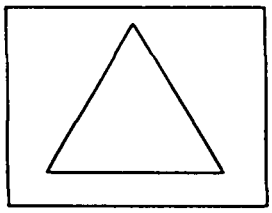
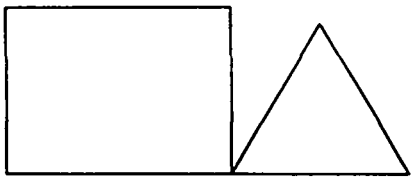
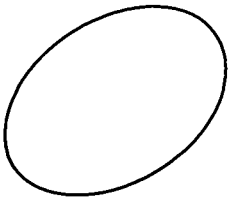
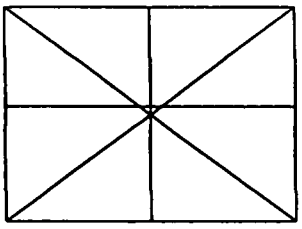
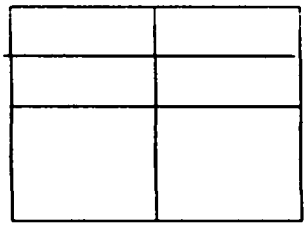
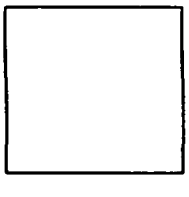
After giving him the idea he was able to speak a few sentences correctly. However, his thought is very limited. Whatever points he got he has mentioned only those. He could not add anything more on his own.

Since I am looking at the writing aspect it seems that Siddharth's nerves are very weak and he is terribly slow in writing. His handwriting cannot be read at a glance. It is almost illegible. Due to his motor problem he tends to reverse certain alphabets as mentioned earlier. Therefore, he is not given much writing task.

This is the reason I was not allowed to take his test on paragraph writing.

SHAPES

SHAPES (Siddharth)

Shapes	Student's Response
	
	
	
	
	
	
	

Case Study-.IV

Name: ROMITA SHARMA

Age: 10 Years 3 Months

Languages Spoken: Hindi &English

General Description

Romita is a 6th standard student attending a regular school. It was just a few months before that her teachers and parents found that she was unable to cope up with the normal school curriculum. She is a slow learner and her results were below average. It was only a few months ago that her parents decided to put her with a special educator in the same school. For the last six years, no one was aware of her problem. However, Romita seems to be improving with the remedial classes. Here I have produced her reading and writing data collected during these 3 months.

Table-13 Reading

Word	Transcription	Student Response
Side	said	said
Run	ran	ran
Help	help	help
Made	med	med
Jump	jəmp	jəmp
See	si	si
two	tu	tu
we	wɪ	wɪ
Where	wer	wer
This	ðis	ðis
Had	hæd	hæd
By	bay	bay
all	əl	əl
When	wen	hwen
There	ðer	ðer
Use	yuz	uz

Find	faynd	faynd
Us	as	as
Car	kar	kər
Ate	et	æt
Came	kem	kem
Eat	it	ɪt
Four	for	fər
Good	gu:d	gud
Like	layk	læk
Must	məst	məts
Our	awr	or
Out	awt	owt
Here	hɛr	hɛr
Saw	sə	si
Open	əpən	əpen
Over	ovar	ovɔr
Found	fəwnd	fond
Green	grin	gɪn
Walk	wək	wək
Nine	nayn	nayn
Some	sam	som
Your	yor	yur
Sleep	slip	sip

Table-14 Writing

Marvelous	marulous
Poisonous	poienous
Continuous	Continous

Gloominess	glumeness
Affected	effected
Recklessness	reclessness
Grammar	grammer
Weak	week
Group	grop
Separate	separte
Beach	beech
Regarded	regaarded
Pigeons	pegions
Engineer	enginior
Danger	dangeour
Advisor	adviser
As	sa
Be	eb
Name	man
Thing	ting
There	here

Table-15 Analysis of Reading

Word	Metathesis	Substitution	Addition	Deletion
wen			hwen	
yuz				uz
kar		kər		
et		æt		
gu:d		gud		
for		fər		
layk		læk		
mast	mats			
awt				ot

hɛr		her		
sə		si		
əpən		open		
ovar				əva
fawnd				fond
grin				gɪn
wɪɵ		wɪð		
nayn				nan
səm		som		
yor		yur		
slip				sip

Description of Reading:

In reading Romita has scored more than 70%. She has mostly made errors of regularization. The errors made by her may be divided into the following.

a) It is very interesting to note that during reading, she has made only one error of reversal. That is the word/ mast/. The consonant cluster 'st' may be out of her memory. Therefore, she has reversed it into 'ts'. It may be due to the generalization that's' comes finally to form plural and so she brought the 's' in the final position.

b) Romita made quite a number of substitution errors. Mostly she has made vowel substitution errors. For example, /et/ is substituted as /æt/. It may be made because of the confusion between the 2 sounds. Again in /gu:d/, she replaced the long vowel 'u:' with a short one. In the words, /for/, /əpən/, /yor/ and /sam/, she has replaced each of the vowels with a different one as /fər/, /open/, /yur/ and /som/. From the above, it is clear that Romita has a great difficulty with perceiving the vowel sounds. However, there are substitution errors other than for vowels. For example in words like /layk/,/fawnd/,/nayn/ etc, she replaced them as /læk/,/ fond/and /nan/ respectively.In these words she has deleted the semi vowels.

c) She made only one error of addition. That is /wen/ .She seems to add the 'h' since she is u n aware of the silent 'h'.

d) Finally the deletion errors Romita made were also very few. As said earlier, she has a tendency to delete the semi vowels and put a vowel instead of the them. Again, she also seems to be deleting certain consonant clusters. For example, she represents the word /grin/ as /gɪn/ and /wi ɵ/ as /wit /. She finds it difficult to produce the sounds /gr/and /ɵ/ so she deletes the sounds to make it comfortable for herself.

After assessing the reading errors let me now come to writing. The spelling errors are taken from the class dictations.

Table-16 Analysis of writing

Word	Metathesis	Substitution	Addition	Deletion
Marvellous		Marvelous		
Poisonous		Poisenous		
Continuous				Continous
Gloominess		Glumeness		
Affected		Effected		
Recklessness				Reclessness
grammar		grammer		
Weak		week		
Group				grop
Separate				Separte
Beach		Beech		
regarded			regaarded	
pigeons		pegions		
engineer		enginior		
danger			dangeour	
advisor		adviser		
As	sa			

be	eb			
Name	man			
Thing				ting
There				here

Description of writing:

The errors of spelling can be divided as-

a) Errors of reversal made by Romita are quite interesting. She seems to be reversing the little words as they are called. These words are-*as, be, is,* which she writes as, *sa, eb, si,* respectively .

Again, another error she has made is while writing the word 'name' which she has written as 'man'. This might be a semantic error, because she has in her short term memory that every man has a name and so she writes 'man' instead of 'name'.

b) Just like reading, in writing also she has made the maximum number of errors of substitution. In the word *'poisonous'* she replaces the 'o' by 'e' between 's' and 'n'. In the word, *gloominess* she deletes the vowel cluster 'oo'and replaces it by 'u' and replaces the 'j' between m & n by 'e' . Again in words like, *grammar, affected, weak, beach* she replaces the 'a' by 'e' as *grammer, effected, beech, week.*

The replacement of the word *'weak'* as *'week'* may also be due to her inability to understand the difference in meaning of the two words. Since both of these words are homophonous, she commits an error of semantic categorization. The same may be said of the words *beach* and *beech*

There are other errors of substitution also, for example, in the words *pigeon, engineer and advisor.* The vowel sounds that are included to form the first word is quite confusing. Therefore she substitutes the 'i' between 'p' & 'g' as 'e' and 'eo' as 'io'. In the first word she replaced the 'ee' cluster as 'io'. Lastly, in the third word, she replaces the 'o' with 'e'.

Once more it is proved that Romita has a real problem in retrieving the vowel sounds.

c) There are only two errors of addition in the words, *regarded* and *danger.* She adds an 'a' along with the 'a' between g & r making it a vowel cluster. Again the word *danger* is written as dangeour instead of 'er' he adds 'eour' . She adds 'ou' which may be due to her confusion on when to add 'ou'

and when to add 'e' . She is aware that there are words which are suffixed by our, ous, but she is not clear about the rules. Therefore, she tries to generalize between *dangerous* and *danger.*

d) However, errors of deletion are quite a few. She seems to delete the consonant cluster 'le' in *marvellous* and replaced it with a single 'l' Again, she deletes the 'u' in *continuous* and writes it as *continous.* She generalizes the sound 'k' with the consonant 'c' and so she does not find it necessary to write the blend 'ck' in *recklessness* and replaced it as *reclessness.* In words like *group*, *separate*, etc she deletes the vowel 'u' from 'ou' and 'a' between 'r' & 't' in *separate.*

Interestingly, she writes *thing & there* as *ting* and *tere.* This may be due to her inability to conceive the two sounds of the same blend 'th' while one sounds θ and the sound ð.

