Indian Association of Clinical Psychologists

PRACTICE GUIDELINES:
LEARNING DISABILITY

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Practice Guidelines for the Assessment and Intervention of Specific Learning Disabilities

This document was developed on the request of the Executive Committee of the Indian Association of Clinical Psychologists. A Task Force of Clinical Psychologists was convened for this purpose by Dr. Annie John in 2009.

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Note from the authors

Due to the burgeoning awareness of students affected by Specific Learning Disability, Clinical Psychologists in India are coming across this condition with increasing frequency. These guidelines have been prepared to enable the Indian Clinical Psychologist to provide high quality and consistent psychological service in this emerging area of practice. The term Specific Learning Disability shall be referred to as SLD and the Clinical Psychologist as CP. The authors have attempted to use current research and their own experience while compiling this document. The main aim of these guidelines is to aid the CP in the process of assessment and intervention of children or adolescents with SLD. It is also, however, understood that the role of the psychologist is not confined to assessment and the intervention process. Dissemination of information about SLD in the community – parents, teachers and to other care givers, is essential. Teachers and other mainstream educators should be introduced to the prevalence of SLD, the common manifestations of the disability and its impact on the student.
1. Introduction

To facilitate a clear understanding of the term Specific Learning Disabilities, the authors have decided to use the definition put forward by the National Joint Committee on Learning Disabilities (1998).

**Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking reading, writing, reasoning, or mathematical skills.**

These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability.

Although learning disabilities may occur concomitantly with other disabilities (e.g., sensory impairment, mental retardation, serious emotional disturbance), or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences (NJCLD, 1990).

SLD refers to a heterogeneous group of disorders where significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills are present.

These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability. (NJCLD, 1990)

The growing awareness of Specific Learning Disabilities in India stresses the need for standardized assessment practices and educational remediation methods. A review of the literature on research done in the area of Learning Disabilities in the Indian context reveals that while there has been a smattering of studies in the different aspects of SLD, there has been no sustained, rigorous research done in any specific area.

**Epidemiological data** on the prevalence of Learning Disabilities in India have been sparse due to the many difficulties inherent in the Indian situation. Suresh and Sebastian (2003) have noted that the research on the prevalence of learning disabilities in India is limited and there is certainly no data that can be quoted about the pan Indian situation. There have been no prospective longitudinal studies, and there is little information on the prevalence of SLD with other psychiatric disorders like ADHD, among Indian children and adolescents. They
have however, reported a ‘large incidence’ of learning difficulties in rural areas in Kerala, and John (1990), found a distinct group of children with features of a specific learning disability among those presenting with scholastic backwardness in the Child Guidance Clinic in NIMHANS. Most studies have difficulty distinguishing between learning disability and learning difficulty. They have noted that the issues specific to the Indian context that need to be integrated when researching the prevalence of SLD in India are various. These include bilingualism and multilingualism, classroom and school contexts in rural areas, parental illiteracy, medium of instruction and socio-economic factors associated with environmental, cultural, economic disadvantage.

**Identification, Assessment and Diagnosis of Learning Disabilities in India**

Kapur, John, Rozario and Oommen (1991) developed the NIMHANS Index for SLD – Level 1 for assessment of pre-academic skills for children between 5 to 7 years – attention, visual and auditory discrimination, visual and auditory memory, speech and language, visuomotor and language, writing and number skills. The Level II for Classes 1-7 assess the areas of attention, reading, spelling, perceptuo-motor, visuo-motor integration, memory and arithmetic skills. This battery of tests is usually used in conjunction with the Malin’s Intelligence Scale for Children. Initial efforts at developing norms (Hirisave & Shanti, 2002) have been made.

Sankaranarayana (2003) used reading assessment tests (letter identification, word recognition, and reading texts) as well as tests used with children in the Western literature such as Rhyming, Torgeson Elision, Rapid Automatized Name, Rapid Alternating Stimulus, Short-term memory for Digits, Conservation, Handedness, and Vocabulary. They found that the best predictors of reading ability in Indian children were speed of naming letters, vocabulary and phonological awareness. Rozario (2003) emphasised the need for individualised profiles.

Konanthambigi and Shetty (2008) used the Behaviour Checklist for Screening the Learning Disabled and Swarup and Mehta (1991) – developed a scale at the Special Education Cell of the SNDT Women’s University – for teachers to identify learning problems in children.

The Learning Disabilities Scale developed by Yadav and Agarwal (2008) consists of 19 questions in 5 areas – Verbal disability, oral attention disability, writing disability, mathematical computation disability and written attention disability. They identified 2.25 percent of school children (8-10 yrs) as learning disabled in rural schools in Allahabad. They found more boys than girls (B= 2.66; G= 1.71) having a Learning Disability.

Assessment of Learning Disabilities should also include screening and evaluation of other co-morbid conditions like Attention Deficit Hyperactivity Disorders. Crawford (2007) highlighted the fact that both SLD and ADHD existing co-
morbidly are under-recognised in India. Karande, Satam, Kulkarni, Sholapurwala, Chitre and, Shah's study (2007) study reported profiles of 50 children diagnosed with SLD and/or ADHD. The average age at which the children were diagnosed was 11.36 years (with a range from 7 to 17 years), while the average age at which the children's symptoms had first been noticed was only 5.55 years (with a range from 4 to 6 years). The delay between symptoms first being noticed and the child being diagnosed with SLD and ADHD was nearly 6 years on the average.

**Language and Learning Disabilities in India**

As educational facilities in most of rural India are in the regional language there is a need to have assessment tools in the different mother tongues or the medium of instruction of the students. Prema (1998) developed the Reading acquisition Profile in Kannada – a language based reading assessment battery.

Sharma (2000) explored the language skills of 23 Hindi speaking children with LD (7-15 years). They were evaluated on the Hindi version of the Linguistic Profile Test (Karanth et al, 1984; Sharma, 1995). Children with LD performed poorer than children without LD and they found that syntax and semantics were affected more than phonemics. The same study was repeated with 21 Malayalam speaking LD children and reported similar findings (George, 2001). An additional finding was that the gap between the chronological age and language age of the children increased with age.

Balasubrahmanyam (2001) speculated that the incidence of dyslexia would be less in India as those literate in Indian scripts received intensive phonic training and that the Indian methods of writing (orthographic) were transparent. Karanth (2002) also suggested that the syllabic nature of most Indian scripts along with the high degree of grapheme-phoneme correspondence meant that a lower level of phonological awareness would be required for learning to read. However, other characteristics of Indian languages could lead to significant difficulties with reading at phrasal and sentence levels. The implications from this research would be that informed choices on medium of instruction and method of teaching (e.g. phonic method) for learning disabled children could be guided by a detailed language assessment. Gupta (2008) analysed the reading errors of Hindi-speaking dyslexic children and found a greater number of graphemic errors.

Karanth (2008) observed that conversational level of LD children could be adequate, though they may have specific delays or deficits in language acquisition on formal language assessment.

Research with other Indian languages would need to be integrated into research on prevalence of LD in children with medium of instruction other than English. However, it is clear that LD is found in Indian children from both English speaking and vernacular backgrounds.
Psychosocial aspects of Learning Disabilities in India

Mukerjee, Hirisave, Kapur and Subbakrishna (1995) aimed at examining anxiety and self-esteem in children with Specific Developmental Disorders of Scholastic Skills (SDDSS). A purposive sample of 40 children between the ages of 8-13 years, attending English medium schools, with IQs above 80 was taken. Of these, 20 children fulfilling the ICD-10 criteria for SDDSS, were taken from a Child and Adolescent Mental Health Unit, and compared to 20 non-SDDSS children drawn from nearby schools. Both groups were assessed on: (1) A semi-structured interview schedule (2) Malin’s Intelligence Scale for Indian Children (MISIC) (3) NiMHANS Index for Specific Learning Disabilities (4) State-Trait Anxiety Inventory for Children and (5) Culture-Free Self-Esteem Inventory for Children. The obtained data was analysed using descriptive statistics, parametric and non-parametric tests. Findings revealed a significant difference in the self-esteem of children with and without SDDSS. Particularly, low parental, academic and general self-esteem were seen in SDDSS children (p < 0.01). The SDDSS children also had significantly higher state anxiety (p < 0.01), but did not differ significantly on trait anxiety scores. Moreover, parental self-esteem was found to be significantly related to state and trait anxiety in SDDSS children. The findings were discussed in terms of their importance in planning intervention for the SDDSS children, both in the clinic and school settings.

Lall, Hirisave, Kapur and Subbakrishna (1997) examined perceived peer relations and social competence in children with specific developmental disorders of scholastic skills. A sample of twenty children with disorders of scholastic skills aged, seven to twelve years and twenty controls matched on age, class and IQ were taken. The two groups were assessed on (i) A semi-structured interview schedule (ii) Malin's Intelligence Scale for Indian Children (MISIC) (iii) NiMHANS Index for specific learning disabilities (iv) Perceived peer relations questionnaire (v) Interpersonal competence scale -Teacher version. Results revealed that children with scholastic skill disorder perceived their relationship with peers as cordial. However, teachers found these children as poorer in social competence and in dimensions of academics, popularity, affiliation and sportsmanship qualities.

