

ASSESSMENT AND REMEDIATION TECHNIQUES FOR DYSLEXICS

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ABSTRACT

In this paper, the writer will first examine some definitions of 'dyslexia'. Definitions by Hornsby (1995), Pavildis (1990), Peer (1994) and the British Dyslexia Association will be included. It will be stressed that dyslexia is 'not solely a reading disability' (Peer 1994). Next, the importance of assessment and remediation techniques for dyslexics will be briefly discussed. Some types of assessment tests will be mentioned: Norm Referenced Tests (e.g. New Reading Analysis, Raven's Matrices); Diagnostic Assessment of sub-skills (e.g. Aston Index, Bangor Dyslexia Test); and Criterion Referenced Tests (Heaton Test). Besides highlighting the types of reading and spelling tests available, the type of data to collect and what signs to look out for during informal assessments will also be mentioned. For remediation, the importance of structured sequential, cumulative programmes based on multisensory techniques will be discussed. A range of structured learning programmes available (e.g. *Alpha to Omega* by Horneby and Shear, *Skill Teach* by Shelton) will be highlighted. Finally, a case study of a 12.7 year old dyslexic child will be presented. The writer will discuss her work with the child during a five-month period. The child's profile, the assessment and remediation techniques used will be presented. Since the child is a native speaker of English, the implications of the assessment and remediation techniques on second language learners will be considered.

The first part of this paper examines the definitions of dyslexia. The second part focuses on assessment and remediation techniques. In the final part of the paper, a case study of a 12.7 year old dyslexic is discussed.

(I) Definitions of Dyslexia

The word 'dyslexia' comes from the Greek meaning 'difficulty with words or language' (Hornsby 1995: 3). According to the British Dyslexia Association (BDA), the terms 'Specific Learning Difficulties' and 'Dyslexia' are 'often used synonymously' (BDA Handbook 1995: 9).

Peer (1994: 9) defined Specific Learning Difficulties (Dyslexia) as 'organising or learning difficulties affecting fine co-ordination skills and working memory skills. It is independent of overall ability and conventional teaching. When untreated, there are significant limitations in the development of specific aspects of speech, reading, spelling, writing and sometimes numeracy.'

Pavlidis (1990) described dyslexia as a 'syndrome that is best exemplified by an unexpected severe reading retardation which is not caused by any known intelligence, physioeducational or environmental factors.' It must be noted that research has indicated that dyslexia is 'not solely a reading disability' (Peer 1994: 14). In order to help dyslexics overcome their learning difficulties, early identification, assessment and remediation are important.

(IIA) Assessment

Assessment has three main functions: diagnosis, delineation of specific learning difficulties, and guide to remediation (Thomson and Watkins 1990). Hence, assessment should be functional (to identify what is getting in the way of learning) and descriptive (to identify what can be done to further learning).

Below are some types of assessment tests:

- a. (a) Norm Referenced Tests - for screening purposes, evaluating teaching strategies, to identify discrepancies between IQ and literacy skills, to measure how child's learning compares with the learning of his peers. Standardised score, quotient, percentile score and age equivalent are given (e.g. New Reading Analysis; Raven's Matrices, British Picture Vocabulary Scales (BPVS); British Ability Scales (BAS); Wechsler Intelligence Scale for Children (WISC).
- b. Diagnostic Assessment of sub-skills - for testing development of auditory/visual/processing skills (e.g. Aston Index, Bangor Dyslexia Test).
- c. Criterion Referenced Tests - for determining entry points in structured remedial programmes (e.g. Heaton Test).

During informal assessments, background information (e.g. family, birth, developmental, medical, school history etc.) should be collected for the learner's profile. Parents, teachers and even the learner himself, are useful sources of information. The child's vision/hearing must be checked to ensure that learning difficulties are not caused by defective vision/hearing. The child's oral skills should be assessed since 50% of dyslexics have oral language problems which are often manifested in their reading/spelling mistakes. As pointed out by Peer (1994) 'children who do not articulate sounds clearly, probably cannot spell words correctly'. A checklist for signs of dyslexia will be useful.

To identify any discrepancy between the child's intelligence and literacy skills, the BPVS and Raven's Matrices can be used to provide 'reasonable estimates of verbal and non verbal abilities' (Snowling 1990). The BPVS measures the child's receptive (hearing) vocabulary. It is not a comprehensive test of intelligence since it only measures the child's ability to understand and store word meanings. The child is presented with four simple black and white illustrations on a page. The child's task is to select the picture considered to illustrate the meaning of the target word presented orally by the examiner. No reading or writing is required of the child, just a verbal or a pointing response.