Thus, from both reading and writing we find that Romita, like other dyslexics is unable to conceive the vowel sounds and has difficulty producing the consonant blends.

Description of Sentence formation:

1. Question- I had a *question.* In exam I attempted difficult *questions.*
2. Through- I looked *through* the window
3. Beautiful- My friend have a *beautiful* doll
4. Although- *Although* you can learn from the copy
5. Another- I had *another* photocopy of that book
6. Anxious-When I got good marks in Maths. I was very *anxious.*
7. Sure-I am *sure* you won the race.

By looking at her sentence formation capacity, it is found that Romita is well-organsied than most dyslexics of her age. In the first sentence, she was to make a sentence with the word 'question'. Since she was well aware of the meaning of this word, she made two sentences-

a) I had a question

b) In exams I attempted difficult questions

Both the sentences are correct grammatically. However, sentence a) does not complete the sense

The second word given to her was 'through'. She made the sentence – I looked through the window. From her sentence, we find that she knows the meaning of the word but somehow fails to complete the meaning of the sentence.

The third word given to her was 'beautiful' She made the sentence- My friend have a beautiful doll. Here, she makes a complete sentence but she uses 'have' with a 3rd person singular subject. This

shows she does not possess much knowledge of the rules of grammar. To prove this point, another example can be drawn from the sentence- I has another photocopy of that book.

Here she uses 'has' with 1st person singular subject which is against the rules.

Again, she was asked to make a sentence with the word 'although' which is a conjunction and is used to join sentence. She made the sentence- Although you can learn from the copy

From this sentence it is clear that Romita is not aware that 'although' is a conjunction and the sentence she has formed is not complete. It needs another clause to be complete in its meaning.

The sixth sentence she made was with the word 'anxious'. The sentence she made was "when I got good marks in Maths, I was very anxious"

Though the sentence seems to be correct grammatically, it seems to be somewhat incorrect semantically. The context for which she is using anxious is not appropriate.

The last word she was given was 'sure'. She made the sentence- 'I am sure you won the case'. Here, she is semantically correct in expression. But the grammar is not correct. Once she uses simple present and then she uses simple past. It would have been either –

I am sure you will win the race or

I was sure you would win the race

The activity which happened after should be in future perfect tense and which occurred before can be in the simple present or past.

Thus, as a whole Romita is not a severe dyslexic. She seems to be a surface dyslexic and a slow learner.

Description of Creative writing:

Romita's creative activity skills were also tested. She was given a topic and the main points which the topic should include were also given. Here, the paragraph written by Romita is represented

Republic Day

Republic day is celebrated on 26th January every year. It is one of the national days and it is celebrated with bomb and grandeur and lots of traditional functions are heald.

A March take place. March past in which Neavy, Army, Airforce take place. The children and students also take part in it. Different dances of state and songs was also shown. It starts from Vijay Chowk and finishes at Rajghat.

Romita has written a very good paragraph indeed. She has quite nicely organized the points she was given. However, there are unconscious mistakes here and there. Foe example, she has reversed the 'p's in the word *pomp* into 'b's and made it *bomb.* She has made some spelling mistakes like *heald* for *held, Neavy* for *Navy, was* for *were.* She don't have much problems with her thinking and memory .She has a few problems with spellings and mastering the knowledge of grammar.

CASE STUDY –V

Name: SHRISTI

Age: 11 Years 7 Months

Languages Spoken: Hindi & English

General Observation:

Shristi is a smart and cheerful girl and studies in class VI at a special school. She is very interactive and has lots of friends. Apart from her problems of reading and writing , she has no other problem. She can comprehend and learn any other from of teaching. Shristi is undergoing remedial teaching from the age of seven. As a result, she has lot of improvement in her academics. I have been observing her for three months now. However, no noticeable difference in improvement is recorded in these 3 months as the time limit is too less. Let us now look at the reading and writing tests she went through. She was asked to read the S- words list D and the errors of writing were taken from her class-work in school.

Table-17 Reading:

Words	Transcription	Student Response
Open	/əpən/	/əpən/
over	/ovar/	/əvar/
put	/put/	/put/
does	/daz/	/du/
gave	/gev/	/gɪv/
found	/fawnd/	/faynd/

first	/fərst/	/farst/
fast	/fast/	/fəst/
Don't	/don't/	/du nət/
cold	/kold/	/kəld/
call	/kəl/	/kol/
buy	/bay/	/bay/
with	/wɪɵ/	/wɪð/
best	/best/	/best/
goes	/goz/	/go/
green	/grin/	/gin/
its	/its/	/it is/
made	/med/	/med/
off	/of/	/əf/
pull	/pul/	/pul/
Read	/rid/	/rɪd/
Sing	/siŋ/	/siŋ/
walk	/wək/	/wək/
Day	/de/	/de/
Nine	/nayn/	/nayn/
Ten	/ten/	/ten/
Man	/mæn/	/mæn/
Name	/nem/	/mæn/
Good	/gu:d/	/gud/
Thing	/ɵiŋ/	/ɵiŋ/
Most	/most/	/mast/
Back	/bæk/	/bæk/
Sleep	/slip/	/slɪp/
Told	/told/	/tell/
their	/ðer/	/ðer/

Right	/rayt/	/rayt/ .
Take	/tek/	/tek/
Stop	/stop/	/stɔp/
Some	/sam/	/sam/
Your	/yor/	/yur/

Shristi's writing and spelling errors as collected from her class-work are given in the following table:

Table-18 Writing

WORD	STUDENT'S RESPONSE
Shape	Shapee
Towel	Towle
Brown	Broun
Crowded	Cround
Clown	Clound
Crown	Cround
Outside	Ouside
Points	Poines
Spoilt	Spoinlt
Need	Nead
Very	Wery
Laundry	Londry
Says	Say
August	Augst
Laundry	Laundy
Because	Becaune
Cause	Cauce
Pause	Paune
Saucer	Sancer
Fault	Bault
Pin	pine

Table-19 Analysis of Reading:

Word	Metathesis	Substitution	Addition	Deletion
/ovar/		/əvar/		
/daz/		/du/		
/gev/		/gɪv/		
/fawnd/		/faynd/		
/don't/			/du not/	
/kold/		/kəld/		
/goz/				/go/
/grin/				/gin/
/of/		/əf/		
/its/			/it iz/	
/rid/		/rɪd/		
/nem/	/mæn/			
/gu:d/		/gud/		
/most/		/mast/		
/slip/		/slɪp/		
/told/		/tel/		
/yor/		/yur/		

Description of Reading:

Shrishti has scored above 80% in reading unlike other dyslexics she has committed the least number of errors of reversal. The type of errors can be divided as-

a) She has made only one error of reversal, which is more of a semantic error. When she was asked to read the word (nem) immediately after (mæn), she reads it as (mæn). This may be due to the relation between /mæn/ and /nem/. Every man has a name and so she generalized that both /nem/ and /mæn/ can be read similarly.

b) She has made most errors, which can be called semantic errors instead of substitution. For example, when she was asked to read the words – *daz, gev, fawnd,* and told, she represented them with their different grammatical roots as- *du, giv, faynd* and *tel.* This shows that Shristi is not quite aware of the different forms of the same word and is unable to perceive the new forms of these words. She therefore, represents them as the root form of the word.

Again there are other errors of substitution – as well. There are substitution of long vowel with a shorter one in words like- *grid, rid, slip* etc. There are also examples of replacing a vowel with another one. For example, the words like *kold, of,* wɔk, and *yor* etc. are replaced as *kɔld, ɔf, wak, and yur.* The typical characteristic of a dyslexic seems to be having problems with vowel identification. Therefore, they tend to replace vowel diagraphs with single vowel and substitute vowels for vowels. Shristi is also a typical dyslexic according to this characteristic of hers.

c) She has made very few errors of deletion; for example, in words grin, goz, she deletes the 'r' and reads it as *gin,* since *gin* is a series of reading books which they are made to read, she has it in her short term memory and therefore, she reads *grin* as *gin.* Again, the 'z' is deleted in the word goz because she is not aware of this form i.e. the 3rd person singular form of the word go.

d) Lastly, the errors of addition are also a few. She read the words *ovar, don't* and *its* as əvar, *du not,* and *it iz.* In the word *ovar,* the 'r' is silent but Shristi has in mind the orthographic memory of this word, so she pronounces the silent 'r' also. Again, the words like don't and it's are the short forms of *du not* and *it iz.* And Shristi has the latter in her memory so she reads them as *du not* and *it iz.* It also may be due to the fact that she has difficulty in pronouncing consonants blends – *don't* and *it's,* so she finds the easy way out.

