THE WINSTON CHURCHILL MEMORIAL
TRUST OF AUSTRALIA

Fellowship Report

Dr Lorraine Hammond

2002/2 CHURCHILL FELLOW

To investigate best practice educational programs and professional services provided to support individuals with Dyslexia, their families and teachers by non-profit organisations in the United States of America, Canada and the United Kingdom, for an Australian context.

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Signed Lorraine Hammond

Dated July 31 2003
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ACKNOWLEDGEMENTS

The findings documented in this report are the result of a 2002/2003 Churchill Fellowship visit to the United States of America, Canada and the United Kingdom to investigate successful practice in support provided to individuals with Dyslexia by a broad range of groups and individuals including non-profit organizations, specialist schools, intervention programs and researchers working in this field.

This Churchill Fellowship and the invaluable experiences I gained would not have been possible without the financial assistance provided by the Winston Churchill Memorial Trust and the Department of Education in Western Australia. I am also grateful for the unconditional support of Edith Cowan University, in particular, Associate Professor Dr Chris Forlin, who recognised the value of this Fellowship, in spite of the demands it placed on her workload to accommodate my time away. In addition, without the dedication of the Board, staff and volunteers of the Dyslexia-SPELD Foundation of Western Australia the findings of this report would not reach those who first prompted me to apply for the Fellowship. Throughout the Fellowship I was overwhelmed by the generosity of the professionals who made me welcome during my visits. In particular, Dr Philip de Fina who invited me to attend a post-graduate course in neuropsychology in New Jersey and Dr Martin McPhillips who arranged visits to schools in the Belfast area especially for my benefit. Finally, this trip would not have been possible without the enthusiasm and assistance of family and friends both from Australia and overseas who supported this Fellowship from initial application to final report.
EXECUTIVE SUMMARY

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Major Lessons

Researchers and practitioners working in the field of dyslexia in the United States of America, Canada and the United Kingdom and interviewed for the purpose of this report were unequivocal in their acceptance that dyslexia is a distinct type of learning disability that is neurological in nature, highly inheritable and, if not detected early can contribute to detrimental educational, social and health issues for individuals and the communities in which they reside. It is only when dyslexia is recognised as a type of disability that the ‘label’ will be legally enforceable and secure educational support. Presently, in Western Australia dyslexia is not recognised as a distinct learning disability and this has the greatest impact on school age students.

In countries where dyslexia is recognised as a type of learning disability a number of highly effective educational programs are readily available, either through government funded or private organizations. While subtly different, the theoretical underpinnings, content and structure of these educational programs have been evaluated empirically and are regarded as the most effective way to support individuals with dyslexia to achieve their learning potential by ameliorating literacy based learning problems. The essential elements of such educational programs are easily translated into classroom practice and have been shown to be supportive of all students in the beginning stages of reading, as well as those at risk for dyslexia. These programs are relatively inexpensive, but funding to raise the knowledge base of teachers and provide small group instruction for the 3-5 percent of students with dyslexia will be necessary in order for change to occur.

Dissemination and implementation

Information contained in this report on identifying, understanding and supporting individuals with dyslexia, will be disseminated to the widest possible audience in the following way:

- Research papers on issues about the definition, early identification of and successful intervention of dyslexia in children to be submitted to national journals

- Course materials presented to undergraduate and post-graduate Education students at Edith Cowan University and other universities in the present writer’s role as a representative of the Dyslexia-SPELD Foundation.

- Presentations to representatives of the Department of Education and Training in Perth, Western Australia, academics, teachers, related professionals and parents at public libraries, schools and education and multi-disciplinary conferences such as the New Teachers’ Seminar (Perth: July, 2003), CHERI Neuroscience Conference
at Westmead Hospital (Sydney: August, 2003), Prevention of Literacy Based Learning Difficulties (Melbourne, September, 2003) and Early Years in Education Conference (Perth: September, 2003).

- Submission of summary documents for audiences such as parents, teachers and academics to relevant newsletters and non-referred journals.
- Presentations to the Board and professional members of the Dyslexia SPELD Foundation.

**Recommendations**

In order to bring about changes to the quality of services and support provided to individuals with dyslexia, the following recommendations are made:

1. Acceptance of dyslexia as a distinct type of learning disability by government / educational agencies to reflect world-wide trends and the principles of social justice.
2. Recognition that the identification and support of individuals with dyslexia is a health issue that will lead to wide reaching social consequences if ignored.
3. Provision of professional development for practising and pre-service teachers, psychologists and all relevant personnel working with students at risk of literacy failure to raise awareness about dyslexia, address issues of assessment and inform best practice in educational interventions.
4. Support and recognition for practising teachers to pursue post graduate qualifications in the area of dyslexia.
5. Trialing of best practice programs such as ‘Dyslexia-Friendly’ Schools and ‘School Attuned’ that have been shown to be relatively inexpensive to government and will inevitably reduce the number of referrals to specialist services by empowering teachers with the knowledge to support students with dyslexia.
6. Trialing of literacy interventions and assessment procedures shown to be highly effective in overseas countries, such as *The Sound of Reading* and *RAVE-O* in addressing literacy based learning difficulties.
7. Greater liaison between SPELD organizations within Australia, and non-profit organizations in other parts of the world, to share and disseminate new information to teachers and parents of children with dyslexia and the wider community.
## PROGRAM