Bhola, Hirisave, Kapur and Subbukrishnal (2000) studied Self esteem and self perceptions in children with learning disability in a purposive sample of 40 children, 8-13 years, with IQs over 80. The sample had 20 children with specific developmental disorders of scholastic skills and 20 age and sex matched normal achievers. Two groups were assessed on the Culture-specific Self Esteem Inventory for Children. Self Perception of Learning Disability Scale was administered to the children with SDDSS. Results indicated that learning disabled children had significantly lower academic, social, parental and general self-esteem. The child’s perception of learning disability had significant positive associations with academic, social, general and total self-esteem levels but not significantly associated with parental self-esteem.
Hirisave & Shanti (2002) studied behavioral problems in children with scholastic skill difficulties. A sample of children (n=20) aged 5 to 8 years with scholastic difficulties was compared with those who did not have difficulties. Results indicated that revealed the greater number of externalizing, internalizing and learning problems in children with scholastic difficulties. The need for management of behavioural problems along with remediation of scholastic difficulties was highlighted.

Kohli, Malhotra, Khehra, and Mohanty (2007) studied 46 children using the NIMHANS Index of Specific Learning Disabilities, in the age range of 7-14 years with SLD. They were primarily boys who attended the outpatient service of the Child and Adolescent Psychiatric Clinic at PGIMER, Chandigarh. The prenatal and perinatal history indicated that mothers of 21.7% of the children had problems during pregnancy. These children reported various clinical problems such as behavioural problems (60.9%), neurotic traits (54.3%), history of developmental problems (39.1%) and family history of learning disabilities (17.4%). The specific errors in their reading and writing skills were difficulty in comprehension, omission of words, difficulty using phonetic cues, difficulties with spellings, tenses, guessing at words, mispronunciation, substitution of letters, illegible handwriting and visuo-spatial difficulties.

**Neuropsychological aspects of Learning Disabilities in India**

Bhasi, Rao and Oomen (2003) studied the effect of neuropsychological intervention on children with Specific Learning disorder for Arithmetic. The study was carried out in two phases. In Phase I norms were developed for the Test of Arithmetic Ability (Shalev et al, 1993), administering it to a sample of 284 children studying in Standards III to VI. Standard wise cutoff scores were developed to identify Specific Learning Disorder for Arithmetic. In Phase II, a remedial program consisting of neuropsychological remediation targeting the functions of attention, visual and verbal memory as well as content based arithmetic skills training was developed for the treatment of Specific Learning Disorder for Arithmetic. A sample of 17 children with Specific Learning Disorder for Arithmetic were identified using the NIMHANS Index for SLD, of which the treatment group comprising of 10 children received neuropsychological remediation while the control group comprising of 7 children received remedial sessions for the improvement of handwriting skills. Both the groups received content based remediation of arithmetic skills after they were regrouped based on the nature of arithmetic deficits as seen on the Test of Arithmetic Ability. Results indicated a significant improvement in arithmetic skills in the treatment group suggesting that neuropsychological remediation contributes to the improvement of arithmetic skills.

Kohli, Malhotra, Mohanty, Khehra, and Kaur (2005) aimed to assess the deficits and neuropsychological functioning in children with specific learning disability
drawn from the clinic population of the Child and Adolescent Psychiatric Clinic at PGIMER, Chandigarh. 35 children in the age range of 7-14 years were assessed using the NIMHANS Index of Specific Learning Disabilities and neuropsychological tests consisting of the PGIMER memory scale for children, the Wisconsin card sorting test, the Bender visuo-motor gestalt test and Malin’s intelligence scale for Indian children. The results indicated impairments in specific areas of memory, executive functions and perceptuo-motor tasks. The authors concluded that identification of specific deficits would aid in planning of individualised intervention plans.

Kohli, Kaur, Mohanty and Malhotra (2006) compared the pattern of deficits, intelligence and neuropsychological profiles of 45 LD children (16 with reading disorders, 11 with writing disorders and 19 with both reading and writing disorders - mixed group) in the age range of 7–14 years. The NIMHANS Index of Specific Learning Disabilities, Malin’s Intelligence Scale for Indian Children, and the PGI Memory Scale were administered. The results indicated that the mixed group had greater dysfunction than the writing group in incorrect use of capital letters, division and graded subtraction. Also, the mixed disorder and reading disorder groups had greater dysfunction than the writing group in speech and language. Intellectual function and mental balance on the PGI memory scale were more affected in the mixed group in comparison to the writing group. The study indicated that subtypes of learning disorders differ in their neuropsychological profile of deficits with the mixed group having greater dysfunction.

Vinod Kumar, and Bhasi.S. (2009), compared matched groups of adults with history of LD (n=22) and normals (n= 25) using the Wechsler Adult Intelligence Scale III (WAIS III). Results showed a significant difference in Full Scale, Verbal and Performance IQs, with normals obtaining higher scores. The adults with history of LD also had lower scores on Verbal IQ compared to Performance IQ. Analysis of index scores indicates significant difference in the indices of Verbal Comprehension, Perceptual Organization and Working Memory between the two groups with no significant difference in the index of Processing Speed. In addition, a positive correlation was found between the three indices of Verbal Comprehension, Perceptual Organization and Working Memory with the Full Scale IQ, Verbal IQ and Performance IQ in the adults with history of LD group while in the normals, positive correlation was found between the Full Scale IQ and all the four index scores, between Verbal IQ and the indices of Verbal Comprehension and Working Memory as well as between Performance IQ and the indices of perceptual organization, working memory and perceptual speed. These results suggest that the neuropsychological profile of adults with history of LD vary from that of normal controls.

Krishna, Oomen and Rao (2008), aimed to examine the association between academic skill deficits, brain dysfunction in the form of neuropsychological
deficits and psychological comorbidity in the form of behavioral/emotional problems. The study was done on a sample of 130 school going children with learning disability, studying in the 3rd to the 7th std in English medium schools. The tools used were the Sociodemographic data sheet, NIMHANS Index for Specific Learning Disabilities- Level II- Short scale, NIMHANS Neuropsychological Battery for Children, Missouri Assessment for Genetics Interview for Children-Parent version and the Malins Intelligence Scale for Indian Children. There was a higher frequency of mixed disabilities than single disabilities. The neuropsychological deficits showed predominantly diffuse cortical deficit pattern and the behavioral/emotional problems were predominantly externalising symptoms with ADHD having the highest frequency. Associations between academic skill deficits and neuropsychological deficits were evident as an increased number of impaired academic domains were associated with academic skill deficit severity and greater neuropsychological deficits. The behavioral/emotional problems were found to be non specific to the type of academic skill deficits. The association between all three dimensions was seen by the formation of 3 clusters with distinct profiles of academic skill deficits, neuropsychological deficits and behavioral/emotional problems. The authors attributed this association to brain dysfunction.

Interventions in Learning Disabilities in India

Rozario, Kapur and Rao (1994) evaluated effectiveness of a 25 session remedial package for 25 children (9-11 years) with LD and reported significant improvement.

Srikanth and Karanth (2003) developed a remedial programme based on the Aston teaching Programme focusing on auditory visual channel deficits, specific spelling rules and cues, training in comprehension skills, oral expression, written expression and visuo-motor perceptual skills. The remedial programme included both reading and spoken language proficiency.

Pagedar and Sarnath (2008) developed the PASS Reading Enhancement Programme (PREP), a theory driven remediation program for primary school children with difficulty in reading, spelling and comprehension. This programme aims at improving information processing strategies and avoids direct teaching of word skills like phoneme segmentation/blending. Pilot study on effectiveness of PREP with 6 students aged 7-11 years referred to Maharashtra Dyslexia Association’s Resource Centres.

Sadasivan, Rucklidge, Gillon and Kapur (2009) compared the effect of phonological awareness intervention (PA) and neuropsychological intervention (NP) in two groups of 10 reading disabled children each (10-13 years) The children with reading disability were also compared in performance on reading, phonological and neuropsychological tests with twenty age- and education-matched controls without reading disorder. Both the reading disabled groups
received intervention in 20 bi-weekly sessions of 40 minute duration. The PA group received inputs to enhance phonological awareness skills such as segmentation, isolation, deletion and tracking of speech sounds using games and visual material. The NP group on the other hand received inputs to enhance their attention, concentration, working memory, verbal learning strategies, planning and organization and memory skills. The results indicated that reading disabled children differed significantly from the control group on reading abilities, attention, executive functions and phonological awareness measures at phoneme and syllable levels before intervention was carried out. After intervention, both treatment groups showed significant improvements in their reading score which was maintained three months after the intervention. Cognitive changes and phonological processing skills showed different outcomes in response to intervention. While the PA group had improved attention, verbal and visual memory and visual perception, the NP group had enhanced verbal fluency, inhibition control, verbal learning and immediate visual memory. Phonological awareness at phoneme level improved significantly after PA intervention while the improvement for the NP group was at the syllable level. The improvements were maintained at three month follow-up for both groups with the PA group being significantly higher than the NP group on verbal working memory while the NP group was significantly higher on verbal fluency three months after intervention. The two interventions were found to be effective in enhancing reading accuracy in a group of children with specific reading disorder. In addition, the two interventions also improved specific cognitions which were maintained over time.
2. Assessment of SLD

The assessment of SLD by a Clinical Psychologist allows the clinician to:

• Make a diagnosis of SLD
• Understand the severity of the disability
• Construct a learning profile of the child
• Make recommendations for specialized instructions and accommodations for the child

The main purpose of determining if a child has a SLD is to be able to provide appropriate, supportive and remedial programmes to enable the child to effectively function in his or her environment. As SLD affects all spheres of functioning – academic, emotional and social – it is necessary to provide a complete analysis and profile in these areas. This will in turn suggest the treatment and accommodations that the child will require. With a profile of skill deficits and strengths, the professional administering the remediation programme will be in a better position to plan an effective programme.