Table-20 Analysis of Spelling errors:

WORD	Metathesis/ reversal	Substitution	Addition	deletion
Shape			Shapee	
Towel	Towle			
Brown		Broun		
Crowded		Cround		
Clown		Clound		
Crown		Cround		
Outside				Ouside
Points		Poines		
Spoilt			Spoinlt	
Need		Nead		
Very		Wery		
Laundry				Londry
Says				Say
August				Augst
Laundry				Laundy
Because		Becaune		
Cause		Cauce		
Pause		Paune		
Saucer		Sancer		
Fault	Bault			
Pin			pine	

Description of Spelling Errors:

Shristi has made the highest number of substitution errors. The type of errors she has made can be discussed as follows:

a) Shristi has made certain interesting reversal errors. One is the word *towel*, which she writes as *towle*, she has reversed the 'el' into 'le'. However she has made one error of blend reversal.

Other reversal errors are of alphabets. In words like *crowded, crown, clown* she has reversed the 'w' as 'n'. Again, in the word *because*, she has reversed the's' as 'n' and in the word 'saucer' she has reversed the 'u' as 'n'. From the above examples, we can conjecture that Shristi has problems in writing the alphabets u, w, and s and so she tends to represent all of these with 'n' which she finds easier and also similar to the above. Again, there is an interesting example of 'f' and 'b' reversal. She has replaced the 'f' in the word 'fault' as 'bault'. Shristi seems to be confused with the sounds as well as the shapes of the consonants 'f' and 'b'. So, she tends to replace one for the other.

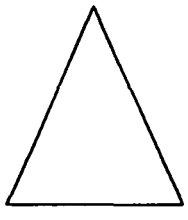
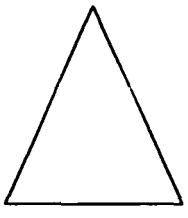
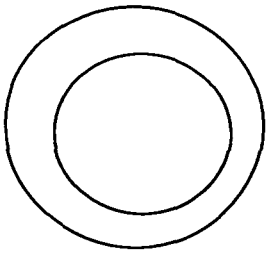
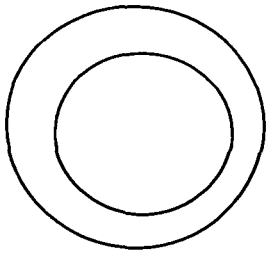
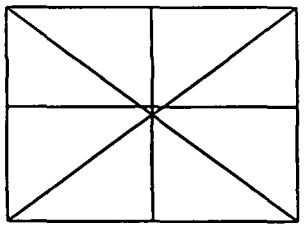
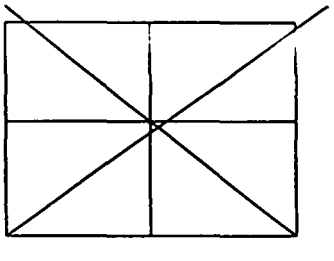
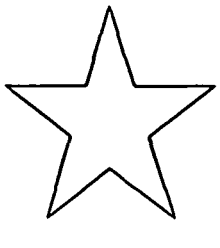
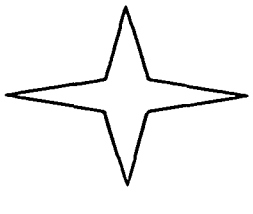
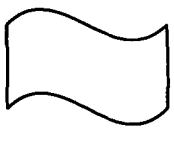
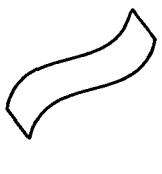
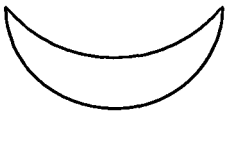
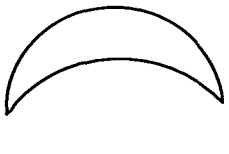
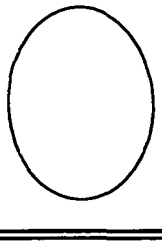
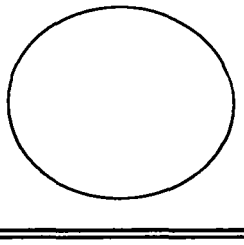
b) Secondly, in errors of substitution she tends to replace one vowel for another for example; in words like 'need', 'pause' etc, she writes them as 'nead' and 'pease'. Again she replaces the word 'brown' as 'broun', i.e; she substitutes 'w' as 'u'. This may be because of the confusion between the 2 sounds 'w' and 'u'. Interestingly enough, she replaces the't' in the word 'points' with 'o' which orthographically becomes 'poinos'. There is no possible reason as to why she replaced the consonant with a vowel. The only reason can be that, due to her failure to listen the proper word, she could not comprehend the word. Another error of substitution is of the word *very* as *wery* which is a common error even by normal learners due to the influence of the MT.

c) There are a few errors of addition which can be taken into account. For example, words like 'shape' and 'pin', she adds an 'e' in the final position. However, the addition in the former may be due to her problem in controlling the shape of 'e' and the addition of 'e' in the latter may be due to her failure to perceive the sounds /pin/ and /pain/. She seems to be taking both the orthographic representations as one and so adds an 'e' after 'pin'. Another error which surprised me was the addition of 'n' in the word *spoilt*. She wrote *spoilt* as 'spoinlt' , which may be due to her lack of concentration.

d) There are also a few errors of deletion. In words like 'laundry', 'August' she deletes the 'u' and writes them as 'landry' and 'Augst'. This is because she is confused with the sounds 'u' can make. Again in the word *says*, she deletes the final 's'. This is due to the fact that she has no idea of the different forms of *say* particularly this form, i.e. the 3rd person singular form. In the word, 'outside', she deletes the 't' representing it as *ouside*. Since this word is a two syllable word, she is unable to divide the syllables and removes the 't' thinking 'ts' would be a blend.

SHAPES:

SHAPES (Shristi)

Shapes	Student's Response
	
	
	
	
	
	
	

Description of Maths & Shapes :

In sequencing Shristi seemed to have no problems at all. However she sometimes reverses numbers like- 24 as 42, 12 as 21, 35 as 53, etc. She doesn't have much problems with shapes.

Description of Sentence Formation:

1. my uncle was *author*.
2. cats claws are *wery* sharp.
3. laundry have lost *towel*, it's not my fault.

She has missed the article in the first sentence. In the second, she misses the apostrophe before 's' and writes *very* as *wery*. Otherwise both the sentences are semantically correct. In the third sentence, she has used 'have' with 3rd Psg - otherwise the sentence is able to bring out the meaning of the word. However, she fails to use capital letters in the beginning of the sentence and also misses the punctuation marks. Shristi is quite good at her creative thinking.

CASE STUDY -VI

NAME: LAKSHYA

Age: 11 YEARS 8 MONTHS

Language Known: Hindi & English

General observation: Lakshya is also a sixth standard child attending a special school. Lakshya is also a very smart and energetic boy. He likes to play and fight like any other normal kid of his age. He is not under any medication. His capability of comprehending and producing is very normal unless he is asked to read or write. However, his problem is not so severe, he has been undergoing remedial teaching from the last 3 years. He was earlier in a regular school. Lakshya does not have problems with Maths and shapes of figures. However, he is not able to do the normal class VI Maths but a lower level. He does not have problems with sequencing unlike other dyslexics. Let us now look at the reading and writing tests and his responses to them.

Table -21 Reading:

WORD	TRANSCRIPTION	STUDENT'S RESPONSE
Open	/əpən/	/əpen/
over	/ovar/	/əvar/
put	/put/	/pu:t/
does	/daz/	/das/
gave	/gev/	/gev/
found	/fawnd/	/fond/
first	/fərst/	/farst/
fast	/fast/	/fəst/
Don't	/don't/	/dən't/
cold	/kold/	/kold/
call	/kəl/	/kɔ l/
buy	/bay/	/boy/

with	/wɪɵ/	/wɪɵ/
best	/best/	/bɪst/
goes	/goz/	/gəz/
green	/grin/	/grin/
its	/its/	/ist /
made	/med/	/med/
off	/of/	/f/or
pull	/pul/	/pul/
Read	/rid/	/rɪd/
Sing	/siŋ/	/siŋ/
walk	/wək/	/wak/
Day	/de/	/de/
Nine	/nayn/	/nəyn/
Ten	/ten/	/ten/
Man	/mæn/	/men/
Name	/nem/	/men/
Good	/gu:d/	/god/
Thing	/ɵiŋ/	/ɵiŋ/
Most	/most/	/most/
Back	/bæk/	/bæk/
Sleep	/slip/	/sɪp/
Told	/told/	/tol/
their	/ðer/	/ðer/
Right	/rayt/	/rayt/
Take	/tek/	/tek/
Stop	/stop/	/stop/
Some	/sam/	/sam/
Your	/yor/	/yu/

Table -22 Writing:

Word	Student's Response
Rode	Road
Rod	Rode
Bit	Bite
Rob	Robe
Eight	High
Boiling	Boring
Annoyed	Annoyed
Ointment	Oinent
Imagine	Imegin
Who	How
Both	Bought
avoid	ovoid
rejoiced	rejoyed
pull	puel
coil	cole
poison	pouson
own	on
pretty	preety
upon	opon
were	war
sparkle	sparekle
saw	saa
interest	insterst
meant	ment
hard	heart
here	hear
pin	pine