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**Oxford University, UK**

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**University of York, UK**

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**The University of Durham, UK**

**University College Dublin, Ireland**

**Queens University Belfast, Northern Ireland**

### Conferences attended

- **Learning and the Brain Conference** April 24-27
- **New Jersey Psychologists Association**

**Harvard University Faculty Club, Boston USA**

**Ramada Inn, East Windsor, USA**
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INTRODUCTION

I think the term dyslexia is adequate to describe a ‘difficulty’- of course details about the definition vary according to what you want to do with it. Who you include and exclude depends on whether your motives are political, financial or focused on a particular field of interest, such as neurology (Dr Al Galaburda, Harvard Medical School, 2003).

To most, even those outside of educational circles, the term ‘dyslexia’ is associated with significant difficulties learning to read and write. Dyslexia comes from the Greek meaning dys (impaired) and lexia (word) but is not a disease such as measles, where the individual clearly does, or does not have the condition, and can be cured. Instead, dyslexia is a trait such as flat feet or fair skin that affects particular aspects of the individual’s life style such as long distance running or staying out in the sun for too long. Individuals with dyslexia experience difficulty with symbolic systems humans have invented such as reading and writing words, numbers and musical notations. The difficulties individuals face vary in type and severity from person to person, dyslexia is usually, but not always inherited, can be caused by a relatively minor head injury at a young age, and is neurological in nature.

In is significant that one of the earliest English language author cited for the term dyslexia by the 1928 Oxford English dictionary is Gowers (1893) in A Manual of Diseases of the Nervous System 1886-1888 who noted that dyslexia is a “cerebral symptom….a peculiar intermitting difficulty in reading.” It is from the neurological perspective that this report was written as a significant number of those interviewed work in the field of neurology and the application of this research to educational practice.

1.1 Defining Dyslexia

Defining dyslexia is the hardest thing. What is obesity? Where do we draw the line between those of us who never lose our baby fat and those of us who are clearly very overweight. It is an arbitrary line. This does not mean that dyslexia or obesity do not exist, it just means we have to be very precise about how we differentiate between the two (Dr Maryanne Wolf, Tufts University, 2003).

Despite the universality of the term, those who teach and research individuals with dyslexia are yet to agree on issues of definition and remediation. Indeed, one of the critical questions posed to the academics, teachers and non-profit organizations documented in this report support the view that there are as many definitions of dyslexia as there are researchers in the field. Confusion about definitions is problematic and has significant ramifications on the allocation of funding for individuals with dyslexia and whether they are eligible for support and services. Put simply, most who study dyslexia agree that it is a distinct literacy based learning problem that affects a significant proportion of the population, and results in unexpected and enduring difficulties learning to read, write, spell and sometimes to do maths.
Dyslexia however, is not synonymous with illiteracy and to overstate the incidence undermines acceptance of dyslexia as a learning disability. Many individuals experience difficulties learning to read and spell due to cultural or educational deprivation, and are not dyslexic. When researchers control for the specific information processing difficulties that are the hallmark of dyslexia, the incidence of those who fail to learn to read because they are dyslexic is significantly lower at 3-5 percent, as opposed to estimates as high as 10-25 percent of the population that include all individuals whose literacy skills do not meet their needs.

Dyslexia is a complex disorder that arguably is made more difficult to understand by the different ways this disorder is conceptualised and subsequently described to teachers, parents and those outside of specialised fields of academia. Despite differences in the way researchers have tried to explain why some children have difficulties learning to read, write and spell, many of the models described are very similar, but use terminology that appears otherwise. For example, some cognitive psychologists take the view that differences in the way that the brain processes information is the key to understanding dyslexia.

This has lead to many studies on phonological processing deficits and difficulties in this area appear to contribute to dyslexic readers’ failure to acquire adequate word recognition skills. At the same time, research has described the role of other aspects of cognition, such as visual-attentional processes on learning to read. While some children demonstrate weaknesses in either phonological or visual processing, many have deficits in both areas.

This general finding underscores the complexity of dyslexia and illustrates two different ways of understanding the disorder. First, that dyslexia may be conceptualised into broad subtypes: phonological processing deficits, visual-attentional deficits and a mixed subtype. Second, a Double-Deficit Hypothesis may be evident. That is, phonological deficits, visual-attentional deficits and other cognitive processes such as ‘naming-speed’ deficits that contribute to efficient reading may all be independent sources of reading dysfunction. This finding, while offering a range of explanations for dyslexia, has one important outcome. That is, whether interpreted as a deficit in cognitive processing or as particular weaknesses in auditory or visual processing, interventions designed to support individuals with dyslexia must include strategies to promote all learning modalities (i.e., a multi-sensory approach including visual and auditory processing) and reading sub-skills such as reading accuracy, comprehension and rate.