The purpose of a diagnosis is not to provide a label in order to categorize the child. But to provide a basis for the child to be able to access support and services to which she/he is entitled to.

**Step 1**: Gather a history of the child. This should include

• Developmental history
• Educational history – including any intervention used
• Emotional, and behavioural difficulties
• Classroom observation of learning behaviours – if this is not possible, a descriptive report by the teacher is recommended with the following information
  - does the child pay attention to classroom instruction, does the child follow classroom instruction
  - homework compliance
  - organization of behaviour – is the child ready for the class with books, stationary, etc.,
  - test preparation and test taking behaviours
• Social interaction with peers and adults

**Step 2**: Standardized assessments

• Cognitive Ability – Assessment of cognitive ability should be made using a test that is both valid and culturally appropriate, to ensure that the child’s score falls within the average range of scores. The test should be
administered in the language the child is most comfortable in. Acceptable measures include, but are not limited to, Malins Intelligence Scale for Indian Children (1971), Wechsler Intelligence Scale for Children-IV (2003) and the Stanford-Binet.

• **Information processing** – Different aspects of information processing should be assessed on a general basis, and in depth, based on the difficulty reported in the referral. Auditory and visual processing, processing speed, executive functioning, memory – sequential, short term and long term and auditory and phonological awareness must be assessed. The assessment of gross and fine motor skills - balance, eye-hand coordination, pencil grip and sense of rhythm. The assessment should be done in the language the child is most comfortable in. Some of the measures of cognitive ability do measure some aspects of information processing as well (WISC-IV), however the assessment of skills like phonological awareness, are included in tools that measure reading.

• **Achievement**

  Assessment of skills necessary for learning in the classroom must be made. These can be categorized into 3 main areas - reading, writing (including spelling) and mathematics. Assessment tools that commonly used include the NIMHANS Battery(2002), Wechsler Objective Reading Dimension (1993), W Wechsler Objective Numerical Dimension (1996), Test Of Written Language-III (1996). Woodcock Johnson 3 Tests of Achievement (2001),

  The assessment of **reading** should include –

  • Identification of alphabets and knowing the sounds of letters in the early years
  • Words in isolation – analysis of the kind of difficulties present while reading a word including decoding strategies, these could include substitution, omission or addition of consonants or vowels, phonetic inaccuracies, , reversal or inversion of letters or parts of words, knowledge of patterns of sound made by a group of letters (eg., ‘ough’ in ‘rough’) and familiarity with of homophones
  • Reading for meaning from a sentence or passage,
  • Fluency in reading – is the child reading the text in a word by word, phrase by phrase manner with pauses that do not contribute to the meaning of the text.
  • Does the child ignore punctuation while reading
  • Understanding written directions
  • Middle school and high school students should be assessed for reading rate.
The assessment of **writing** should include –

- Proper pencil grip
- Ability to retrieve alphabets representing sounds
- The formation and legibility of letters or numbers
- A mixture of print and cursive the appearance of upper case in the middle of a word should also be noted.
- Spelling – words in isolation – with a detailed error analysis, for example, substitution, omission or addition of consonants or vowels, phonetic inaccuracies, sequencing or letter order difficulties, reversal or inversion of letters, knowledge of spelling rules, of commonly used sight words and of homophones
- Spelling as part of comprehension or essay writing,
- Punctuation
- Use of vocabulary and synonyms in a piece of free writing,
- Ability to present ideas in an understandable sequence,
- Ability to plan and organize a written text for a particular audience or purpose
- Organization of writing and the mechanics of writing a paragraph or essay.
- Speed of writing

The assessment of **mathematics** skill should include –

- The ability to recall basic math facts, procedures, rules, or formulas
- Ability to maintain precision during mathematical work
- Ability to sequence and carry out successfully multiple steps
- Understanding of the final goal of the math problem
- Ability to identify salient aspects of a mathematical situation, particularly in word problems or other problem solving situations where some information is not relevant
- Ability to remember and understand the vocabulary and language of math
- Ability to know when irrelevant information is included or when information is given out of sequence
- Ability to explain and communicate about math, including asking and answering questions
- Ability to read texts to direct own learning
- Ability to remember assigned values or definitions in specific problems
• Mental fatigue or being overly tired when doing math or feel overloaded when faced with a worksheet full of math exercises
• Confusion with learning multi-step procedures
• Ability to order the steps used to solve a problem
• Ability to copy problems correctly
• Ability to read the hands on an analog clock
• Ability to interpret and manipulate geometric configurations
• Ability to appreciate changes in objects as they are moved in space
• Ability to switch between multiple demands in a complex math problem
• Ability to tell when tasks can be grouped or merged and when they must be separated in a multi-step math problem
• Ability to manage all the demands of a complex problem, such as a word problem, even thought he or she may know component facts and procedures

Step 3: Behavioural Observation during assessment. Observation done in the testing situation should report on factors that could impact the learning of the child. This should include

• Level of anxiety
• Fatigue
• Handwriting - pencil grip, pressure while writing, posture
• Ability to sustain attention during the assessment

While making a diagnosis it is essential to rule out factors like lack of sufficient or appropriate instruction. Response to Intervention methods tried out in the early years (Kindergarten onwards) should be noted. Here, the child should have had some specialized or intensive remedial instruction in the specific area of difficulty, (before a diagnosis) of SLD is done. This intervention could have been carried out by a special educational teacher or in the form of a one to one instruction by a tutor. If the child has not made sufficient progress after having had specialized help at the time assessment is carried out, then a diagnosis of SLD can be considered. It is necessary to rule out the fact that the academic difficulties seen are not a result of poor or inadequate educational methods.

The assessment should provide evidence for the fact that the child’s learning and performance in the areas assessed are significantly low, in contrast to other areas of functioning. That performance in school is significantly limited due to the disability, and that the child is unable to access the school’s curriculum due to the specific disability.

The CP should be aware of the fact that the severity and manifestation of SLD can vary across and within the pertinent areas. The degree and extent to which
the specific disability impacts on the child’s learning should be described as this will enable the educator to make an Individual Educational Plan.

The CP should be cognizant of the fact that age and stage of development of the child can influence the manifestation of the disability.

The manifestation can also be influenced by the context that the disability is seen in – in an academic or nonacademic setting. (NJCLD, 1998)

The National Academy of Neuropsychology (NAN) Policy and Planning Committee recommends that when a learning disability is suspected, an evaluation of neuropsychological abilities is necessary to determine the source of the difficulty as well as the areas of neurocognitive strength that can serve as a foundation for compensatory strategies and treatment options. The purposes of a neuropsychological evaluation are to determine the pattern of brain-related strengths and weaknesses, to develop an understanding of the nature and origin of the difficulties, to make a diagnosis, and to provide specific recommendations for appropriate intervention and treatment.

When possible it is recommended to use standardized measures. Standardized tests allow clinicians and other professionals working with the child to understand the nature of difficulties present.

When standardized achievement tests are not available, curriculum based assessments should be used. Here it is important to be aware that the assessment should be comparable with the child's present educational curriculum.

As many children who come for assessment are from schools and backgrounds where English is not the first language of instruction, it is important to be able to assess them in the language they are most comfortable in.

**Diagnosis of SLD**

A diagnosis can be made based on the results of the assessments carried out. The child could have a Reading, Spelling, Writing, or Arithmetic Disability or a combination of any of the above. The term Dyslexia usually refers to a specific disability in reading, but spelling difficulties are also often included. Dysgraphia refers to a specific disability in writing and in expressing oneself in writing. Visual and Auditory Processing Difficulties could also contribute to a SLD.

The traditional criterion of diagnosis of SLD was based on whether the child’s scores showed a discrepancy between ability and achievement, usually assessed by comparing the child’s IQ with the levels attained on an achievement test. While this approach to the diagnosis of SLD allows the clinician to report a significant delay in a student’s achievement as compared to ability, researchers have argued that many flaws exist in this model (Vaughn., et al., 2003). In India, the discrepancy model should be used with caution as it does not account for
those students who have not had sufficient exposure to adequate learning experiences, or recommended learning strategies. *For this reason it is necessary to make sure that the student being assessed has had at least 2 years of adequate schooling before a diagnosis is made.* It also excludes those children with high abilities who have developed strategies to compensate for their difficulties.

If the child is in pre-school or the in the first two years of schooling, the ability-achievement discrepancy model will not allow a diagnosis. In such cases, a Response to Intervention model is to be used (Fuchs & Fuchs, 2006). The assessment by the Clinical Psychologist in such cases should give a profile of the skills of the child with specific recommendations for the intervention of these difficulties. The intervention could be carried out by a special educator, the teacher in the class, trained parents or any other trained caregiver. It is important to note and worthy of repetition that when the child has had these special methods of instruction for a period of 2 years and the symptoms of SLD persist, a diagnosis of SLD should be considered. As a complete discussion of the Response to Intervention model cannot be presented here, it is recommended that the CP read the chapter on Remedial Training Programmes with SLD.

The assessment carried out by the CP should be specific and detailed enough to provide an idea of the severity and type of SLD. For instance, if the student has a specific reading disability, it is essential to be able to say whether the reading disability is due to a phonological deficit or a visual perceptual deficit. This allows a specific intervention plan that is based on research evidence to be followed.