Table -23 Analysis of Reading :

Word	Metathesis/Reversal	Substitution	Addition	Deletion
/əpən/		/əpen/		
/ovar/				/ɔva/
/put/		/pu:t/		
/daz/		/das/		
/fawnd/				/fond/
/fərst/		/farst/		
/fast/			/farst/	
/kold/				/kol/
/kəl/		/kol/		
/bay/		/boy/		
/wɪɵ/		/wɪɵ/		
/best/		/bɪst/		
/its/	/ist /			
of/			/for/	
/rid/		/rɪd/		
/wək/		/wak/		
/dey/				'de'
/naɪn/		/nayn/		
/mæn/		/men/		
/neIm/	/men/			
/gu:d/		/god/		
/most/	/mast/			
/slip/				/sɪp/
/told/				/tol/
/ðer/		/ðɛr/		

/yor/	-			/yu/

Description of Reading:

Lakshya's reading test analysis shows that he has problems with vowels and vowel diagraphs for which he has committed mostly errors of substitution and deletion.

a) The errors of substitution are the maximum. In words like/ əpən/, /kəl/, /bay/, /best/, /wək/, /gu:d/, & /ðer/, he has substituted the vowels with a different one like /open/, /kol/, /boy/, /bɛst/, /wak/, /god/, and /ðɛr/. He has replaced the ' ə', ay, e, u: and e with o, oy, ɛ, and ɛ respectively. This substitution errors are due to his problem with the recognition of the sounds of the above vowels. However, the word *gu:d* is read as *god*. It also may be a semantic error. Since God is good, he replaces *gu:d* as *god*. In the words,/ *put/*,and */rid/*. He replaces the u, and i as u:, and ɪ. That is he has replaced the shorter vowels with a longer one and longer one with a shorter vowel. In words like /daz/, /wiɵ/, he replaces the final consonants 'z' and 'ɵ' with 's' and 't' respectively. Here also, he is confused with the sounds 'z' and 'ɵ' and goes by the orthographic representation.

b) The errors of deletion are also quite a few. He tends to delete the semi vowel and replace them by vowels. For example, in words like /ovar/, /fawnd/, /kold/, /dey/, /most/, he replaces the vowels with ə, o, and a respectively. Again, Lakshya also seems to have difficulty with consonant blends. As a result, to make it easier he has deleted one consonant from the blends. For example, the words /told/, /slip/ and /stop/; he reads them as /tol/,/sip/ and/top/ respectively.

c) He has made mainly reversal errors based on semanticity. He has reversed the word /nem/ as /mæn/. This is due to the fact that he associates man with a name and vice-versa. So he replaces one for the other.

Lakshya tends to have problems with little words. He has reversed them completely; for example, he has reversed the words /its/, /of/ as /ist/ and /for/.

d) Lastly, the errors of addition are only two. He has added 'r' which is silent in fast and has read it as farst. He read the word mæn as meyn, where he has added a semi vowel instead of a single vowel.

Thus, Lakshya's reading ability is quite good and has scored above 60%. He has not made errors of all kinds but selective errors of substitution and deletion.

Let us now look into the spelling errors he has made. These spellings were taken from his test of dictation done in the class.

Table -24 Analysis of Spelling errors:

Word	Metathesis/Reversal	Substitution	Addition	Deletion
Rode		Road		
Rod			Rode	
Bit			Bite	
Rob			Robe	
Eight	High			
Boiling		Boring		
Annoyed				Anoyed
Ointment				Oinent
Imagine		Imegin		
Who	How			
Both		Bought		
avoid		ovoid		
rejoiced				rejoyed
pull		puel		
coil	cole			
poison		pouson		
own				on
pretty		preety		

upon		opon		
were				war
sparkle			sparekle	
saw		saa		
interest	insterst			
meant				ment
hard		heart		
here	hear			
pin			pine	

Description of Spelling Errors:

From the above table, it is understood that Lakshya has difficulty in coordinating the alphabet – sound relationship. Therefore, most of his mistakes are due to his lack of understanding that homophones can have same sound, but different orthographic representation. His type of errors can however, be divided as –

a) He has made quite a few errors of reversal. Lakshya wrote *eight* as *high*. This was not dictation but he was asked to arrange the jumbled letters 'ghiet' to form the correct word. And he wrote this as 'high'. The reason for this may be that since 'gh' was given at first, he thought of the word 'high' which has 'gh' at the last. Again another error of reversal is of the word 'who', which he has written as *how*. Since both of these are question words, he replaced one for the other.

When he was asked to write the word 'both' he wrote 'bought'. This was because he could not distinguish between the sounds 'o' and also 'ɔ' and 't'. Since the orthographic representation of the 2 words are same initially, he represents one for the other. He also has replaced 'coil' for 'cole', i.e. he has reversed the 'il' as 'le'. The reason again may be due to his inability to distinguish the 'oi' and 'aw' sounds. Lakshya wrote the word *interest* as *intrest*. He may have difficulty with words having more than one syllable. So he adds a's' and decreases the number of syllables unconsciously though. Lastly, he has represented the word *here* as *hear*. Since the pronounciation of the 2 words are similar, he represented one for the other. This can be categorized as a semantic error.

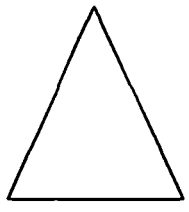
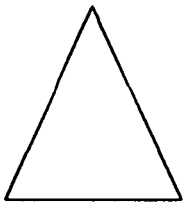
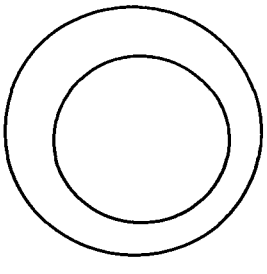
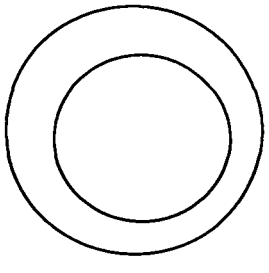
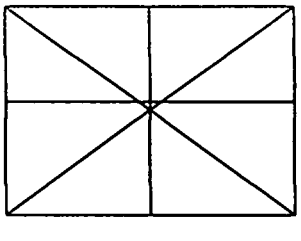
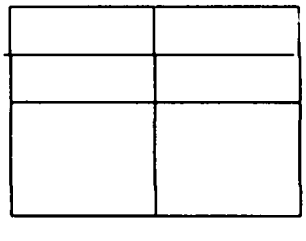
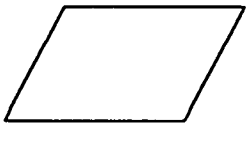
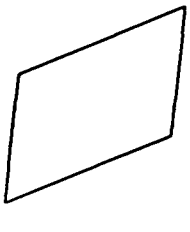
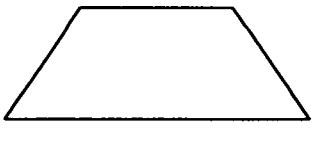
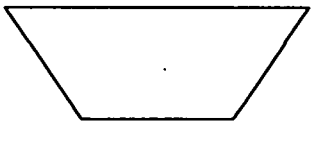
b) The errors of substitution are many. In words like *imagine, avoid, poison* and *upon*. He has replaced them with a new vowel as *imegin, ovoid, pouson* and *opon*. Thus it is clear that Lakshya like other dyslexics has difficulty in perceiving the sounds of different vowels. Lakshya seems to write 'boiling' as 'boring'. This also may be considered a semantic error. Because he was bored of what he was doing, he wrote 'boring' instead of 'boiling' subconsciously. In words like *pull* and *pretty*, he replaced the consonant clusters with vowel and one consonant as *puel* and *preety*. He wrote *rejoiced* as *rejoyed* which means he took and *joiced* as *joyed*, that is from the word 'joy' which was known to him. Again, he wrote the word *saw* as *saa* since the letter 'w' sounds as a vowel, he represents it with 'a' vowel.

c) It is seen that in errors of addition, Lakshya tends to add the magic 'e' in most words. For example, words like Rod, Bit, rob and pin, have a short vowel. Lakshya adds an 'e' to each of these words to form longer vowel words. This may be due to the fact that he recently was taught the magic 'e' rule and whatever word he was given he added an 'e' because he was getting used to this rule. There is also another example of the word 'sparkle' which he writes as 'sparekle'. Here also he adds an 'e'. Again he wrote the word 'hard' as 'heart'. This also is a semantic error. He was unable to distinguish the sounds /ha:d/ and/ ha:t/.

d) In errors of deletion, Lakshya sometimes tends to delete one consonant from a cluster; for example, he represents the word 'annoyed' as *annoyed*. The word *ointment* is represented as *oinent*. He has deleted the 'tm'. He must have difficulty with the consonant blends 'ntm' as he could not break the word as *oint* and *ment*. So he deletes the 'tm'. Again, he represents the word 'own' as 'on'. Here since he was unable to hear and distinguish the 'w' sound he deletes it naturally and writes 'on' instead. The word *were* is written as *war*. It is clear that he has great difficulty with sound-pattern relationship. And therefore represents *were* as *war*. This also shows that he is not aware of the function words.