The Raven's Standard Progressive Matrices (Coloured Progressive Matrices for younger children) measures nonverbal reasoning skills, using spatial and spatial relationships to complete patterns. The Standard Progressive Matrices (SPM) scale is divided into five sets of 12 problems. Each set starts with a problem which is self evident and develops a theme in the course of which the problems build on the argument of what has gone on before, and thus becomes progressively more difficult. 8PM provides a reliable estimate of a person's capacity to think clearly when allowed to work steadily at his/her own speed from the beginning to end without interruption.

Other more comprehensive intelligence tests (e.g. BAS and WISC) can only be administered by educational psychologists. Like most intelligence tests, the WISC is divided into two parts. One aims to assess the child's intellect by what he can say about things and the other to test what he can do in visual/manual tasks that require no speaking. The verbal tests comprise tests on general information, comprehension, mental arithmetic, similarities, vocabulary and digit span. The non-verbal (or performance tests) comprise tests on picture completion, picture arrangement, block design, object assembly and coding. Taking into account the child's age, a scaled score will be calculated for each of the tests, ranging from 0-20 or 0-19, the average for each test is 10. The scaled scores (excluding scores for Digit Span) are added up and converted into verbal IQ and performance IQ. The full scale IQ is a statistical conversion of the sum total of the verbal and performance IQ. According to Hornsby (1995:91), most people score 'equally well or equally badly' in both verbal and performance tests. Hence, a big difference between the child's verbal and performance ability can 'result in learning difficulties such as dyslexia.'

Since the ability to use fine motor skills helps register information leading to long term storage and recall, (Chasty and Friel 1991), learning skills in fine motor development should be assessed. This competence is needed in manipulating the book, turning the page and controlling the pencil when writing/spelling. The ocular motor skills required in controlling/moving the eyes from left to right across the page so that the child takes in the printed word is also important. Children with manual/fine motor skills inadequacies show increased incidence of ocular motor difficulties. The nature and extent of the child's working memory difficulties must also be investigated to detect any inadequacy in the links between auditory, visual, motor and semantic aspects of learning.

Besides assessing auditory, visual, perceptual, memory and sequencing skills, tests on laterality/directionality are necessary since confusion between left/right may lead to confusion between letters (b/d) or words (saw/was) and mirror writing. The Aston Index has a comprehensive series of tests on sub-skills. For example, there are tests on picture recognition, Goodenough draw-a-man, copying geometric designs, visual discrimination, child's laterality, visual sequential memory and auditory sequential memory. The nature of the child's learning problems can be indicated by the profile of results that represent the summary of diagnostic testing. Besides the Aston index, the SEN Resource Manual for Schools also has useful materials for assessment and remediation.

Since reading/spelling involves many skills which dyslexics lack, a comprehensive and appropriate range of assessment tests is necessary. Below are some reading tests available:

- a. Single word recognition tests - Schonell Graded Word Reading Test, Vernon's Word Recognition Test, Burt's Reading Test
- b. Sentence reading tests - Salford Reading Test (by Bookbinder)
- c. Continuous prose tests - Neale Analysis of Reading Ability, the Individual Reading Analysis (for younger children), the New Reading Analysis (NFER/Nelson)

Since reading is not a single skill, but a linked series of sub skills which leads to information processing competencies, the New Reading Analysis is a very useful test measuring oral reading ability and comprehension skills. Accuracy and comprehension scores are available and a miscue analysis will reveal the types of errors, reading strategies and word attack skills used. Like the New Reading Analysis, the Neale Analysis of Reading Ability also comprises passages of English prose which have to be read out aloud. Comprehension questions are asked and accuracy, rate and comprehension scores are calculated.

For the Schonell Graded Word reading test, the child is required to read aloud a series of graded words. Testing is discontinued when 10 consecutive words are misread. Based on the number of words read correctly, a Reading Age is obtained. To test sight word recognition, the Murray and McNally High Frequency Sight Word Vocabulary is available. Since phonology is crucial in reading and spelling, the child's phonic skills (e.g. knowledge/recognition of letter names/sounds, grapheme/phoneme correspondence, blends, phonemic segmentation etc.) must also be assessed.

To measure spelling ability, the Schonell Graded Word Spelling Test is available. For this test, the child is required to spell a number of graded words. Testing is discontinued when 10 consecutive words are misspelt. Based on the number of words correctly spelt, the Spelling Age is obtained.