The assessment should also allow the educator to construct a learning profile of the client that would indicate areas of strength as well as needs.


3. Differential Diagnosis for Specific Learning Disability

What is differential diagnosis?

Differential diagnosis refers to the process by which a disorder or a presenting set of symptoms is evaluated and differentiated from other conditions that may be associated with similar clinical features. It requires the formulation of hypotheses regarding the etiology and nature of the presenting problem (NJCLD, 1994).

The clinician must be aware that Learning Disabilities often occur in conjunction with other disorders or conditions. The assessment process should establish that while LD can co-exist with other conditions such as AD/HD, depression, anxiety, social skill deficits, language disorders etc, it is not primarily a result of the co-morbid disorder.

Prerequisites for differential diagnosis

A comprehensive assessment is a prerequisite for differential diagnosis. NJCLD recommendations suggest that assessment for LD must include procedures to establish levels of performance in the areas of motor, sensory, cognitive, communication and behaviour functioning.

The tests used must demonstrate that significant difficulties persist in one or more processes involved in the acquisition, retention, organisation and use of listening, speaking, reading, writing, reasoning and numerical skills. Tests should also indicate the extent to which these processing deficits impair the individual’s ability to learn.

In addition to test scores there has to be an adequate consideration of individual behavioural and social characteristics and sufficient integration of other assessment information.

When one of several factors may be the cause of learning problems, low achievement, underachievement or maladaptive behaviour, all possible etiological alternatives must be considered.

Intellectual limitations, sensory impairments and adverse emotional, social and environmental conditions may be the primary cause of low achievement and should not be confused with learning disabilities.

Documentation of underachievement in one or more areas is a necessary but insufficient criterion for the diagnoses of learning disabilities.

Discrepancy formulas must not be used as the only criterion for the diagnosis of learning disabilities.
Manifestations of learning disabilities such as language impairment, can affect performance on intelligence tests. Selection of tests and interpretation of results must acknowledge the influence of specific disabilities on intelligence measures.

**What LD does not include**

The Individuals with Disabilities Education Act (IDEA, 2004) specifies that Specific Learning Disability does not include learning problems that are primarily the result of visual, hearing or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural or economic disadvantage.

In making a diagnosis of a Specific Learning Disability, the clinician would need to rule out:

1. Mental retardation- all domains of development are delayed
2. Pervasive development disorder- delays seen in 2 or more domains of development
3. Autism- impaired language and communication, impairments in social and emotional functioning, with or without mental retardation
4. Primary language disorder- language development outside the normal range and significantly underdeveloped compared to nonverbal reasoning in normal range
5. Slow Learner- developmental profile consistently at lower end of normal range, IQ scores are below average range.
6. Primary sensory deficits- visual, motor, hearing and speech impairments
7. Environmental factors such as deprivation, abuse, inadequate or inappropriate instruction, socioeconomic status or lack of motivation

The clinician must be aware that SLD often occurs in conjunction with other disorders or conditions. The assessment process should establish that while SLD can and often does co-exist with other conditions such as AD/HD, depression, anxiety, social skill deficits, language disorders etc, it is not primarily a result of the co-morbid disorder.

**Importance of Differential Diagnosis**

A comprehensive and thorough assessment is critical for a differential diagnosis. Diagnostic accuracy has implications for prognosis and planning appropriate intervention programmes. In addition it may also indicate the need for referrals to other professional services that may be of use to the intervention programme.

**Referrals required**

These are a possible list of referrals that the clinician would need to make either in the course of establishing a diagnosis or when planning an intervention programme for a Specific Learning Disability.

Audiologist - if there are difficulties observed in hearing.
Speech Therapist – If there are speech difficulties such as stammering, lisping, stuttering etc.

Ophthalmologist- if there are difficulties in reading from text - holding text too close or too far, errors in copying from the black board, squinting, blurring of vision, frequent headaches etc.

Neurologist- if there are difficulties in gait, movement, unusual pencil grip, presence of soft neurological signs, presence of seizure history, physical discomfort and fatigue while writing

Peadiatrician- to monitor for general health, age appropriate milestones and physical development. To rule out hormonal imbalances and abnormalities in thyroid, iron and haemaglobin levels and functioning.

Occupational therapist- to aid in intervention for difficulties observed in gait, movement, visual motor coordination, handwriting.

Child Psychiatrist- possible pharmacological intervention for co-morbid AD/HD, other emotional and behavioural disorders should be considered.
4. Communicating a diagnosis of SLD

The assessment report

Most often the report is read by non psychologists, i.e., parents and special educators – for this reason it is important to keep the language simple and clear. If possible, give a brief description of the assessment tool used. Be aware that the special educator will be making an IEP based on the assessment report.

A typical report can be detailed under the following sections. Examples of reports are provided in the Appendix.

Reason for referral: Although this may seem obvious, it is important to note why the child is being assessed. Whether the child was referred for assessment by the teacher or the parent will give an indication of the awareness of the caregiver concerned.

Educational History: Has the child been through different school systems. What was the method used to teach reading? Has the child had any sort of intervention and for what period of time.

Personal History: Any significant events in the personal history of the child that might have contributed to the present situation, including psychosocial factors.

Previous Assessments: What previous assessments have been done and the results in brief.

Behaviour Observation: Include observation of behavior during the testing situation and observation done in the classroom.

Assessment tools used: List out the name of the tools. You can describe them briefly while giving the results.

Results: Give values if the tests are standardized, give positive and negative findings – all help to formulate the educational plan

Discussion of findings: Give a clear idea of how you arrived at your findings and the implications for intervention.

Recommendations (and accommodations): Based on the assessment, the CP should give recommendations to the special educator and recommend accommodations in the classroom and for examinations. The educator and the caregiver must be given clear and detailed instructions on how to proceed with the interventions suggested. For instance, if the child has an auditory processing difficulty, the CP can recommend that the child be seated (in the classroom) away from distracting sounds (away from the door or window). Specific suggestions, like techniques or tools to support the child with the particular deficit must be made. The details in the recommendations also help the board decide if the child must be given an accommodation at the time of examinations.
Information Conveyed to Parents

Being informed that their child’s assessment indicates the presence of SLD can be a challenging process of acceptance for parents. Apart from informing them of the diagnosis, the clinician has to handle the session and information given with great sensitivity and empathy. Some parents are relieved in knowing that their concerns about their child’s academic performance are rooted in a genuine disability and for others it is an ongoing process of coming to terms with the diagnosis and being engaged in the intervention. These are a few points that the clinician would need to be aware of while discussing the diagnosis of SLD and its implications.

1. Avoid the use of jargon and convey assessment information with clarity.
2. Give the parent time to go through the assessment report and be able to raise queries.
3. Be factual and accurate in discussing the assessment results.
4. Emphasise that while SLD is a life long condition, the consistent use of strategies have been proven to enhance coping and maximize abilities and experiences of success.
5. Recognize and acknowledge feelings of guilt, anger, blame, denial, anxiety and loss in coming to terms with the diagnosis.
6. Emphasise that the child is more than a diagnosis, identify their areas of strength and nurture them.
7. Encourage them to talk to their child and family members in an open manner about SLD. This conveys to the child that it is not ‘shameful’ to have SLD and that it is an eminently manageable issue.
8. Provide parents with information that would extend their understanding of SLD. This could be relevant literature and research, online resources, books, parent support groups and courses.
9. Encourage building good communication links with the school and the child’s teachers.
10. Help the parent be aware of their own psychological needs and mental health as coping with their child’s learning and emotional needs can be a stressful process.
11. Emphasise that early intervention, teaching skills of organization and time management at home, does provide a critical scaffold for the child.
12. The acceptance of LD is an ongoing process and each developmental stage presents its own challenges
13. The presence of SLD does not limit what the child will achieve in their adult and professional lives given the appropriate support and intervention.
Talking to the Child

Often the child referred for assessment is forced to assume a passive role and is taken for various tests without necessarily being told about what is happening or what the test results indicate. The child may experience a sense of low personal control and could become apprehensive about what the process is going to reveal. Engaging with the child at all levels in the assessment and intervention process is essential.

Parents may sometimes have concerns about whether the child needs to be ‘burdened’ with the knowledge of his/her SLD. They need to be informed by the CP that talking to their child about SLD encourages them to be more positive in their approach to academics.

Prior to the assessment the CP should establish a rapport with the child and be able to explain the rationale for testing.

Sentences like, ‘this testing will help us find out your areas of strength and what areas you need help with’ or ‘you did tell me that you found reading very difficult. The tests that we will be doing will help us find out why and what we can do to help’, conveys a sense of reassurance for the child.

The CP must provide information that is age appropriate and encourage the child to raise questions/ concerns about the testing process and the results.

The child may feel relieved to know that struggling in school is not their fault, that there is a reason why they find school hard and most importantly that they can do something about it.

The CP should provide age appropriate information in sharing assessment results with the child.

The child should be encouraged to see that different children learn differently and that the presence of a difficulty does not indicate personal failure.

The need to use strategies consistently should be stressed upon. They should also be made aware that the proper use of strategies while being effective and transforming the way they learn, will mean that they may spend more time on learning.

The child and parents should be encouraged to expand their understanding of SLD through reading up relevant literature/websites and mutually discussing information.
5. Intervention

Remedial training is the main form of intervention for the child and is planned based on the profile established through assessment. Supportive psychosocial counseling and social skills training should also be considered for a child with SLD. Several different remedial training methods are available but only a few of them are tested scientifically. The following are some guidelines on the qualities of an effective training method.