SHAPES

SHAPES (Lakshya)

Shapes	Student's Response
	
	
	
	
	
	
	

Description of Maths & Shapes:

In sequencing from 1to 100, he left out 14, 21, 34, 35, 42, 45, 80 – 88, 97, 98.

Again he reversed the numbers 14, 24, 32, 62, 95, as 41, 42, 23, 26, and 59

He reverses the patterns and deforms the oval.

Description of Sentence Formation:

He made sentences for the following words as-

Draw – I draw a driwing.

Drink- I drink a water.

Eight – I have a eight students.

From the above sentences, he has made it clear that his power of imagination is very limited. And he has a tendency to add articles even if it is not necessary. In the last sentence, the meaning is lost.

Following are the calculated number of Errors in Reading and Spelling:

Table-25: Reading

Cases	No of errors of Metathesis/Reversal	No of errors of Substitution	No of errors of Addition	No of errors of Deletion
1	6	19	8	10
2	2	7	3	3
3	0	9	3	1
4	1	6	2	7
5	1	10	3	3
6	4	14	1	7
Total	14	65	20	31

Table-26: Spelling

Cases	No of errors of Metathesis/Reversal	No of errors of Substitution	No of errors of Addition	No of errors of Deletion
1	17	32	17	10
2	7	15	7	8
3	2	2	4	10
4	3	10	2	6
5	2	11	3	5
6	5	11	5	6
Total	36	89	48	45

Table-27: Total Number of Errors

S. No.	Total Number of Reading errors	Total Number of Writing errors
1	14	36
2	65	89
3	20	48
4	31	45
Total	**130**	**190**

Table-28 : Total Number of Reading ad Spelling errors

S. No.	Total Reading Errors	Total Spelling errors
Samerra	43	76
Ishaan	15	37

Siddharth	13	18
Romita	16	21
Shristi	17	21
Lakshya	26	27
Total	130	190

Table 29: Errors in shapes

Cases	Three sided figure(Test1)	Four sided figure(Test 2)	Oval shaped figure(Test 3)	Pattern1(Test4)	Pattern2(Test 5)	number of errors
1	Reversed	O.K	Deformed	O.K	Reversed	3/5
2	Unable to draw	Deformed	Deformed	O.K	Reversed	4/5
3	Reversed	Deformed	Deformed	Reversed	O.K	4/5
5	O.K	O.K	O.K	Reversed	O.K	1/5
6	O.K	O.K	O.K	Reversed	Reversed	2/5
Total	3	2	3	3	3	13/25

Table 30: Errors in Mathematics

Cases	No of reversals	Percentage of reversals	No of missed numbers in sequence	Percentage of missed numbers	Total	Total Percentage
1	1/10	10%	6/50	12%	7/60	
2	4/10	40%	2/20	10%	6/30	
3	3/10	30%	8/50	16%	11/60	
4	1/10	10%	2/30	6.6%	3/40	
5	3/10	30%	5/50	10%	8/60	
6	5/10	50%	10/100	10%	15/110	
Total	17/60	28.3%	20/300	6.6%	50/360	

CHAPTER-IV

SUMMARY AND CONCLUSION

CHAPTER-IV

In the context of assembling their writing difficulties, we have envisaged a couple of language examination along with its linguistic aspects in this study. As noted earlier, the purpose of this present research is to look into the spelling errors and writing difficulties among dyslexic children within the range of 7-15 years of age. What makes the investigation effectual and pragmatic is the fact that it attempts to touch essential avenues related to the learner's basic functioning skills in terms of reading and decoding as well as writing and encoding. For this purpose, therefore, to gauge the underlying principle of the dyslexics' alphabet-sound correspondence, we have undertaken an assortment of test in the form of sight words reading, paragraph writing, copying, dictation and also shapes and numbers. Among the characteristics of the case studies in this research, the regular factor perhaps lay out only in the avoidance of reading/writing, especially writing paragraph or sentences and reluctance or slowness in both reading and writing. The assessments indicate unequivocally that dyslexic learner's word recognition predicament and it is purely developmental in most cases. Disorders in speech such as stammering, cleft palate etc and visual motor problem could affect and influence reading and writing processes i.e. the phonological processes. Although the present study has probably partially ruled out the effect of hereditarian and environmental positions that make the prediction that the defect in the phonological processes faculty will be familial, it can go no further in ruling out the irreversible effects of very early psychosocial factors or of biological environment factors. This can be found in the decoding of certain words which have found its semantic counterpart resulting in the decoding of the word, *name* as *man*, and the word *good* as *god*(case studies 3,4)etc

Because dyslexics have difficulty acquiring the relations between symbols and sounds that underlie English orthography, it is not surprising that they also have difficulty in spelling. It has been anecdotally observed that spelling skills often improve less than reading skills as a dyslexic progresses through school (Critchley & Critchley , 1978, pg352).

To examine the spelling skills of the six dyslexics, a spelling test was administered. The test included several categories of words expected to elicit different levels of performance, frequent words and infrequent words, words that varied in their orthographic regularity, words with doubled consonants and multiple morphemes, and homophones(words that sound alike but are spelled differently.)

An important measure of the dyslexics' spelling skill is the phonetic acceptability of their error. A phonetically acceptable error is one that would sound like the target word if it were pronounced using a standard orthographic interpretation. For example, a phonetically accepted error would be seased for ceased or kold for cold.

Phonetically acceptable errors were often generated by omitting a repeated consonant, incorrectly spelling an unstressed vowel, substituting a consonant or consonant cluster that can have the same phonemic value, or making some combination of these errors (as, for example, in spelling nessesery for necessary). Non-phonetic errors could differ in many ways from the target. They could omit phonemes or syllables or add extraneous ones; include letters that seldom or never take on the required phonemic value; or have no obvious resemblance to the target. Examples of the extreme non-phonetic spelling by one dyslexic(case 1) included *secten* for citizen and *dicnty* for *decent*. More than half of the dyslexics' errors were phonetically unacceptable.

Most of the dyslexics' phonetically unacceptable spelling contained phonetically correct beginning but erroneous word ending (*insures* for *insult*) or an additional or omitted middle or final phoneme (*scaricity* for *scarcity*). This pattern paralleled the pronunciation errors that dyslexics made in oral reading. They correctly pronounced the beginnings of words but made mistakes on the middles and ends. Both in spelling and reading, the dyslexics' errors occurred more often with less frequent words and words containing several morphemes. The spelling results support the conclusions of the oral reading studies that dyslexics have problems with tasks that require knowledge of symbol-sound relations. They are particularly slow in retrieving such information and they make significantly more errors than normal readers in both encoding words and in spelling words.

The types of errors encountered in spellings as well as reading are as follows:

Substitution Errors:

It has been found that almost all the cases have made the maximum number of substitution errors both in reading and spelling. Since the production of vowel sounds need a very fie coordination of jaw height with the tongue tension, the dyslexics find it difficult to produce most of these sounds. As a result they tend to replace a longer vowel with a shorter one or vice versa. Sometimes they completely change the vowel sound. In some cases, even the consonants are substituted with a

different one. This is also due to the confusion between the different sounds a single consonant gives. The consonant/vowel substitution can be seen in the all the cases 1to 6. Example: soon i.e. /su: n/ as /san/ (cases 4,5,6), good,i.e./gu:d/ as /gud/ and /god/ (cases 2,5) in reading. In writing, they made mistakes like /seased/ for /ceased/, /trauble/ for /trouble/,/adge/ for /edge/ (cases 3,1). Again /black/ was both read and written as /back/ by case 2.

Addition of final 'e':

In some cases, the learner has added a final 'e' to make the sound longer. For example, words like /rod/,/bit/ etc were represented as rode, bite (case 6) in writing.

Metathesis/ Reversal:

This is said to be most typical of dyslexics. But except a few cases, there were very few errors of reversal. It is interesting to note that all the cases made the minimum no of reversal errors. For example, words like football, fault, substance were represented as *footdoll*(case1*)*, *bault*(case 6), *sudstance*(case 3) in writing. There were also reversals like /gərl/ as /grəl/, /aydɪa/ as /aydæ/(case 1) in reading.

Deletion of Sound Segment:

This was the most common error among the cases I have studied. For example, the words /grin/, /stop/, /sku:l/ were represented as /gin/(cases 5,6), /top/(case 2), /ku:l/(case3) in reading. In writing they represented the words *happiness, recklessness*, as *hapiness, reclessness* respectively (case 3).

Addition of Sound Segment:

There were also certain evidence of cluster addition, though in a few cases. For example,the words *nocturnal* and *drifted* were written as *nocktarnal* and *driffted* (case 3) .However, there were no cluster addition in reading.

Lastly, the subjects were also found to be confused with phonetically graphemic shapes like, l/r, u/n,m/w etc. Some examples are, *treatment* as *treatwent* (case 2), *clown* as *croun*, *because* as *becaune* (case 5).