It became apparent, from the start of this fellowship that no strict definition for dyslexia is strictly adhered to in different countries or in research publications. Definitions appear to be based on the influence of particular researchers in particular countries or the way in which dyslexia is viewed. As the difficulties individuals with dyslexia face are more than likely associated with the symbolic representation of words and numbers, it is useful to consider dyslexia in the light of written language. Put simply, the more opaque the orthography the higher the proposed incidence of dyslexia. For example, the Spanish written language maps 28 sounds onto 28 letters, is one of the most transparent of the alphabetic languages and reports a very low incidence of dyslexia as less than three percent. European languages including Finish, Swahili, German and Italian are more transparent than French, English and Danish.
that are some of the most opaque languages with a relatively higher incidence between three and ten percent. Interestingly, in more regular alphabetic languages reading difficulties pertaining to naming speed are higher than difficulties with phonology. This suggests that inefficient processing of verbal codes appears to be a core characteristic of all individuals with dyslexia irrespective of their written culture. This may account for why, accordingly to most academics interviewed, the incidence stated was never less than three percent, irrespective of the language system, but was estimated as high as ten percent by others.

In order to establish the appropriateness of intervention for a Western Australian context, it is important to operationally define the term ‘dyslexia’. The Senate Report of Employment, Workplace Relations and Education References Committee into Education of students with disabilities (2002) noted that differentiating between children with learning disabilities (or dyslexia) and learning difficulties was a “vexed issue” (p.64) and that despite request for specific funded support for children with learning disabilities, education authorities were unwilling to identify this sub-group. The report also clarifies that although a ‘learning disability’ is a disability for the purpose of the Disability Discrimination Act, typically state education departments provide for students with learning disabilities under umbrella programs designed to assist students with learning difficulties. Students with learning disabilities are not eligible for specific Commonwealth or state disability funding, but states may, at their discretion make funds available under the Strategic Assistance for Improving Student Outcomes (SAISO) program.

A definition by AUSPELD, of which Dyslexia SPELD Western Australia is a member, is included in the Senate Report. AUSPELD define dyslexia as a type of specific learning difficulty belonging to the larger set of students termed ‘learning disabled’. Specific learning difficulties:

- are considered intrinsic to the individual;
- can cause a person to learn differently;
- are not linked to intellectual impairment (except incidentally);
- may coincidentally exist with problems in self-regulatory behaviours; social perception and social interaction;
- are life-long; and
- result in difficulty accessing the curriculum unless identified early and educational adjustments appropriate to individual need are provided to prevent failure (p. 64).

Presently in Western Australia, students with learning disabilities are considered part of the larger group of students who are at ‘educational risk’. This group comprises of up to 20 percent of the population and includes students who are not achieving their potential. Under new guidelines outlined in the Building inclusive schools: Review of Educational Services for Students with Disabilities in Government Schools, Pathways to the Future, Final Report June 2003 (Draft document, to be released in August, 2003) students with special needs are eligible for financial support on the grounds of intellectual and physical disability, Autism Spectrum Disorder, hearing and vision impairment and language disorders. There is no category for students with learning disabilities. Although some schools provide resource teachers to work in small groups or teach alongside the classroom teacher to support individual students, there
is no formal acknowledgement, in WA at least, that acknowledges dyslexia or learning disabilities as a distinct group of students.

As will become apparent, this is not the case in the United States of America, Canada and the United Kingdom. By contrast, Australia has much in common with Belgium and France in terms of policy or practice to support students with learning disabilities.

1.2 Defining and assessing Dyscalculia

1.3 Dyscalculia

It has been known for more than a decade that arithmetical learning difficulties often co-occur not only with dyslexia, but also with other problems. About 40 percent of dyslexics have maths problems and children with attention deficit hyperactivity disorder, autism, dyspraxia and specific language impairment also show a higher incidence than normal of arithmetical learning difficulties. While it is tempting to think that most children with dyslexia or these other disorders will find maths harder than their peers, this is not always the case. In fact, some of these children with disorders are very good at maths, but very little else. This is the conundrum of dyscalculia (Dr Brian Butterworth, 2003).

Dyscalculia is a condition that is sometimes called ‘number blindness’ because it parallels dyslexia in many respects, but uniquely affects the ability to acquire arithmetic skills. Dyscalculic learners may have difficulty understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they do produce the correct answer or use a correct method they may do so mechanically and without confidence. While speed of processing is one cognitive process that appears to be contributing to difficulties solving maths problems efficiently, deficits in working memory, weak phonetic representations and abnormal representation of in semantic memory are likely to be affected.

Very little is known about the prevalence, causes or treatment for dyscalculia, other than studies of twins that suggest a familial link but no specific genes have been isolated (Butterworth, 2003). Some specific brain pathways have been identified in particular a ‘number module’ based in the parietal lobe of the brain. The angular gyrus in the left hemisphere is a pathway common to both aspects of reading and maths, however, not all individuals with reading difficulties experience the same level of difficulty with maths and the reverse is true for some individuals who are mathematically challenged, but have superior literacy skills.