The first step in evaluating the efficacy of a remedial training programme is to identify who the training is meant for. The next important thing is to assess who will provide the training— is it a special educator, teacher, speech-language therapist or educational/clinical psychologist? Finally, it is important to assess the time frame involved and the support the remedial program offers even after the completion of the programme.

**Qualities of Effective Intervention Programs**

Effective programs must be driven by research, not ideology.

Effective programs emphasize direct, systematic, intensive, and sustained changes in the target behaviour/cognition.

Effective programs need to be supported by initial professional development and extended follow-up training throughout the school year.

Effective programs should make effective use of instructional time, provide multiple learning opportunities, and employ a variety of assessments.

**A Model Intervention Programme**

An effective remedial reading programme must address the student’s specific strengths and weakness, instructional sequences, provide ample practice opportunities and must include targeted scientifically based instructional strategies.

Most educators working with children with SLD chalk out what are known as Individual Educational Plans (IEP’s) for each child based on the deficit profile and the current functioning capabilities of the child. The aim of these IEPs is to provide one with a working framework to operate in for each child. In addition, periodic evaluation of the child’s current level of functioning occurs within this framework to help reevaluate need/efficacy of tasks for the child based on response to intervention.

The programme should also include assessment strategies for diagnosing student needs and measuring progress, as well as a professional development
plan that ensures teachers have the skill and support necessary to implement the program effectively and to meet the needs of individual students.

**Some Questions to ask About the Remedial Program**

Here are some questions you need to ask about the child's remedial program:

1. What is the name of the remedial program
2. Is it researched-based? Does the program include the essential elements?
3. How many children will be in the group?
4. How have the children in the group been selected?
5. Has the trainer been trained in direct, systematic, multisensory instruction?
6. Is the trainer certified in this particular program?
7. How many hours of instruction per week will each child receive?
8. How will the pace of the instruction be determined?
9. What criteria will be used to determine mastery?
10. How will the parents be informed about the child's progress?

**Directions for Remedial Instruction**

1. Introduce the child gradually to the programme
2. Start at a level that is comfortable for the child e.g. when blending sounds, start by introducing sounds of consonants and short vowel sounds. Then proceed to introducing consonant blends and finally vowel blends.
3. Stress on accuracy and not speed
4. Do into skip any stage in the intervention programme
5. Provide adequate practice drills at each level
6. Use concrete associative aids

**Components of an Effective Response to Intervention Model**

1. Baseline Data - using curriculum-based measurement as primary data gathering.
2. Measurable Terms - define problem areas numerically.
3. Accountability Plan – monitor fidelity of selected intervention.
4. Progress Monitoring – how, where, and when intervention results will be measured and recorded.
5. Data Based Decision Making – ongoing analysis of data to drive future intervention decisions.

It is recommended that children are identified early in their school life (KG to Grade1) as response to intervention at an early stage has been shown to be more effective.

Older children will require other needs like social skills, behavioural and emotional difficulties to be addressed as well.

4 Keys to Remediation

(1) Eclectic Approach - An eclectic approach capitalizes on the particular strengths of the child. The program will depend upon the age, skill level, and neuro-developmental profile of the child.

(2) Top Down Strategies – Intervention for learning disorders need to consider top down strategies. For example, development in various regions along the left temporal-parietal cortices is responsible for modulating the phonological aspect of reading; from this ability develops the ability to modulate sounds to the visual word form association areas.

(3) Socioeconomic Status - According to Noble and McCandliss (2005), socioeconomic status (SES) is a very strong predictor of reading skills due primarily to the home literacy environment. Therefore, schools catering to children from lower SES need to provide more reading opportunities.

(4) Motivation and Confidence – Good remedial training programmes tend to give immediate feedback to students that they are improving, and can be used as a confidence builder as well.

For any programme to be considered effective, it must bring about changes in day-day behaviours. These include generalization as seen in better academic performance and the ability of the child to gradually become an independent learner.

Finally the efficacy of the programme also brings about change in behaviour, emotional and social aspects as these are found to be affected in this population.

A detailed programme for intervention of SLD with Arithmetic Disability is provided in the Appendix.
6. Academic Accommodations for Students with SLD

Psychologists are required to be aware of the specific accommodations provided by the National Examination Boards that are available to students with a diagnosed SLD and the procedures to obtain the same. These accommodations allow students with SLD to demonstrate their knowledge of a subject in an examination. It levels the playing field for these students by providing extra time, a reader, an amanuensis, or the choice of dropping a second or third language. A study done at the Learning Disability Clinic at the Sion Hospital in Mumbai, (Kulkarni, Karande, Thadani, Maru & Sholapurwala, 2006) shows that students with SLD who have used these accommodations have performed significantly better than those with SLD who have not availed of them.

The national boards – Central Board for Secondary Education and the Indian School Certificate, do provide accommodations for students diagnosed with SLD.

Some state boards – including Maharashtra, Kerala and Karnataka provide accommodations as well.

Common accommodations available are exemption from second and third languages and the provision of extra time for completion of tests and exams.

The use of a scribe/computer and/or reader by the student depends on the level of disability exhibited by the student and is usually available on a case specific basis.

In each case it is essential to route requests for accommodation through the student's school. A copy of the assessment is sent to the head of the school who forwards this to the board with previous academic reports and a letter of recommendation.

Test reports submitted should be detailed and also include previous academic reports of the student.

Universities in India have just begun to recognize the existence and implications of SLD and to the authors’ knowledge a few state boards or universities do provide accommodation. Karnataka University has been known to consider SLD for special accommodations. They require that the student acquire a statement from NIMHANS every year for the accommodations to be provided. Delhi University, though recognizing SLD in its admission process, does not have set procedures that can be used to apply for special accommodations. Individual cases have been known to receive second language exemptions.
Appendix A

Given below are 2 examples of reports from assessments.

Example 1

CONFIDENTIAL PSYCHO-EDUCATIONAL REPORT

Name:                      Date of Assessment:

Date of birth:        Age:

SUMMARY OF FINDINGS

Abilities
_____is of high average general ability (above that of 79% of his age group). He has high verbal scores (91st percentile), and average nonverbal scores (53rd percentile) and the difference between them is significant.

Pattern of Relative Strengths and Weaknesses

_____ can retain general knowledge facts well, and his abstract verbal reasoning skills along with common sense problem solving is good. His mental speed for routine information processing is good. His ability to perceive small details, visual sequencing, visuo-motor coordination and pencil control are relatively weak.

He has difficulties with attention and impulse control.

Attainments

For reading accuracy and comprehension, _____’s attainment is about two years below expected level, while his spelling level is one year below predicted level for age and ability. His arithmetic ability is within the average range.

Conclusions

_____ shows a pattern of performance that is indicative of poor visuo-perceptual acuity and poor visuo-motor coordination. He has a specific learning disability in the areas of reading and spelling. Attentional needs make it difficult for him to fully access the support received.

Recommendations

_____ requires a structured programme to address his specific disability. He needs in class support as well as one to one instruction. A further evaluation of his attentional needs is recommended. Specific suggestions towards improving his visual acuity and coordination will be made (see report).

Detailed Report

Background
_____ had been previously assessed for learning difficulties in October, 2000. His parents made a request for a current assessment, as they wanted to take _____ for summer help in a learning centre.

Support received
_____ has been part of a learning support group for Literacy and Maths. In addition, he has received individual support 4 times a week for basic skills in Literacy, ‘catch up’ in Math, Science, Social Studies and for training in visual-perception.
Behaviour during Assessment

_____ was cooperative, but was impatient for the tests to be completed quickly. He would keep asking if it was the last ‘one’. He fidgeted with test material on the desk, used the stopwatch to measure different activities (e.g. how long I took to arrange the next test). His first reaction to many of the tests that appeared more complex (e.g. with a component of visual analysis or writing) was – ‘Oh no! That's difficult’ - going on to perform quite competently on some of them.

Intellectual Ability

_____’s scores on the WISC – III (UK) show that he has a high Verbal IQ of 120, which means that he would beat 91% of children of his age at this test. His Performance IQ is 101, which places him at the 53rd percentile. This discrepancy between his Verbal and Performance IQ’s is significant, and his Full Scale IQ of 112 does not give a full picture of his intellectual ability.

Cognitive Style

_____ has acquired an adequate verbal knowledge base that supports the development of oral and/or written language skills. Language or verbally-mediated thinking and information processing is his strength. He has also shown the ability to use verbal contextual cues, which may lead to a good understanding of word meanings. His retention of general knowledge facts and abstract verbal reasoning skills along with his common sense problem solving is above average. Although his knowledge of word meanings is good, his ability to express his knowledge is restricted. He often doesn’t find the right word on his own.

His processing speed is his other strength (87th percentile) and this indicates a good mental speed for routine information processing.

His ability to perceive small details is his weakness, and this is manifest in his reading and spelling. He also has difficulty breaking down material into its parts. His visual perceptual and visual motor skills are significantly weaker than his verbal skills.

His scores for the subtests forming the Freedom from Distractibility Index are lower, and significantly lower when compared with the Verbal Comprehension Index. This difference is indicative of an attention disorder.

Diagnostic Tests

_____ has a Full Scale IQ of 112 and is of high average intelligence with a significant difference between his verbal and performance abilities.