The variation observed were classified into four different types namely, Metathesis/Reversal, Substitution, Addition and Deletion. These variations were observed in 3 skills separately namely, Reading, Writing and Spelling. The responses of the 6 different cases under these two sets of parameters are summed up in the following charts.

Table-31: Total Number of Errors

S. No.	Total Number of Reading errors	Total Number of Spelling errors
1. Metathesis	14	36
2. Substitution	65	89
3.Addition	20	48
4.Deletion	31	45
Total	**130**	**190**

Table-32 : Total Number of errors made by each individuals

Name	Total Reading Errors	Total Spelling/writtig errors
Samerra	43	76
Ishaan	15	37
Siddharth	13	18
Romita	16	21
Shristi	17	21
Lakshya	26	27
Total	130	190

Chart-1

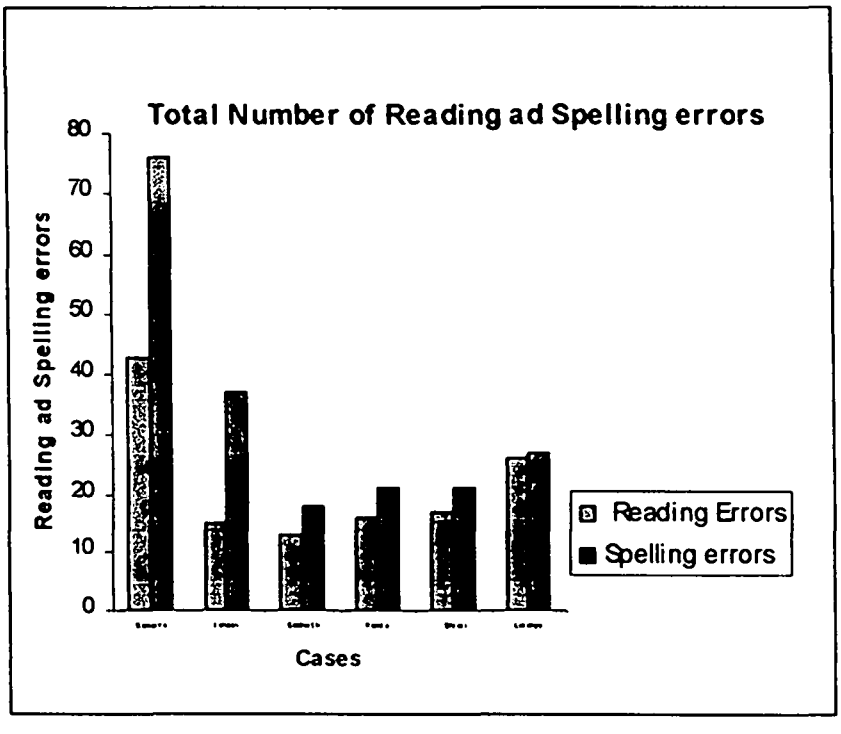


Chart-2

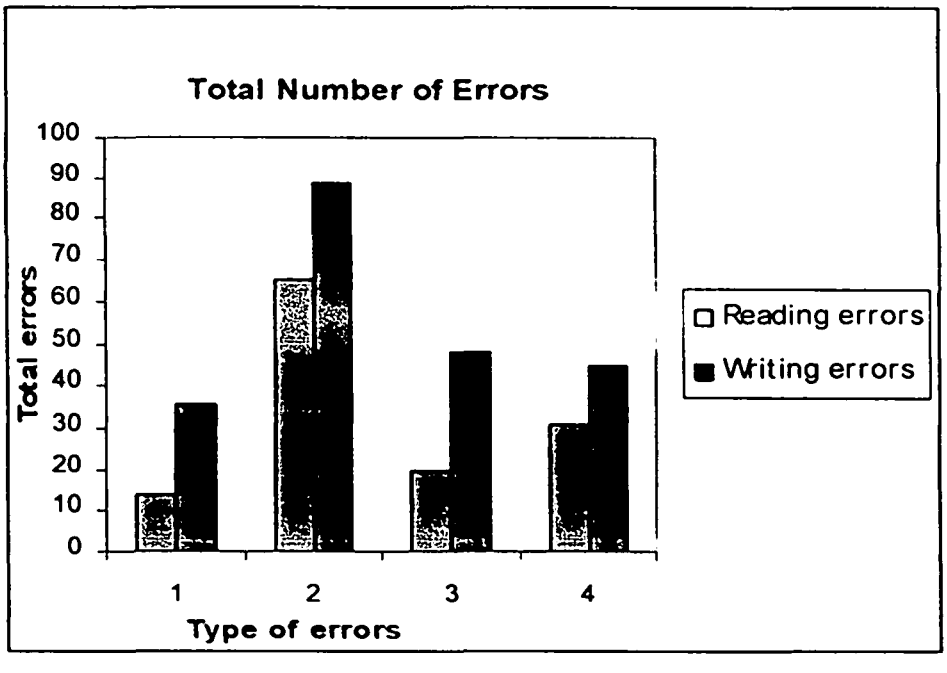
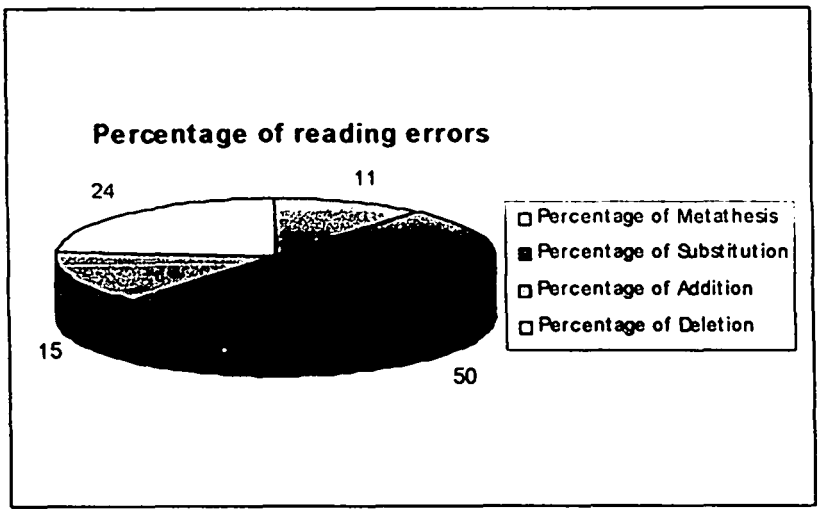


Table-33: Total percentage of reading errors

Percentage of Metathesis/reversal	Percentage of Substitution	Percentage of Addition	Percentage of Deletion
11	50	15	24

Chart-3



Let us now look into the total percentage of reading errors in each category made by all the cases. The above data says that 50% of the errors were in the category of substitution. And only 11% of errors were recorded in the category of reversal/metathesis which is against the predictions that dyslexics make the maximum no of reversal errors. The charts 3,4explains this clearly. Therefore, we can conclude that both reading and writing are interdependent on each other. To write correctly one has to master the art of reading.

Table-34: Total percentage of spelling errors

Percentage of Metathesis	Percentage of Substitution	Percentage of Addition	Percentage of Deletion
19	47	25	24

Chart-4

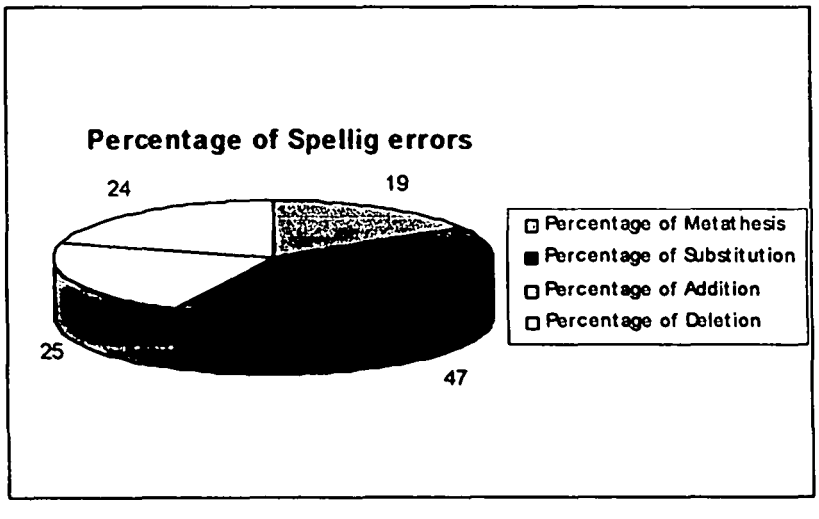


Table-35: Highest and Lowest number of errors .