Despite the low profile of dyscalculia relative to dyslexia, Butterworth (1999; 2003) an international leader in the field, has been instrumental in bringing recognition to the 3-4 percent of students who experience difficulty with maths despite adequate intelligence and instruction in schools in the United Kingdom. Butterworth (2003) maintains anywhere up to 15 percent of the population worldwide struggles with maths, however this can be due to a combination of factors including, lack of appropriate instruction. A smaller subset of this group are classified as primarily
‘dyslexic’ who experience associated difficulties with the language concepts that underpin reading and solving mathematical problems. A smaller group again, estimated at 2 percent, have difficulties exclusively with maths and with no evidence of reading disabilities.

Mathematics is a complex subject involving language, space and quantity. Most research has focused on teaching the skills of counting or arithmetic, but from a young age children must develop complex abilities including:

- Understanding number words, numerals and the relationship between them;
- Being able to carry out mental arithmetic using the four basic arithmetic operations – addition, subtraction, multiplication and division;
- Being able to carry out written multi-digit arithmetic using the four basic operations;
- Being able to solve ‘missing operand problems’ (\(? + 4 = 6\));
- Being able to solve ‘word problems’ which set arithmetical problems in realistic contexts, particularly using money and change (2003, p. 3).

According to Butterworth (2003) the complexity of numerical processing has made defining what it means to have a specific mathematical learning disability (dyscalculia) difficult. Traditional definitions for both dyslexia and dyscalculia state that the student must substantially underachieve on a standardised test relative to the level expected given age, education and intelligence. Standardised tests, however, are varied and generally test a range of skills, that may include spatial and verbal abilities. Different results make comparisons between students difficult and statements of ‘mathematical achievement’ ambiguous. In short, what is required is a measure of any deficit in an individual’s capacity to learn maths.

Butterworth (2003) argued that the need to recognise dyscalculia as a distinct type of learning disability is critical given the perceived importance of learning maths. To some children, parents and teachers maths is something that is commensurate to overall ability. To others, underachievement in the area of maths is thought to be due to laziness, failure to commit times tables to memory or generally low cognitive ability. By contrast, it is accepted by most educators that some children can have a type of disability learning to read, irrespective of whether they choose to call it ‘dyslexia’. In either case, compared to dyslexia, dyscalculia has less credibility amongst educators. As a consequence for a significant number of students maths concepts and processes are not easily learned and self esteem invariably suffers.

_I have one goal – to make sure children with dyscalculia are not included in the National Numeracy Strategy’s daily mathematics lesson. In his view, the bottom five percent are simply not helped by it. It is like putting children with physical disabilities into a regular physical education lesson and expecting them to cope. I thought that inclusivity was a good thing, but I have interviewed these children and they have a miserable time in class feeling humiliated and showing everyone how bad they are at maths_ (Dr Brian Butterworth, University College London, 2003).
To identify those students who have a deficit in their capacity to learn maths, Butterworth (2003) has developed a CD-Rom screening tool. After the assessment battery is completed in 15 to 30 minutes, teachers are able to ascertain the potential for mathematical processing in children aged six to fourteen years. According to Butterworth (2003), teachers do not realise how stressful maths is for some children. He advocates that teachers should reduce the anxiety associated with math and instead of drilling tables should try and ensure that children understand basic number concepts.

**Government responses to Dyslexia**

2 The United Kingdom

*As far as I am concerned Specific Learning Difficulty and Dyslexia are synonymous. Teachers like the term SpLD, psychologists prefer dyslexia. I would expect to find one child per class of 30 students with dyslexia, but not in every class* (Dr Morag Stuart, London University, 2003).

Despite some reservations about the term dyslexia in educational circles, it is gaining ground and is now recognised in government and professional publications in the United Kingdom (Dr Brian Butterworth, University College, London, 2003).

*How did I get interested in the field of Dyslexia? It was after a meeting with the school and the Head Teacher said, “Mrs Riddick, there’s no such thing as dyslexia. We have very intelligent students at this school and it seems that your son cannot keep up.”* (Dr Barbara Riddick, University of Durham, 2003).

The law dealing with special educational needs in the United Kingdom is the Education Act and includes a new Code of Practice on the Identification and Assessment of Special Educational Needs. The term ‘special education’ has a legal definition. Children with special educational needs all have learning difficulties or disabilities if they:

- have a significantly greater difficulty in learning than the majority of children of the same age; or
- have a disability which prevents or hinders them from making use of educational facilities of a kind generally provided for children of the same age in schools within the area of the local education authority;
- are under compulsory school age and fall within the definition of (a) or (b) or would do so if the special educational provision was not made for them.

Children must not be regarded as having a learning difficulty solely because the language or form of language of their home is different from the language in which they will be taught (Special Educational Needs Code of Practice, 2001, p. 6).
This definition does not differentiate between children who have, for example, high support needs for an intellectual disability or the child who experiences difficulties learning to read and write. Rather, the Act describes a ‘range’ of needs and the Guide for Parents and Carers (2001) lists many parent associations who represent the interests of children with Autism, Down’s Syndrome, Dyslexia, Leukaemia, Haemophilia and Spinal injuries. While the preferred term is ‘specific learning difficulty’ (SpLD), dyslexia is recognised in the United Kingdom as one type of SpLD.