His Basic Reading Age is 7.9 years, his Spelling Age is 8.6 years and his Reading Comprehension Age is 7.3 years (WORD). These scores indicate that _____’s reading, and reading comprehension skills are about two years below age expected levels. However, his comprehension could be affected by his poor reading skills. His spelling age is one year below age level.

The kind of reading errors that _____ made were: substitution of vowel sounds, consonants, words; addition of consonants and omission of part of words.

The kind of spelling errors that _____ made were: difficulties with homophones, phonically attempting unfamiliar words, a confusion with long vowel sounds and omission of vowels and consonants. He also showed a difficulty with syllabification of words.

_____ was required to write based on three pictures that make a story. He was asked to take 5 minutes to plan the story, but chose to start write away. He has used a few details from the pictures, but has left out a large number of cues that could have added to the content. There is no evidence of the use of proper nouns, adjectives or adverbs, similes or metaphors to enrich the
language. In a total of 59 words, he has used 2 seven-letter words. He has not broken up the writing into sentences and has not used paragraphs. His handwriting is large, irregular and is mostly in print. There is enough space between most of the words. The ‘r’/’n’ and i/u are letters that are difficult to distinguish from each other. He gets a percentile score of 5 for writing skills.

______’s attainment in Arithmetic is at Grade 6 level. This is age appropriate.

On the Brown ADD, ______ has a moderately high score for inattention and impulsivity. This along with the fact that there is a significant difference between Freedom from Distractibility Index and the Verbal Comprehension Index indicates a possibility of a diagnosis of ADD.

Conclusions

______’s difficulties in the classroom stem from his specific learning disability in reading, spelling and writing as well as his attentional needs. He has made improvements in reading and spelling. He continues to have visual motor difficulties. His maths skills are age and grade appropriate.

Recommendations

Activities that include unscrambling words to form a coherent sentence, comic strip frames to tell a joke, or unscrambling paragraphs to form a story should help ______ with developing the skill of visualizing a whole from the parts.

Memory games and mnemonic devices should help him remember specific terms in the sciences and social studies.

To enable ______ to function in an organized manner he should work in an environment that is structured. He should learn to rely on visual aids like checklists and colour codes, for e.g., he should pack his school bag the previous night with the aid of a checklist. He should have a school assignment book where he notes down reminders and messages. His class teacher and parents could initially monitor this on a regular basis till it becomes an established behaviour.

Since he dislikes the act of writing, the use of the word processor in the long run could be motivating and time saving. He could make a gradual start so that he is competent with it at a later stage. This does not imply that _____ should not continue to write as well. _____ should practice writing between lines, paying attention to the formation of his letters to make it more legible.

To improve his fine motor skills _____ is advised to spend some time each day in activities like making figures or forms with play dough or clay, paper folding activities, cutting and pasting with paper, sandpapering or sewing.

_____ should continue to receive classroom support and one to one instruction. He needs to be taught the basics of writing – sentence structure, paragraphs, elaboration of a theme and the use of vocabulary. Support in the Social Sciences, Maths and Integrated Science in the classroom is recommended as well.

In the classroom, all written instructions need to be read out to him before he is expected to start the task. The teacher could prearrange a signal with ______ to get his attention back to the task at hand. He could be given breaks in the form of allowing him to get a drink of water, or fetching a book. The teacher should initiate these breaks.

______, M.Phil, Ph. D., C.Psychol. April, 2003

IACP – PLM

Technical Appendix

Tests Administered


The (WISC-III UK) was administered to measure cognitive functioning across 12 different areas, which included six verbal and six performance subtests. The Full Scale is calculated from ten of these tests, with two additional subtests giving extra information about memory and speed of information processing. The scale scores are standard scores relating ______’s performance to that of individuals in the same age group.

An average I.Q. score is between 90 and 109, 70 to 79 are low average, 110 to 119 are high average, 120 to 129 are high while 130 plus is exceptionally high. The percentile rank is the percentage of children of the same age in the sample, who gained a score at the same level or below that of the child’s score.

<table>
<thead>
<tr>
<th>Scale Type</th>
<th>Score</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale I.Q.</td>
<td>112</td>
<td>79th</td>
</tr>
<tr>
<td>Verbal I.Q.</td>
<td>120</td>
<td>91st</td>
</tr>
<tr>
<td>Performance I.Q.</td>
<td>101</td>
<td>53rd</td>
</tr>
</tbody>
</table>

**Verbal Subtests**  
An average score would be 10, individual scores can vary from 1 to 19.

- Information: retention of general knowledge facts 15
- Similarities: abstract verbal reasoning skills 15
- Arithmetic: mental calculation of problems using a variety of memory skills 12
- Vocabulary: oral definitions of words 10
- Comprehension: social common sense problem solving 14
- Digit Span: immediate verbal recall 10

**Performance Subtests**

- Picture Completion: visual perception of small details in pictures 8
- Coding: visual memory and speed of information processing 12
- Picture Arrangement: visual sequencing of pictures to make a story 12
- Block Design: spatial ability shown in three-dimensional construction 9
- Object Assembly: spatial ability assessed by building parts into wholes to form jigsaws 10
- Symbol Search: visual scanning at speed 14

The subtests can be regrouped to give further information about four specific areas.

1. Verbal Comprehension shows the use of language in thinking across a variety of question and answer tests and is calculated from the Information, Similarities, Vocabulary and Comprehension subtests.
2. Perceptual Organization shows the ability to use non-verbal materials in logical ways and is calculated from the Picture Completion, Picture Arrangement, Block Design and Object Assembly subtests.

3. Freedom from Distractibility measures the use of auditory memory in verbal problem solving without losing concentration. Auditory working memory, short-term memory and sequencing are required to interpret mental arithmetic problems and to solve them applying tables’ facts. This is examined together with the ability to remember sequences of digits presented at one second intervals on the Digit Span Test.

4. Processing Speed is calculated from the Coding and Symbol Search subtests. It is important for accurate copying and for a fast writing speed.

<table>
<thead>
<tr>
<th></th>
<th>Standard Score</th>
<th>Perce</th>
<th>Age Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCI</td>
<td>121</td>
<td>92nd</td>
<td>7.9</td>
</tr>
<tr>
<td>POI</td>
<td>113</td>
<td>81st</td>
<td>7.6</td>
</tr>
<tr>
<td>FDI</td>
<td>106</td>
<td>66th</td>
<td>7.3</td>
</tr>
<tr>
<td>PSI</td>
<td>117</td>
<td>87th</td>
<td></td>
</tr>
</tbody>
</table>

**FDI discrepancy with VCI - 15**

**Wechsler Objective Reading Dimensions – WORD**

The three WORD subtests – Basic Reading, Spelling and Reading Comprehension, enables one to view the child’s progress in acquiring fundamental literacy skills from three different perspectives. A composite literacy score provides a measure of overall performance.

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Predicted WORD</th>
<th>Actual WORD</th>
<th>Difference</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Reading</td>
<td>107</td>
<td>80</td>
<td>-27</td>
<td>0.01</td>
</tr>
<tr>
<td>Spelling</td>
<td>106</td>
<td>90</td>
<td>-16</td>
<td>NS</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>108</td>
<td>80</td>
<td>-28</td>
<td>0.01</td>
</tr>
</tbody>
</table>

It is possible to compare _____ ’s general ability level (WISC-III) with his level of achievement in literacy skills. This can be done by finding the difference between actual achievement and predicted value.

**Qualitative Analysis**

**Basic Reading –**

Substitution of:

vowel sounds - e.g., ‘rain’ for ‘ruin’

consonants – e.g., ‘that’ for ‘then’; ‘unless’ for ‘useless’

Addition of consonants – ‘angry’ and then ‘angin’ for ‘again’

Omission of part of word - e.g., ‘complete’ for ‘completely’

Made some effort to decode words, but gave up and began to guess at the word taking a cue from the first letter or sound.

Spelling –
Phonically attempted unfamiliar words
‘don’ for ‘done’; ‘pitcher’ for ‘picture’; ‘riply’ for ‘reply’; ‘edishin’ for ‘edition’; ‘wissl’ for ‘whistle’

Difficulties with homophones
‘night’ for ‘knight’

Confusion with long vowel sounds
‘conting’ for ‘counting’; ‘carless’ for ‘careless’

Omission of vowels and consonants (difficulty with syllabification)
‘prusded’ for ‘produced’; ‘prvew’ for ‘preview’

Test of Auditory Analysis Skills (TAAS)

The TAAS is a test of auditory perceptual skills and investigates the ability to analyse spoken words into phonemes (sounds) and to map out a temporal sequence among the sounds.

Age appropriate score. Had difficulty with this test and continuously expressed how difficult it was.

DAB - 2
This is a standardized individual achievement test that measures various dimensions related to learning in school. _____ was assessed for word knowledge (synonyms), grammatic completion and writing (based on three pictures that make a story). A standard score of 8 – 12 is within the average range and a percentile rating of 50 is average.

<table>
<thead>
<tr>
<th></th>
<th>Std score</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>9</td>
<td>37th %tile</td>
</tr>
<tr>
<td>Grammatic Completion</td>
<td>8</td>
<td>25th %tile</td>
</tr>
<tr>
<td>Writing</td>
<td>5</td>
<td>5th %tile</td>
</tr>
</tbody>
</table>

He was asked to take 5 minutes to plan the story, but chose to start write away. There is no evidence of the use of proper nouns, adjectives or adverbs, similes or metaphors to enrich the language.