Cases	No of errors of Metathesis/Reversal	No of errors of Substitution	No of errors of Addition	No of errors of Deletion	Total no of errors
1	6	19	8	10	43
3	0	9	3	1	13
Average	3	14	5.5	5.5	28

Charts -5

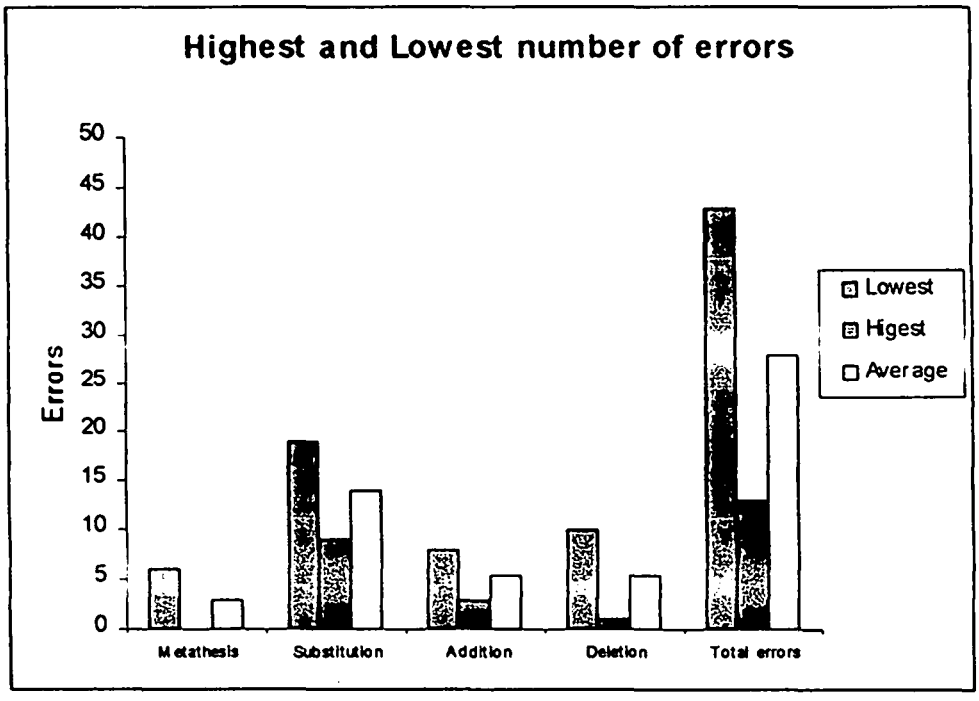


Table 36 : Combination of Total Number of Errors & Types of Errors

S. No.	Total Number of Reading errors	Total Number of writing/ Spelling errors
1. Metathesis	14	36
2. Substitution	65	89
3.Addition	20	48
4.Deletion	31	45
Total	**130**	**190**

Chart-6(a)

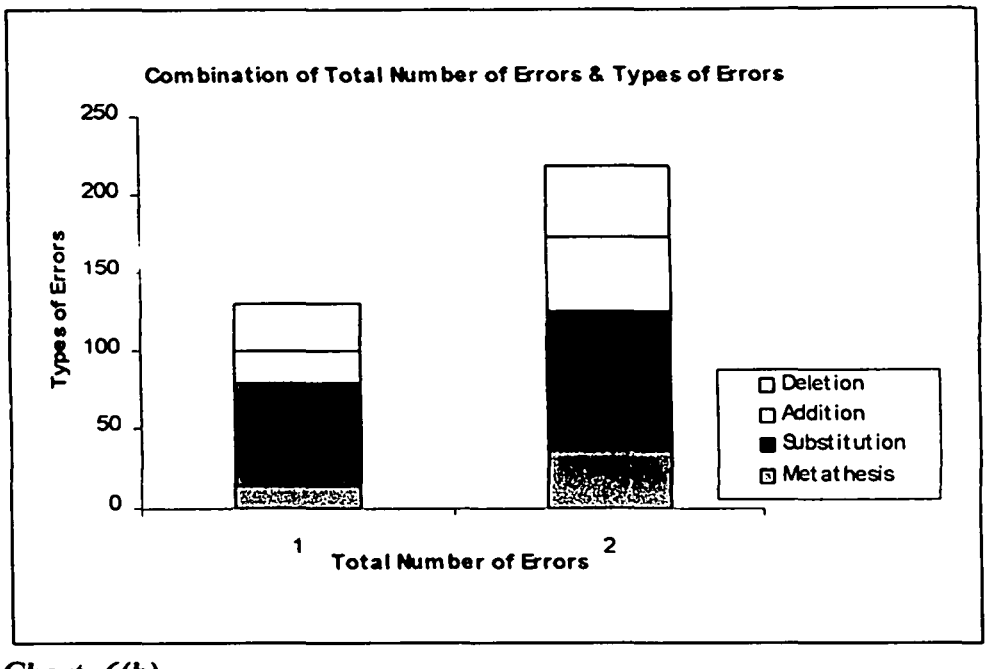
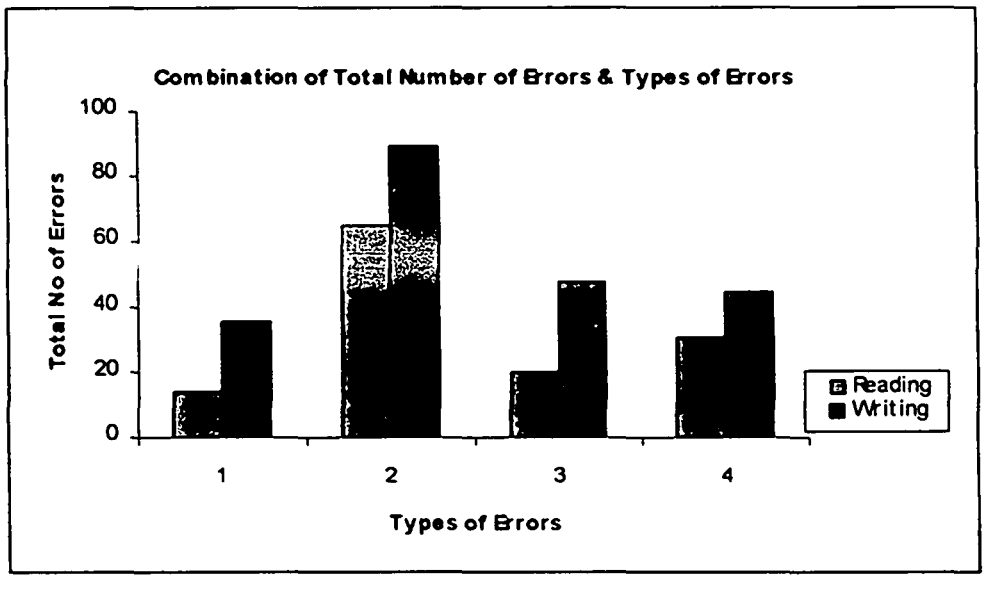


Chart- 6(b)



Since the semantic errors could not be considered with the reading and spelling errors, therefore they are considered in the following table.

Table 37: Total Number and percentage of Semantic errors

Cases	Total Number of Semantic errors	Total percentage of Semantic errors
1	4/5	80%
2	4/5	80%

3	2/7	28%
4	1/6	17%
5	3/5	60%
6	2/5	40%
Total	16/33	48%

From the above it is seen that the highest no of semantic errors are made by cases 1,2, i.e. 4/5 each which amounts to 80%. The second highest is that of case 5, 60%. The minimum errors were made by case 4,17%. However, unlike reading and spelling the highest and lowest no of errors have changed to cases 2 and 4.

Let us now look into the conclusions drawn from their tests of **shapes** with the help of the following table.

Table 38 : Errors in shapes

Cases	Three sided figure(Test1)	Four sided figure(Test 2)	Oval shaped figure(Test 3)	Pattern1 (Test4)	Pattern2 (Test 5)	number of errors
1	Reversed	O.K	Deformed	O.K	Reversed	3/5
2	Unable to draw	Deformed	Deformed	O.K	Reversed	4/5
3	Reversed	Deformed	Deformed	Reversed	O.K	4/5
5	O.K	O.K	O.K	Reversed	O.K	1/5
6	O.K	O.K	O.K	Reversed	Reversed	2/5
Total	3	2	3	3	3	13/25

From the above it is seen that all the subjects had reversed at least one of the patterns. Out of five shapes at least one mistake was seen. However, Cases 5, 6 seemed to be in good control of the geometrical figures.8/13 errors are those of reversal and 5/13 are deformed but not necessarily reversed. This proves the point that dyslexics do always tend to form mirror images and this can be considered one of the most important symptoms to diagnose a dyslexic.

5 errors of missed numbers. But the same child shows 30% errors in the 10 double digit numbers given to them(case5,6). Ishaan, case2 shows definite dyslexic tendencies because the child shows 4 out of 10 double digit numbers and he writes only upto 20 with 2 errors of missed numbers. The same child in the earlier tests of shapes shows 4 errors out of 5.