Dyslexia is to be found in paragraph 7.58 in an area of need titled ‘Cognition and Learning’ where it is stated that “children who demonstrate features of ….specific learning disabilities such as dyslexia or dyspraxia, require specific programmes to aid progress in cognition and learning (p. 86). Put simply, in the United Kingdom if a student with dyslexia has needs that cannot adequately be met, there may be a requirement for the protection of a Statement of Educational Need. This procedure is a matter of law. The statement should clearly specify the provision necessary to meet each identified need (para 8:36/7). Provision should be quantified in terms of the number of hours of provision and staffing arrangements and clearly documented in the IEP.

The Act gives practical guidance to schools and Local Education Authorities (LEAs) on how to identify, assess, record, meet and review special educational needs. The Code recommends that schools and LEAs should provide help for children with special educational needs in three action steps within a graduated system of individual assessment, planning, monitoring and review based around the use of the Individual Education Plans (IEPs). The first step called ‘School Action’ is school-based, and is linked to decisions about how to accommodate individual learning differences. Two indicators for School Action specified in the Code are of particular relevance to dyslexic students: showing signs of difficulty in developing literacy and numeracy skills and presents persistent emotional and/or behaviour difficulties which are not ameliorated by behaviour management techniques usually employed in schools.

If an IEP review at this initial stage indicates that the students is not making the expected progress outside support services can be called in to give advice on a new IEP. The next step, ‘School Action Plus’ calls for the involvement of educational psychologists or advisory teachers, although these may be involved at an earlier stage if deemed appropriate. The final step involves the school and LEA and could lead to a formal ‘Statement of Special Educational Need’ for those whose needs cannot be met by the school without additional resources. The role of parents is valued at all stages of this process and when possible, the individual student is encouraged to contribute as well.

Legislation stipulates that a student’s special educational needs have to be determined by a multi-disciplinary review body that should involve the child’s parents. These formal ‘Statements’ are considered legally binding documents and as such time requirements and systems for appeal are outlined. An estimated 25 percent of students in the United Kingdom are considered as ‘likely’ to require special education provision at some point in their school career. Statements are prepared for only 2 percent of students requiring provision over and above that usually found in mainstream schools, rather than the 18 percent assumed to have some degree of
special need. Individual Education Plans with short-term targets and long-term goals are also considered legal documents, but are the more common procedure for documenting special education provision for children under the Code irrespective of severity.

In the case of students who do not learn to read and write at the same rate as their peers, parents or the school may refer the student to the Special Education Needs Coordinator (SENCo) who would make a preliminary assessment of the student’s achievement and co-ordinate the provision of extra or different help. While students with dyslexia may receive a Statement of Special Educational Needs and receive additional support in terms of resources, this is the exception, rather than the rule. Despite this, there is considerable variation between LEAs in terms of funding allocation, and depending on the severity of the student’s needs or the determination of the parent, payment for specialised assessment or fees at a specialist school for students with dyslexia is not uncommon. Nevertheless, it is more likely that the school will prepare an IEP including recommendations about specific targets, relevant resources to support identified weaknesses, proposed further actions and summary of outcomes and proposed further actions. The SENCo or Head Teacher usually oversees this process, with input from the parent and the class teacher.

_In one London Local Education Authority (LEA) it was accepted that a very low percentage of students would be dyslexic, however the ‘criteria’ used to define dyslexia was so specific that a student aged 11 who went to secondary school with a reading age of six was not bad enough to be considered dyslexic (Dr Morag Stuart, London University, 2003)._ 

It would appear, after discussions with academics, teachers and not-for-profit organizations that the legal framework and funding of ‘Statemented’ students combine to emphasise the difference between having and not having a statement, and add to the pressure on parents and schools to seek a statutory assessment. At the same time LEAs are constrained by financial demands and have sought ways to restrict the rise in requests for Statements in order to provide stronger support in the earlier stages of the Code of Practice.

Furthermore, the role of SENCo is not a separately funded position and is often filled by administrators, in addition to their other duties. In schools considered to be ‘well managed’ by academics and not-for-profit organizations interviewed in the UK the role of the SENCo can be a position of high status, however, SENCos are expected to know more than their peers, often with limited training. Sometimes teachers with post graduate Special Education qualifications take on the role of SENCo, however it is not uncommon to find teachers with no specialist qualifications in a role that arguably underpins the Statementing process.

**2.1 Strategies to support students with literacy based learning difficulties in the United Kingdom**

Recent definitions of dyslexia such as the one produced by the British Psychological Society (1999) endorse the original meaning of the word dyslexia by emphasising the difficulties with individual words.
Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty. This focuses on literacy learning at the ‘word level’ and implies the problem is severe and persistent despite appropriate learning opportunities.

The National Literacy Strategy (1998) requires schools and teachers in the United Kingdom and Wales to incorporate phonological awareness training and ‘word level’ literacy instruction into early reading curriculum, thus supporting all students at risk of literacy failure, including those with dyslexia. *The Literacy Hour* is a component of this strategy and was introduced into schools in the United Kingdom in September 1998 with the intention of linking the teaching of literacy with recent research and to spread and encourage good practice. Three aspects of this training warrant comment. First, the phonological awareness training set out includes both onset and rhyme and phoneme awareness. This reflects continuing debate concerning the nature of the phonological units first available and used by and children in reading (see Muter, Hulme, Snowling and Taylor, 1997). Second, phonological awareness training in the National Literacy Strategy is to be accompanied by teaching how to represent speech sounds with letters. This emphasis on immediately linking phonemes with orthography is based on recent research findings that substantiate the claim that early phonological awareness training has beneficial effects on reading development when combined with explicit instruction in alphabet knowledge. Third, phonological awareness and letter-sound training in the National Literacy Strategy lead in to a structured phonics teaching program.