The Parallel Spelling Tests are presented in two banks of items: Tests A (for younger children) and Tests B (for older children). The test items are presented in complete sentences. One pair of sentences is selected from each of the successive groups of six pairs to form a test of the prescribed length for each age group. The raw scores are converted to spelling ages and quotients (quotients show the relative positions of children who are, within a month, the same age). This test is very suitable for class teachers as it is quick to administer and easy to mark.

Other spelling tests including the Vernon Spelling Test, Peter's Diagnostic Dictation Test and Spar Spelling Test are available. A piece of free writing is also a good source of spelling mistakes. In order to help dyslexics overcome their reading and spelling difficulties, early identification, assessment and remediation are important.

(IIB) Remediation

Based on the strengths/weaknesses identified in the assessment tests, remediation can be planned to cater to the child's individual needs. The reading and spelling programme must be structured, sequential, cumulative, based on sound phonetic principles and multisensory learning techniques. There must be lots of repetitions, overteaching and overlearning since dyslexics tend to forget easily. Multisensory learning is vital because it stimulates the dyslexic's learning processes through all the senses. Since all the pathways to the brain are involved, the stronger areas of the brain are used while the weaker areas are exercised. .By using the visual, auditory, oral and kinaesthetic pathways simultaneously, memory can be strengthened.

Among the many structured learning programmes based on multisensory techniques, *Alpha to Omega* (by Hornsby and Shear) is widely used for teaching reading and spelling. It is a very detailed language programme which is divided into 3 stages. It starts from basic alphabetic skills and moves on to consonant blends and so on. Each stage ends with test materials for assessment. To supplement the programme, flashcards and activity packs are also available. Phonic work can be further

reinforced by using the *Edith Norrie Letter Case*. Based on multisensory techniques, individual letters are built to form words following the spoken sound sequences from the Letter Case.

Skill Teach (by Kath Shelton) is very reading based and supplementary materials on spelling are necessary. This scheme has a good section on blends. *Spelling Made Easy* (by Violet Brand) has an interesting and continuing story line (Fat Sam). It teaches word families which are useful for dyslexics with problems in blending strings of letters. Accompanying worksheets and computer programs are also available. Since *Spelling Made Easy* is very spelling based, it is recommended for dyslexics with spelling problems.

Other structured programmes include *The Bangor Teaching Programme; the Hickey Programme; and the Gillingham/Stillman Programme*. The Bangor Teaching Programme places emphasis on the children producing their own workbooks, with help from their teachers. Phonetic teaching methods are the key components in this programme. The Hickey Programme provides a very detailed and systematic structure which is largely based on the earlier works of Gillingham and Stillman. In the Gillingham/Stillman Programme, the child commences with letters, letter blends, analysis of blends, phonic analysis of regular words, polysyllabic words and syllable division. The VAKT (visual, auditory, kinaesthetic, tactile) method is emphasized where the child follows its own speech, relating the visual symbols to sound and representing them in writing. A key element in this programme is the simultaneous oral spelling method.

The simultaneous oral spelling method (SOS) is based on multisensory techniques. Typically, the teacher says the word and the child repeats the word, reinforcing the sound and auditory component. Next, the child names the letters. This step provides additional reinforcement that letters can have both a name and a sound. More importantly, the serial, sequential aspect of letter combinations is also reinforced, making the child aware of the detailed letter structure of words. Then, the child writes the word, naming each letter as he writes. This is important in relation to translating the sound into a written equivalent and as a motor, tactile or kinaesthetic programme. Naming each letter helps to map out the correspondences. Finally the child reads the word, reinforcing the visual to auditory component. This also helps train auditory recall of sequence.

The SOS method is useful for teaching the spelling of phonically irregular words. The Fernald Tracing Technique and Margaret Peter's 'Look-Cover-Write-Check' techniques also help strengthen the memory for letters and the kinaesthetic flow. To improve memory, daily spelling practice is important. For phonetically regular words, dyslexics should sound out the consonant/vowel sounds while writing the word.

When teaching spelling, the words should not be taught in isolation but linked to sentences. New learning must always be related to previously understood materials, the same information presented in varied tasks and materials. Tasks should always be broken into smaller ones and only one or two items should be introduced at a time to avoid overloading. Ways to remember spelling (e.g. beat out syllables, highlight difficult bits of words, change the look/sound of word etc.) should be taught. Using markers or fingers to point at words while reading should be encouraged. Dyslexics should be encouraged to develop a reading habit. Appropriate and interesting books should be provided.