Number of words – 59  Vocabulary – limited
Vocabulary – limited  Expression – poor,

Use of sentences - no  Use of paragraphs – no

Handwriting - large, irregular print. There is enough space between most of the words. The ‘r’/‘n’ and i/u are letters that are difficult to distinguish from each other.

WRAT 3 - Math
Assesses numerical computational skills

Standard Score 119  Grade level 6
Brown ADD Scales
This tool integrates information from a variety of sources for a comprehensive assessment of Attention-Deficit/Hyperactivity Disorders and associated symptoms.

Inattention – 7/9
Hyperactivity – 2/6
Impulsivity – 3/3

Example 2

Neuropsychological Assessment Report

Name: XXXX  Gender:  Age:
Date of Birth:  Date(s) of testing:
Name of School:  Class:

Reason for Referral: 1) Difficulties in reading, writing and spelling.
2) Poor concentration
3) Discrepancy between oral and written responses.
4) Makes spelling mistakes and tends to get low marks for answers.

History: XXXX is a 13-year-old girl studying in class 8. The mother reported that XXXX was a very friendly girl with many friends and an ability to get along well with people. She liked being with people and was known to be good with children. The primary problem for which the mother sought help was her academic performance. Since XXXX joined school (LKG in Madurai), the teachers and the mother noticed problem behaviours. She was found to be restless in class and would frequently ask the teacher to let her go out and play. As she went from one class to another the mother noticed that she struggled to keep up with the class. She had problems in her vision, which were noticed and an Optometrician was consulted. She currently wears spectacles to aid in clear vision. Reading, spelling and writing difficulties became more prominent. She has also changed two schools.

Currently there appears to be a marked discrepancy between her verbal abilities and her ability to translate this into the written format. She also tends to forget what she reads quite fast. She does not have problems with maths. The problem appears to be more prominent for languages and history/social studies. The mother reported (and this was later confirmed by XXXX) that she did not attempt long answers as she would forget part of the answer. If that happened then she would lose the trend of her thought and could not continue further. The mother also reported that sometimes she is not aware of the mistakes she makes. Short answers, though correct, tend to have plenty of spelling mistakes and as a consequence she tends to get fewer marks.

Forgetting, however, appears to be related only to schoolwork. Her ability to socialize and make friends remains unaffected. She also shows a keen interest in other activities.
as told by the mother. No attention or behaviour problems were mentioned by the mother.

On observation, XXXX appeared to be a quiet and patient girl who was willing to work with the tasks given to her. She did not ask many questions that would interrupt the session and showed keen interest in attending to the tasks on hand. Preliminary observations did not reveal any signs of restlessness or behaviour problems. She had adequate attention and was able to sustain it over the entire testing period. However she was not able to verbalize her difficulties in the initial session. XXXX was assessed over two sessions of 90 minutes each.

Tools Used:

1. Standard Progressive Matrices (SPM)
2. Digit Span (subtest of WISC III)
3. Letter-number Sequencing (subtest of WAIS III R)
4. Stroop Colour Word test
5. Bender Gestalt test
6. Rey Ostrieth Complex Figure Test (RCFT)
7. Phonological Awareness test (Gillion and Dodds, 1999 version)
8. Reading subtests (NIMHANS SLD Battery)
9. Corsi Block Taping test
10. Block Design (subtest of WISC)
11. FAS (phonemic fluency)
12. Category fluency test (subtest of NIMHANS Neuropsychological battery)
13. AVLT (subtest of NIMHANS Neuropsychological battery for children)

Rationale for choosing the tests:

The above-mentioned tests were chosen for the following reasons:

1. Intelligence to estimate current levels of functioning (SPM)
2. SLD subtests and Phonological awareness to explore for current levels of reading, writing, spelling and phonological awareness.
3. Neuropsychological tests to explore for possible neuropsychological deficits not evident in routine testing.

The aim was to obtain a complete profile of the child on the various parameters, which would help in providing a complete understanding of her strengths and weaknesses. In addition the profile would aid in providing a solid framework for rehabilitation to be planned after the assessment. SPM was the test of choice for intellectual assessment as it was a non-verbal test of. Reading, writing (obtained from a free writing passage) and spelling were assessed to explore for specific deficits in these areas. In addition the phonological awareness tests would throw light on her phonological abilities. The neuropsychological assessment included attention, executive functions, verbal learning and memory, visual integration and organization, visual construction abilities and visual learning and memory.
Findings on the tests:

The entire assessment was carried out across two sessions. The findings of the tests are discussed under separate headings for SLD, Intelligence and Neuropsychological profiles.

**Intellectual Functioning:**

XXXX was assessed on the SPM a non-verbal test of intelligence. SPM is a non-verbal test where a piece of a picture is missing. Below the picture are 6-8 choices of which only one completes the picture. Drawing from logic and her ability to reason, she has to choose the correct option. There are 60 such problems to be solved. It starts with simple problems and gets progressively difficult. Her performance revealed that she has average intelligence. Some intra-test scatter is seen suggesting that emotional aspects might have influenced her performance. Since it is a non-verbal test it would be a true reflection of her abilities despite her reported academic difficulties.

**Specific Learning Difficulties:**

**Reading:** The NIMHANS SLD battery was used to explore for deficits in reading. The subtest consists of standardized reading passages, which she would be required to read aloud. After which she would be asked a few questions to assess her ability to comprehend what she has just read. XXXX read the passages with adequate speed and showed good intonations while reading. Punctuations were attended to while reading. However, she had difficulties reading unfamiliar words. Errors such as guessing at words (e.g. read the word as monkey instead of money), omission (e.g. ‘the’ and word endings were omitted while reading) and additions (e.g. fruits for fruit) were evident. She also displayed poor word attack skills i.e. she could not draw upon cues or strategies to read new/unfamiliar words. She was reading 3 years below her current expected level. Comprehension was intact suggesting the XXXX was able to understand what she was reading despite having difficulties while reading.

**Spelling:** Was assessed using the spelling words from the Phonological awareness list. Spelling errors were present. Some words were spelt phonetically (e.g. “cacher” for catcher, “jat” for jet). Most errors were found with irregular words. This is suggestive of difficulties in spelling.

**Writing:** was assessed on the basis of a writing sample. She was asked to write about anything she likes and she chose to write about her pet. She wrote only 3 lines and refused to write anything more than this. The sentence structure was simple and short. Words were factual rather than descriptive. The writing sample is suggestive of difficulties in spelling and organizing thought and converting thoughts into words.

**Phonological Awareness** (Stahl and Murray, 1994): This consists of lists of words divided into sections. Each section consists of 5-15 words and the instructions given before each section primes the child on what needs to be done. Phoneme blending requires one to identify the word that is made by putting a few sounds together. E.g. /ml/ /al/ /lp/ spells “map”. Phoneme isolation requires one to say the first/last sound of each word read out. Segmentation refers to the ability to break down a word into its sounds (e.g. sheep would be broken into /shl /eel /lp/) and finally phoneme deletion refers to the ability to say a word without a particular sound e.g. “say flat without the /l/ sound”. XXXX was
assessed on phonemic blending, phoneme isolation, phoneme segmentation and phoneme discrimination. Accuracy in performance was low across all the tasks, the most difficult being Phoneme segmentation.

Summary: The SLD assessment is suggestive of difficulties in reading, writing spelling and phonological awareness.

Neuropsychological Assessment:
This consisted of a number of individual tests. The results will be reported on the basis of the functions that the tests represent.

Attention: was assessed on digit span (forward) subtest of WISC III R. Digit span forward requires the child to listen to a list of numbers read in increasing order (i.e. 2 digit numbers to 8 digit numbers) and repeat it. On digit forward her span was 5 digits (with a score of 8) suggesting adequate attention span.

Executive functions: consists of working memory, set shifting, planning, fluency, and inhibition/interference control.

Working memory (WM, refers to the ability manipulate information while holding onto other information) was assessed on digit backward (verbal WM) and Corsi block tapping forward and backward tests (visuo-spatial WM). Digit span backwards refers to a list of 2 digit-8digit numbers read one after another in increasing order and the child has to repeat the numbers in reverse. On the Corsi test she is required to tap a set of blocks (arranged in a predetermined order) just as it is shown by the examiner (forward) or to reverse it (backward). Assessment reveals that XXXX had adequate visuo-spatial working memory (on Corsi she scored above the cut off scores on both forward and backward trials). However she had difficulty on the digit backward test with a span of 3 suggesting difficulties in verbal working memory. This was also evident on other tests in the form of perseverations. On the letter number sequence test a list of letters and numbers are read and each time the child has to arrange the letters in alphabetical order and the numbers in ascending order. Her performance (score of 6) on this test is also suggestive of difficulties in working memory especially in the verbal domain.

Phonemic fluency and category fluency: XXXX was asked to generate as many words as she could in one minute, starting from a particular letter. Three such trials were given (phonemic fluency). In category fluency she was asked to name as many objects made of wood (and round objects), as she could, in one minute. She had difficulty generating words under the phonemic fluency (6 words on average) subtests while for category fluency (10 words on average) she did not show much difficulty. This is suggestive of difficulties in searching for words using phonemic cues.