### 2.2 CReSTeD

*Schools have to protect their profile and take only students who fit their criteria* (Jan Townend, Head of Training, DI, 2003).

There are a high number of specialist private schools for students with dyslexia in the United Kingdom as well as some schools and centres provided by the State. To enable parents to make an informed choice about their child’s education, the Council for the Registration of Schools Teaching Dyslexic Pupils (CReSTeD) produces an annual guide for parents selecting schools for dyslexic children. A combination of private and government schools in the United Kingdom provide specialist support and were categorised in the following way in 2003:

#### Table 1 Classification of schools for students with Dyslexia in the United Kingdom

<table>
<thead>
<tr>
<th>School Categorisation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialist Provision (SP) School</td>
<td>The school is established primarily to teach students with dyslexia.</td>
</tr>
<tr>
<td>(20 schools listed)</td>
<td></td>
</tr>
<tr>
<td>Category Dyslexia (DU) Unit School</td>
<td>Schools with a designated Unit or Centre providing specialist tuition on a small group or individual basis, according to need.</td>
</tr>
<tr>
<td>(38 schools listed)</td>
<td></td>
</tr>
<tr>
<td>Category Dyslexia Unit (SC) Schools</td>
<td>Schools where dyslexic pupils are taught in separate classes within.</td>
</tr>
<tr>
<td>(4 schools)</td>
<td></td>
</tr>
</tbody>
</table>
listed) the school for some lessons most probably English and mathematics.

| Category Withdrawal System (WS) School (9 schools listed) | Schools where dyslexic students are withdrawn from appropriately selected lessons for specialist tuition from a teacher qualified in teaching dyslexic students. |

3 Canada

In order to qualify for special education services in Canada a student must undergo psychological assessment and have a ‘categorical’ or ‘non-categorical’ learning disability. The term ‘learning disability’ in this context includes dyslexia, but the term is not used, rather a ‘learning disability in ‘phonological awareness’ or ‘visual processing’ is used. Schools are required to fund special educational provisions for the student to maximise his or her performance at school and have five Pathways of accommodations to choose from ranging from smaller class settings and extra time for exams to Pathway Five which is a completely alternative curriculum at a different level to class peers. The Pathways as described by the Newfoundland Education Province, and are fairly standard across Canada, are as follows:

| Table 2 Pathways and Accommodations Newfoundland Education Province |
|---|---|
| Pathway | Accommodation |
| Pathway 1 | Refers to the provincial curriculum for a course of subject. The majority of the students in the province follow Pathway 1 for most subject areas. |
| Pathway 2 | Pathway 2 refers to the provincial curriculum but the student needs accommodations or support (e.g., different teaching methods, materials, classroom environment, evaluation or time to meet the requirement for each course or subject. |
| Pathway 3 | Pathway 3 refers to the provincial curriculum being changed to a modified subject/course. The general intent remains the same but, some outcomes are changed and/or, some outcomes are removed, and/or, some outcomes are added. |
| Pathway 4 | Pathway 4 refers to a subject/course that is, based on the prescribed curriculum, but is changed so that it no longer resembles the prescribed subject/course. The course may be in an area of need where there is no prescribed course, e.g., organisational skills. |
| Pathway 5 | Pathway 5 refers to a program that is totally different (alternate) from the provincial curriculum. Academic subjects are only a small |
Students who experience difficulty with learning may be classified as having a ‘non-categorical’ mild learning disability. Students with this classification are usually up to two years behind their peers in academic performance and receive additional ‘withdrawal’ instruction or accommodations in the regular classroom to enable these students to achieve the same outcomes as their peers in the provincial curriculum usually from Pathways One to Three. If students are three to four years below their peers despite adequate intelligence and appropriate instruction, they are classified as having a ‘categorical’ severe learning disability and receive additional instruction in a small group with a ratio of one teacher to four students. Students are classified as having severe learning disabilities in a particular area, such as phonological awareness, and may be working on alternative outcomes to the provisional curriculum presented to their peers in that area. When learning outcomes differ to peers and students are no longer following the Provincial Curriculum accommodations are usually at Pathway levels Four and Five.

A support plan for students monitors and records the student’s support needs and school provisions. This document is an Individual Education Plan and in some Provinces is named as such. Alternative terms for this document include ‘Individual Support Services Plan’ and reflect the interagency involvement in the writing of the plan and broaden the support provided to the student beyond educative goals.

While the law in Canada mandates that public schools must provide support for students with learning disabilities, the incidence of litigation is low, particularly compared to United States of America. It is thought this is due to a number of factors including the attitude of most Canadians. In Newfoundland, one of ten Provinces in Canada, it was common less than five years ago for public schools to be divided into Catholic and non-Catholic institutions. Put simply, in the view of a number of Canadians interviewed, parents trust schools to support children with learning disabilities.