Dyslexics need to develop/improve their visual discrimination skills since reading and spelling are visual processes. To help them recognise and discriminate between shapes of letters/words/sentences, simple games can be played (e.g. jigsaws, Snap, Happy Families). Activities like matching letters/words, classifying things, identifying missing items, finding similarities/differences in pictures are useful. Since dyslexics have short concentration spans, activities should be short, fun and varied

to maintain interest and motivation. Games are very effective for reinforcing teaching points. Lots of concrete props and colourful visual aids should be provided to aid learning.

Ear training exercises can help dyslexics correct articulation (e.g. listen for specific environmental sounds, tapes). Dictation, tracking/sequencing exercises, word discrimination exercises, paired reading, creative writing, crossword puzzles, word mazes, rhymes, limericks and mnemonics are also useful. Rules on spelling grammar, syllabification, word attack skills, word building techniques, proof reading skills, study skills, phonic skills, dictionary skills and cursive writing should be taught. The use of tape recorders, typewriters, word processors and spell checkers should also be encouraged among dyslexics.

Teaching should always be appropriate and geared towards individual needs. For example, a dyslexic with copying and visual motor memory problems will need exercises on basic copying and writing on lines. Another dyslexic with auditory memory problems should be taught chunking-up spelling patterns instead of discrete units. One with problems in blending and sound awareness should be encouraged to follow his own speech sounds more systematically by using the Edith Norrie Letter Case. More importantly, the dyslexic's strengths should always be emphasized and his weakness remediated. Lots of praise, positive feedback, encouragement and empathy should be given to help dyslexics increase their self esteem and confidence.

Dyslexics should also be encouraged to discuss, ask questions and participate especially in class. They should also be given more time to complete their work especially in class since they work more slowly than normal children. If possible, dyslexics should be seated at the front of the class so that the teacher can keep an eye on them and ensure that they understand what is being taught. Since dyslexic children are often 'very sensitive to loud aggressive voices,' (Hornsby 1995:85) teachers should avoid shouting at them. Instead, teachers should always speak slowly and clearly (facing student), using as many gestures as possible. Teachers should also write clearly on the board and when making corrections in the student's exercise books. When marking the dyslexic child's work, some allowances should be made, for example, marking for content rather than presentation. Teachers should praise students' efforts even though their work may seem poor in comparison to nondyslexics' work. Below is a case study of a dyslexic child who responded well to lots of praise and positive feedback.

(III) A Case Study: Tom (aged 12.7 years)

Background

Tom (not his real name) is a native speaker of English. Both his parents were well educated and working. Two of Tom's siblings and his grandmother had learning difficulties. According to Tom's mother, her pregnancy and birth were normal but he was a late talker. Tom was diagnosed as dyslexic at the age of 9.1 years. Based on the educational psychologist's report, Tom's general IQ estimate was 105, verbal IQ estimate was 98, visual IQ was 113 (British Ability Scales). For the next 3 years, Tom attended lessons at a local Dyslexia Institute. He was described as '~a severely dyslexic child who had made very slow progress.' At school, he was given an extra reading lesson every week.

Diagnosis

When Tom started lessons with the writer, he was no longer attending classes at the Institute. However, his extra reading lessons at school continued. During the writer's first informal meeting with Tom, the latter was so nervous that he pressed his nails into his palms. During the subsequent meetings, he became less tense and became more chatty. He seemed very keen to learn but lacked confidence in himself. He also appeared to be rather clumsy and disorganized. He had no problems expressing himself verbally. Some assessment tests were given to Tom in order to assess his strengths and weaknesses.

For the Bangor Dyslexia test, Tom scored 8.5 positive indicators out of 10. He had no problems indicating his left-right body parts. He had problems with repeating some polysyllabic words and doing subtraction. He could not recite his times tables correctly. Nor could he say the months of the year correctly in forward and backward order.

Based on the Schonell Graded Word Reading Test, Tom's Reading Age was 8 years (4.7 years below his chronological age (CA)). When asked to read a short passage aloud, he disregarded punctuation and often skipped words. His reading was not fluent and he could not recognize many simple high frequency words (e.g. in, at, was). However, his recall and comprehension scores were quite good. A miscue analysis revealed that most of his miscues were substitutions with no semantic/syntactic acceptability. Tom said that he felt frustrated whenever he attempted to read so he did not like reading story books.