The hierarchy of errors that emerges from the present study can be summed up once again with reference to these figures in the 3 skills Reading, Writing and Spelling with Spelling at the top and Reading showing the least number of errors; i.e. Reading, Writing and Spelling, the 4 types of errors have substitution at the top and minimum errors in reversal as discussed in the previous sections.
Due to time constraints these cases could not be studied continuously over a period of time and could not be given extensive tests in the mathematics classes. For my future research, I propose to take a larger data base with each one of the cases studied over a period of time so as to establish the exact correspondence between the language skills and mathematical skills and their cognition of shapes and figures. I also wish to focus on developing graded reading & writing materials for the children with the varying degrees of this learning disability.

Bibliography:

American Psychiatric Association(1994): Diagnostic and statistical manual of mental disorders. 4th ed.

Aram, D.M. and Nation, J.E. (1982): Child Language Disorders (St Louis, Mosby).

Arbib, M.A., David Caplan, & *J.C.* Marshall (eds.) :Neural Models of Language Process. N.Y. Academic Press.

Adelman, K. A., & Adelman. H. S. (1987). *Rodin. Pallon. Edison. Wilson. Einstein: Were they really learning disabled?* Journal of Learning Disabilities. 20 (5),270-279.

Bradley, L. & Bryant. P. E. (1983). *Categorizing sounds and learning to read - a causal connection.* Nature

British Psychological Society(1999): Dyslexia, Literacy and Psychological Assessment. Working Party Report. BPS Leicester.

Baker S, Hubbard D(1995): Best practices in the assessment of written expression In Thomas A,Grimes J, eds. Best Practices in School Psychology-III.; 717-730.

Bradley-Johnson S, Lesiak JL (1989): Problems in Written Expression: Assessment and Remediation.

Bloom, L. and Lahey, M. (1978): Language Development and Language Disorders. (New York, Wiley)

Catts, H.W. (1989). Defining dyslexia as a developmental language disorder. *Annals of Dyslexia,*39, 50-64.

Coltheart, M. (1980b, 1987b): Deep dyslexia: A right-hemisphere hypothesis In Deep Dyslexia. op.cit.

Coltheart, M., Patterson, K. and Marshall, J.C (Eds) (1980): Deep Dyslexia. London: Routledge and Kegan Paul, (Second Edition 1987).

Clark, D. B., & Uhry, J. K. (1995). *Dyslexia: theory and practice of remedial instruction* (2nd ed.). Baltimore, MD: York Press.

Critchley, M. (1970). *The Dyslexic Child.* London: Heinemann.

Crystal,D and Varley,R. (1993). *Introduction to Language Pathology.* 3rd Edition. London: Whurr.

Crystal,D. (1987). *The Cambridge Encyclopedia of Language.* New York:Cambridge University Press.

Davis, R.D. (1994). *The Gift of Dyslexia.* London:Souvenior Press.

David Caplan, (1992): Language: Structure, Processing and Disorders.

David Howard and Sue Franklin,(1988): Missing the Meaning: A Cognitive Neuropsychological Study of the Processing of Words by an Aphasic Patient.

David N. Caplan and Nancy Hildebrandt (1987): Disorders of Syntactic Comprehension.

De Partz, M.P. (1986): Re-education of deep dyslexic patient Rationale of the method and results. Cognitive Neuropsychology, 3,149-177.

Duffy, F.H., & McAnulty, G. (1990). Neurophysiological heterogeneity and the definition of dyslexia: Preliminary evidence for plasticity. *Neuropsychologia,* 28, 555-571.

Ehri, LC., and Wilce,LS.(1983). *Development of Word Identification speed in Skilled and Less-Skilled Beginning readers.* Journal of Educational Psychology.

Ehri, L. C. (1989). *The development of spelling knowledge and its role in reading acquisition and reading-disability.* Journal of Learning Disabilities.

Ellis, A.W. (1984). *Reading, Writing & Dyslexia.* London: Lawrence Erlbaum.

Elbert JC(1999): Learning and motor skills disorders. In: Netherton S, Holmes D, Walker CE, eds.Child and Adolescent Psychology.

Englert C, Mariage TV(1992): Shared Understandings: Structuring the writing experience through dialogue. In: Carmine D, Kameenue E, eds. Higher Order Thinking; 107-137.

Frith. U. (1980). *Cognitive Processes in Spelling.* London: Academic Press.

Galaburda, A. (1989). Ordinary and extraordinary brain development: Anatomical variation in developmental dyslexia. *Annals of Dyslexia,* 39, 67-80.

Gillingham and Stillman.(1966). Rcmedial Training for Children with specific disorder in reading. spelling and penmanship. Cambridge. MA: Educators Publishers.

Hermann. K. (1959). Reading disability: A medical study of word blindness and related handicaps. Springfield, Ill: Charles C. Thomas.

Hinshelwood, J. (1895). *Word blindness and visual memory.* The Lancet.

_Hornsby, B., & Shear, F. (1975). *Alpha to omega - a-z of teaching reading, writing and spelling.* Oxford: Heinemann Education.

Hornsby, B. (1994). *Overcoming Dyslexia (A straightforward Guide for Families and Teachers).* London: Macdonald and Co.

Hynd, G., Marshall, R., & Semrud-Clikeman, M. (1991). Developmental dyslexia, neurolinguistic theory and deviations in brain morphology. *Reading and Writing,* 3, 345-362.

Hammil DD, Larsen SC(1996): Test of Written Language-3.

Hresko WP, Herron SR, Peak PK(1998): Test of early Written Language-3.

Howard Poizner, Edward S. Klima, and Ursula Bellugi, (1987). What the Hands Reveal about the Brain.

Ingersoll, B.D.& Goldtein,S.(1993). *Attention Deficit Disorder and Learning Disabilities: Realities, Myths and Controversial Treatments.* NY, London, Toronto, Sydney, Auckland:Double Day (Main Street Books).

Lorraine Komisarjevsky Tyler,(1992). Spoken Language Comprehension: An Experimental Approach to Disordered and Normal Processing.

Lundberg, I., (1985). Longitudinal studies of reading and writing difficulties in Sweden. In G. Mac Kinnon & T. G. Waller (Eds.,) *Reading research: Advances in theory and practice* (Vol. 4). New York: Academic Press.

Lundberg, I., Olofsson, A., & Wall, S. (1980). Reading and spelling skills in the First school years predicted from phonemic awareness skills in kindergarten. *Scandinavian Journal of Psychology*, 21, 154-173.

Larsen SC, Hammill DD, Moats L(2000): Test of Written Spelling. 4th ed.

Morais, J., Alegria, J., & Content, A. (1987b). The relationship between segmental analysis and alphabetic literacy: An interactive view. *CPC-Cahiers de Psychologie Cognitive*, 7,415–438.

Marshall, J.C. and Newcombe, F. (1966): Syntactic and semantic errors in paralexia. Neuropsychologia, 4, 169-176.

Marshall, J. C. and Newcombe, F (1973): Patterns *of* paralexia: A psycholinguistic

approach. Journal of Psycholinguistic Research,2,175-199.

Spafford, C.S. and Grosser, G.S.(1996) *Dyslexia: Research and Resource Guide.*

Patterson, K.E., J.C Marshal and M. Coltheart (eds.) (1985). Surface Dyslexia: Neuro Psychological & Cognitive Studies of Phonological Reading. London, Eslbaum.

Rutter, M. (1978). Prevalence and types of dyslexia. In A. Benton & D. Pearl (Eds.), *Dyslexia: An appraisal of current knowledge.* New York: Oxford University Press.

Schonaut, S., & Satz, P. (1983). Prognosis for children with learning disabilities: A review of follow-up studies. In M. Rutter (Ed.), *Developmental neuropsychiatry.*NewYork:GuilfordPress.

Sandler AD, Watson TE, Footo M, Levine MD, et al(1992 Feb). Neurodevelopmental study of writing disorders in middle childhood. J Dev Behav Pediatr; 13(1): 17-23[Medline].

Stagg V, Burns S(1999): Specific developmental disorders. In: Ammerman RT, Hersen M, eds. Handbook of Prescriptive Treatments for Children.; 48-62.

Swanson HL(1999): Interventions for Students with Learning Disabilities.

Snowling, MJ. (ed.) (1987) Dyslexia: A Cognitive Development Perspective (Oxford, Backwell).

Thomson, M. (1989): Developmental Dyslexia, 3rd edn (London, Whurr)

Vellutino, F.R. (1979). *Dyslexia: Theory and research.* Cambridge, MA: MIT Press.

Wren, C.T. (1983): Language Learning Disabilities: Diagnosis and Remediation (Rockville, Aspen Systems).

Walton. M. *Teaching Reading and Spelling to Dyslexic Children.* London: David Fulton Publishers.

Wolf, M. (1984). *Naming , reading ,and the dyslexias - a longitudinal overview.* Annals of dyslexia.

Wolf. M. (1986). *Rapid alternating stimulus naming in the developmental dyslexias.* Brain and language.

Wolf, M. & Segal, D. (1992). *Word finding and reading in the developmental dyslexia.* Topics in Language Disorder.

Yosef Grodzinsky, (1990). Theoretical Perspectives on Language Deficits.

Yule, W. and Rutter, M. (1987): Language Development and Disorders (London, Mac Keith Press).