4 United States of America

I am not fussy about what we call it. I think dyslexia is adequate to describe a difficulty, of course details about the definition vary according to what you want to do with it. Who you include and exclude depends on whether your motives are political, financial or focused on a particular field of interest. Specific reading disability is the preferred term in a school setting because that is the box you tick on the IEP (Dr Marilyn Jaeger Adams, Harvard University, 2003).

Research conducted by the NICHD in the last ten years has concentrated on reading disabilities as a specific learning disability. That is because reading disabilities are the most common subtypes of LD and one of the most damaging in terms of an individual’s school learning, school adjustment, and occupational and vocational success. Despite attempts to clarify
issues of terminology, definitional issues continue to be the single greatest impediment to understanding learning disabilities (Dr Reid Lyon, National Institute of Child Health Development, 2003).

In the United States of America ‘dyslexia’ is not the preferred term used in schools, however it has been adopted by not-for-profit organisations, academics, parents and the wider community. In America the Individuals with Disabilities Act (IDEA) has been in effect since 1990 mandating that children with disabilities be educated in the least restrictive environment. The Individual Education Plan (IEP) is a legal document in the USA and underpins the documentation process whereby students with special needs are allocated additional funding to enable them to access the curriculum alongside their peers. The category of ‘learning disability’ includes what has been described in this report as ‘dyslexia’ and students who are identified by a process of formal assessment by a school psychologist are eligible for funding. There is however, considerable variation in the level of support and the legislation in place between States, but Texas is highly regarded as having one of the most accessible and effective systems for identifying and supporting individuals with dyslexia.

4.1 Case study: Texas

Because early intervention is critical, a program for early identification, intervention, and support for students with dyslexia and related disorders must be available in each district as outlined in the Procedures Concerning Dyslexia and Related Disorders (1998) Texas Administrative Code §74.28 (State Board of Education Rule).

One highly problematic aspect of funding provision in United States of America is the difference, between States, in definitions of learning disabilities and dyslexia as a subset of that group. For example, in Texas the definition and instruction of students with dyslexia who attend public schools is mandated and structured by two statues and one rule.

Texas Education Code (TEC) §38.003 defines dyslexia and related disorders, mandates testing students for dyslexia and providing instruction for students with dyslexia, and gives the State Board of Texas authority to adopt rules and standards to administer testing and instruction. Chapter 19 of the Texas Administrative Code (TAC) §74.28 outlines the responsibilities of districts and charter schools in the delivery of services to students with dyslexia. Finally, §504 of the Rehabilitation Act of 1973 establishes assessment and evaluation standards and procedures for students. Section 504 procedures are implemented when it is determined that dyslexia substantially limits learning (Revised Procedures Concerning Dyslexia and Related Disorders, 1998).

As defined by TEC §38.003 ‘dyslexia’ means a disorder of constitutional origin manifested by a difficulty in learning to read, write, or spell, despite conventional instruction, adequate intelligence, and socio-cultural opportunity. ‘Related disorders’ includes disorders similar to, or related to dyslexia such as developmental auditory
imperception, dysphasia, developmental dysgraphia and developmental spelling
disability.

In Texas the identification of students with dyslexia is undertaken by a team of
knowledgeable persons including the classroom teacher, others directly involved with
the education of the student and the school psychologist. Once it has been established
that the student has dyslexia, the school district or charter school is required to
provide an appropriate instructional program for the student. While the particular
program or approach is not stipulated, it must include with the following components:
phonological awareness, graphophonemic knowledge, language structure, linguistic
patterns and processes (19 TAC §74.28).

The instructional program should be offered in a small class setting and include
reading, writing and spelling as appropriate. The major instructional strategies should
utilise individualised, explicit, intensive, and multi-sensory methods as appropriate.
The content of instructional programs should be systematic, sequential, cumulative
and individualised to meet the specific learning needs of each individual student.
Notably, each school must provide each identified student with access at his or her
campus to the services of a teacher trained in dyslexia and related disorders.

A school district must also notify the parent or guardian of each student in
kindergarten or first or second grade who is determined, on the basis of reading
instrument results, to be at risk for dyslexia or other reading disabilities. The district
is required to implement an accelerated reading instruction program that provides
reading instruction that addresses reading deficiencies to those students but may
determine the form, content, and timing or that program.