Interference control was assessed on the Stroop colour word test. The test consists of a list of names of colours written in coloured ink (e.g. the word “blue” is written in red ink). The child is asked to name the colour of ink in which the word is written (in the above example she would have to say red). The child is asked to read as many words as possible in 45 seconds. It tests her ability to handle interference. In the presence of a
well-learnt response (e.g. reading the word) she is asked to give a new response (i.e. name the colour of ink). Scores are suggestive of her ability to inhibit a well-learned response in the presence of more appropriate responses. XXXX’s responses on this test are suggestive of difficulties in the ability to inhibit a well-learnt (but irrelevant in the current context) response indicative of difficulties in executive functions.

Verbal Memory was assessed using the auditory verbal learning test. This test consists of two lists of 15 words each. One list is presented five times and she is asked to recall the words, assessing the ability to acquire information across trials. The second list is presented once and is used to assess the role of interference in learning. In addition, subsequent recall trails of list one assess delayed recall i.e. the child’s ability to retain information over a period of time. Her performance shows that the amount she is able to learn in the initial trials is low. After the 5th trail she was able to learn 10 out of the 15 words. However in the subsequent trials she could remember all the 10 words learnt suggesting that the effect of interference is minimal and forgetting is not present. The low number of words recalled in the first 3 trials suggests that she has difficulty in acquisition/uptake of information. However, she has no difficulty recalling whatever is acquired across trials.

Visual-spatial learning and memory was assessed using RCFT. A complex figure is placed before her and she is asked to copy the figure. This assesses her visual perceptual ability. Immediately copying she was asked to draw the figure from memory. This assessed her immediate memory for visual objects. After 5 minutes and after 20 minutes she was asked to draw the same figure from memory. These trials assessed her visual-spatial memory. Results suggest she has adequate visual-spatial abilities. This was also observed on the BGT (where she was able to copy 8 geometric figures) without any difficulty. However she had difficulties in planning the drawings and had to frequently erase and redraw them. While attempting to recall the CFT, however she was unable to recall some facts across all the memory trials. This is suggestive of mild forgetting of visual information not amounting to a deficit.

Visual integration and visual construction abilities were assessed on the block design test. In this test she was given 4 blocks and asked to form a design with the blocks by looking at a picture placed in front of her. The pictures required 4 blocks initially to construct the picture and later required 9 blocks to complete the task. On the block design test performance revealed that she had adequate visual integration and had adequate planning and ability to learn from experience.

Neuropsychological Impression: The neuropsychological assessment is suggestive of deficits in executive functions in the form of verbal working memory, phonemic fluency, poor planning, and poor interference control.

Summary of complete assessment:

XXXX is a 13-year-old girl referred for assessment for difficulties in reading, writing and spelling. A complete assessment was conducted to explore her current level of functioning and to explore possible difficulties in a number of areas. Assessment reveals that XXXX had difficulties in specific areas, which can help explain the difficulties she is experiencing in her academics. The deficits include- difficulties in reading, writing and spelling (suggestive of specific learning difficulties in all three areas) poor phonological awareness and deficits in verbal working memory, fluency, interference control and
visual integration. Visual learning and memory is intact category fluency and visual-spatial working memory does not show any deficits. Intelligence is in the average range.

**Recommendations:**

**Based on the profile of deficits the following recommendations are made:**

1. XXXX would benefit from regular inputs to improve her academic skills.
2. Cognitive rehabilitation to improve working memory and other executive functions.
3. Specific inputs to improve phonological awareness and enhance her spelling.
4. Regular remedial training with some training on study skills may be required at a later stage.

**Assessed by:**

Appendix B

**Remediation**

Although remediation in terms of teaching skills to the child with SLD is mostly carried out by the special educator, it is important for the CP to be aware of research based techniques.

**Reading and Spelling**

Intervention at an early phase would emphasize phonemic awareness and phonic knowledge. Most special educators are familiar with programmes and techniques that stem out of the Orton –Gillingham approach. The child is taught the phonemic sounds of the letters and their combinations and then to blend these sounds to form a word using a multisensory approach. The following websites carry more information and references on the different programmes.

http://www.ldonline.org/article/Components_of_Effective_Reading_Instruction

**Writing**

Remedial teaching in writing comprises strategies to be taught during the 3 stages of writing: planning before writing, the actual writing process and proofreading after writing.

**Arithmetic Skills**

The arithmetic skills intervention process generally proceeds in a bottom up manner, starting with basic facts of number comprehension and production viz. larger than, smaller than comparison, odd-even segregation of numbers, sequence completion, reading of larger numbers, writing of larger number, use of place values, arranging in ascending/descending orders, etc. On ensuring the child’s proficiency in these...
modules, the next level of number processing is initiated. Remediation targets the level of difficulty that the child is experiencing.

A general format to follow in introducing arithmetic skills would be to introduce the concept and proceeding from concrete to symbolic and then to abstract. The abstract stage is when the child is asked to use only the numbers written and work out the problem without resorting to concrete objects or symbols.

**Learning Strategies**

Listed below are some learning strategies that can be used with the older student.

1. **The SQ3R method**

   SQ3R stands for Survey, Question, Read, Recite and Review.

   **Survey** - Get the best overall picture of what one is going to study BEFORE studying it any detail. It's like looking at a road map before going on a trip.

   **Question** - Ask questions for that will aid learning. The important things to learn are usually answers to questions. Questions should lead to emphasis on the what, why, how, when, who and where of study content.

   **Read** - Reading is NOT running one’s eyes over a textbook. Active reading should be emphasized. Reading to answer questions, being alert to words in italics and bold print are useful tips as these are present in the text to indicate a certain degree of importance. Also, ensure that the child reads everything - including tables, graphs and illustrations. Often tables, graphs and illustrations can convey an idea more powerfully than written text.

   **Recite** – The child has to be encouraged to periodically stop reading and recall what is being read. Recall of main headings, important ideas of concepts presented in bold or italicized type, and what graphs charts or illustrations indicate should be done periodically. Developing an overall concept and attempting to connect things already known to things just read are useful strategies that aid in better recall.

   **Review** - A review is a survey of what is covered. It is a review of what one is supposed to accomplish, not what is to be done. Rereading is an important part of the review process. Rereading with the idea that one is measuring what has been gained from the process is essential. During review, it is good to go over notes taken to help clarify points missed. The best time to review is when you have just finished studying something.

   Effective note taking, use of flash cards, using the peg word system and mnemonics and visualization are additional strategies that are useful in enhancing memory.

2. **Mnemonics**

   The most common mnemonic, the FIRST strategy, involves using the first letter of each word in a list to spell out one cue word. This method is easiest to use when the items in the list can be
scrambled around in order to form simple cue words or sentences. Associating cue words with a visual image also aids in recall.

- **Form a cue word.**
  - Use the beginning letters of words in the list to make a word that is easy to remember.
  - Use capital letters for all letters of the cue word that are found in the list.

- **Insert a letter.**
  - Insert a new letter if the existing letters alone don’t make a word.
  - Use a lower case letter for the insertion so it will be clear that it doesn't mean anything

- **Shape a cue sentence or phrase.**
  - If no cue word can be made, use the beginning letters of the words to make a sentence or phrase.

### 3. Cornell method of note taking

This note taking format provides the perfect opportunity for following through with the 5 R's of note-taking.

**Record**
While the teaching is going on the student should record as many meaningful facts and ideas as possible in the main column.

**Reduce**
As soon after as possible, these facts and ideas should be summarized concisely in a Cue Column. Summarizing clarifies meanings and relationships, reinforces continuity, and strengthens memory.

**Recite**
Next the student should cover the Note Taking Area, and using only jottings in the Cue Column, repeat the facts and ideas of what was taught in as detailed a manner as possible. Then, verify what has been said.

**Reflect**
Draw out opinions from the notes and use them as a starting point for reflections on the teaching and how it relates to the subject. Reflection will help prevent ideas from being inert and soon forgotten.

**Review**
The student should review the notes before the next lesson.

### 4. Strategies for multiple choice questions

Multiple-choice answers usually include a correct answer, an answer that is obviously wrong, and two answers that are close to the correct one.
- **Read** the question while covering up the answer choices. **Answer** the question first in your head (or work it out in paper), then **find** the given answer that best matches your original response.
- You can cross out the choice that is wrong and use a process of elimination to help limit the number of answer choices.

### 5. Organizational skills

The process of helping a child and a parent through exam times is often the biggest challenge for professionals working with older children with SLD. Apart from learning strategies – some of which have been outlined above, it is important to make sure that the child follow some general practices that will allow learning to take place.

Getting organized to study allows the child to focus attention on the task at hand. An inability to sustain attention, and easy distractibility are common complaints of children when they study. Effective methods of enhancing concentration are:

- Identify and maintain a special place and time to study
- Ensure people around – the family are aware that the child is studying.
- Advice the child that if they find their mind wandering on unnecessary things they should set aside a different time of the day to think about those aspects.
- Adequate breaks should be taken
- The child should alternate between easy and difficult topics to ensure adequate attention.

Research shows that so-called declarative memories--such as a sequence of facts--also benefit from sleep, especially when students are challenged with subsequent, competing information (Ellenbogen, Hulber, Stickgold, Dinges, and Thompson-Schill, 2006). Students with SLD usually spend many hours learning and tend to deprive themselves of sleep.

These are simple yet handy tips for the parent as well as children to help them organize their time better.

**REFERENCES:**


[http://lsc.sas.cornell.edu/Sidebars/Study_Skills_Resources/cornellsystem.pdf](http://lsc.sas.cornell.edu/Sidebars/Study_Skills_Resources/cornellsystem.pdf)
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