The Schonell B Spelling Test scores indicated Tom's spelling age (SA). His SA was 8.4 years, 4.3 years below his CA. For his free writing test, he wrote slowly. His speed of writing was 9.7 words per minute. (The average number of words for a 13 year old is 13 words per minute.) His posture and pencil grip were good but he did not use a fully joined cursive script. His ideas were coherent but not well organised. He wrote long sentences and disregarded punctuation. A dictation test (Level A, Peter's Diagnostic Test) was also administered. He was very flustered when he could not spell many words. His school exercise books indicated that Tom had problems with High Frequency words, word endings and spelling the months/seasons of the year.

The Diagnostic Reading Tests on Phonic Skills (from *Skill Teach*) revealed that Tom had problems with letter names/sounds, simple polysyllabic words ending in 'ing, le, er, ed, y'. Based on the Diagnostic Test for High Frequency Words (*Skill Teach*), a list of words which Tom could not read and spell were compiled and included in his teaching programme.

His Progress

Tom was given a lot of revision exercises on letter names/sounds. Some worksheets from *Alpha to Omega* were selected and modified to suit Tom's needs. He also learnt to read, spell and sequence the months/seasons of the year correctly using flashcards. *Skill Teach* (a programme based on multisensory teaching) was mainly used for Tom's lessons. He learnt how to read and spell simple polysyllabic words ending in 'ing, le, er, ed, y'. He also learnt how to segment 2 and 3 syllable words correctly. Worksheets from Phase 4, *Skill Teach* were modified to suit Tom's needs. Since *Skill Teach* was reading based, other supplementary materials were added for the spelling input. Great care was taken when selecting supplementary materials in order to ensure that they complemented the materials from *Skill Teach*. Tom also learnt how to read/spell 18 High Frequency Words using

the Simultaneous Oral Spelling Method. Worksheets on punctuation were also given to him. Since he had problems with his Maths, he was taught the 2, 3 and 11 times tables. He also learnt how to read/spell some Maths terms (e.g. circle, square, triangle etc).

Since Tom could handle visual information better than verbal information, a lot of visual stimuli were given during all his lessons. Teaching aids like sponge shaped numbers/letters, flashcards, salt trays, the chalkboard, times sheets, colourful pictures/objects, magnetic letters and tape recorder/tapes were used. Various games and worksheets (e.g. crossword puzzles, word mazes) were devised to reinforce teaching points and to make the lessons more interesting and varied. Teaching was structured, sequential and cumulative with lots of overlearning and reinforcement. Only 1 or 2 new items were introduced at a time so as to avoid overloading. There was lots of praise, encouragement and positive feedback given to Tom. He was given minimal homework after each lesson and his parents also participated actively by supervising him at home.

At the end of the five month period, Tom had made very good progress. Continuous assessment of his work revealed that he had improved in his literacy skills. As part of his Final Assessment Test, the same Schonell Reading/Spelling tests were administered. The results indicated a Reading Age of 10.1 years (an increase of 2.1 years) and a Spelling Age of 9.5 years (an increase of 1.1 years). He could read more fluently and comprehend better. He could recite the 2, 3 and 11 times tables and read/spell/sequence the months/seasons of the year correctly. Tom had also cultivated a habit of reading half a page of a story book daily. There was also a slight improvement in his free writing. More importantly, Tom's self esteem and confidence had improved. He had responded very well to lots of praise and encouragement. He said that he preferred one-to-one teaching as he could get more attention. Tom's success was attributed to his own determination to succeed once he realized that success was within his range. His parents' support and help also played an important role.

Conclusion

Bearing in mind that Tom was a native speaker of English, can the same assessment techniques be used for a second language (L2) learner? At present, there is no 'diagnostic tool' for assessing dyslexics in Malaysia (Star Education Column, 12/5179). There is also little research done on dyslexics whose mother tongue is not English. Hence, would a structured, sequential and cumulative reading/spelling programme based on sound phonetic principles and multisensory techniques be suitable for L2 learners? Would one-to-one teaching be effective for L2 dyslexics too?

Regardless of whether the dyslexic is a L1 or L2 learner, early assessment and remediation is very important. Teaching should also be based on individual needs. To conclude, the key to successful dyslexic teaching can be summed up in the following Chinese proverb:

WE HEAR, WE FORGET
WE SEE, WE REMEMBER
WE DO, WE UNDERSTAND

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