At any time during the assessment for dyslexia, identification process, or instruction
related to dyslexia, students may be referred for evaluation for special education. At
times, students will display additional factors/areas complicating their dyslexia and
requiring more support than what is available through dyslexia instruction. In such
cases, a referral to special education for evaluation and possible identification as
disabled within the meaning of the Individuals with Disabilities Education Act
(IDEA) (20 U.S.C. section 1400 et seq.) should be made. In IDEA, 1997, §1401 (26),
dyslexia is considered one of a variety of etiological foundations for “specific learning
disability”. In general, the term “specific learning disability” means a disorder in one
of more of the basic psychological processes involved in understanding or in using
language, spoken or written. The disorder includes such conditions as perceptual
disabilities, brain injury, minimal brain dysfunction, dyslexia, and development
aphasia. A disorder does not include a learning problem that is primarily the result of
visual, hearing, or motor disabilities, or mental retardation, of emotional disturbance,
or of environmental, cultural, or economic disadvantage. This term does not apply to
children who have learning problems that are primarily the result of visual, hearing, or
motor disabilities, or mental retardation, of emotional disturbance, or of environment,

4.2 Strategies to support students with literacy based learning difficulties in
the United States

*America Reads* is a government initiative established by the Clinton Presidency and
continued by President Bush that recognizes the supreme importance of an early and
successful start to learning to read. Education policy and funding has been based on the view that providing children with the right literacy and reading experiences in the early years is likely to set the stage for successful reading and citizenship in later years. In 2001 the No Child Left Behind Act formalised previous literacy initiatives was launched and called for the use of "scientifically based research" as the foundation for many education programs and for classroom instruction. All students, irrespective of ability, including those with dyslexia are included under this Act. This is in recognition of the belief that learning to read is a fundamental right of all children. Furthermore, research investigating the most effective way to teach beginning literacy has also influenced legislators who take the view that approaches shown to be effective in teaching beginning reading to students at risk of literacy failure should form the basis of all beginning reading programs.

An example of the reading interventions endorsed by School Boards in the states of New Jersey and Texas to support the implementation of No Child Left Behind follows:

Table 3 Reading approaches endorsed by the State Boards of Education of New Jersey and Texas

<table>
<thead>
<tr>
<th>The State of New Jersey received 120 million in a six-year Reading First Grant (1997-2003) to improve literacy in kindergarten through third grade. Reading First is a component of the No Child Left Behind legislation that outlines ‘Five Essential Components of Reading” (Phonemic Awareness, Phonics, Reading Fluency, vocabulary and comprehension) and outlines the following approved reading programs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harcourt Brace - Trophies Program</td>
</tr>
<tr>
<td>Houghton Mifflin Reading - Legacy of Literacy</td>
</tr>
<tr>
<td>SRA McGraw Hill - Open Court</td>
</tr>
<tr>
<td>Two supplementary technology based programs are also cited:</td>
</tr>
<tr>
<td>Pearson Electronic Education - Waterford Early Reading Program</td>
</tr>
<tr>
<td>Scholastic - Wiggle Works</td>
</tr>
<tr>
<td>The following reading programs are recommended by the Department of Education in Texas:</td>
</tr>
<tr>
<td>Bright Start Inc - Leap into Phonics</td>
</tr>
<tr>
<td>SRA McGraw Hill - Open Court</td>
</tr>
<tr>
<td>SRA - Reading Mastery</td>
</tr>
<tr>
<td>Success For All</td>
</tr>
<tr>
<td>Wright Group/McGraw Hill - Fast Track Reading Program</td>
</tr>
</tbody>
</table>
4.3 National Institute of Child Health and Human Development (NICHD)  
United States of America

The NICHD is an organization responsible for translating scientific discoveries relevant to the health and education of children to the White House, the United States Congress and other governmental agencies. Because of concern about the growing incidence of reading problems and learning disabilities in the general population, in 1985 the Health Research Extension Act gave NICHD a new charge - to improve the quality of reading research by conducting rigorous, long-term, prospective, longitudinal, and multidisciplinary studies. This kind of research is underscored by careful planning, involves many disciplines (e.g. education, psychology, linguistics, medicine), recognizes the importance of testing competing theories, includes large samples of subjects/participants, relies on a range of carefully developed measures, implements long-term treatments typically that last at least one year or longer with extended follow-up (typically one-to-three years post-treatment). In some studies, children's growth in reading is observed from five years of age until 23 years of age. This research is enormously difficult to conduct but of significant importance in order to understand the nature of reading development and difficulties in children and adults. Reading research is often hampered because support for long-term studies is not available and because studies do not describe the children or the assessment/teaching methods used with sufficient precision.

The National Institute of Child Health Development (NICHD) supported research is truly distinctive because of its methodological rigor in an area that had been considered challenging for scientific investigation and where scientific knowledge has sometimes been obscured by philosophical and ideological positions. The NICHD program of research in reading is conducted by over 100 researchers in education, psychology, linguistics and medicine at 18 research sites in the United States, and has produced over 2,000 journal articles and books since 1965, when the language and reading research program was initiated.

As the NICHD focuses on the literacy attainment of children and is an organization predicated by an empirical approach, this government agency has released a number of definitions of dyslexia. This is the most current:

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These abilities typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience can impede growth of vocabulary and background knowledge. (NICHD September, 2002)

The NICHD developed this operational definition of learning disabilities and dyslexia in order to provide a scientific foundation for meaningful research, diagnosis, and intervention in order to maximise the potential of individuals with learning disabilities and dyslexia to lead independent and productive adult lives.
One of the management roles of the NICHD is to allocate research funding in areas that pertain to child development, in particular literacy and learning. While funding is provided for many different purposes, a significant function is to validate the efficacy of literacy interventions and to fund school districts to take up these proven approaches. The importance of scholarly research, rather than ideological beliefs, underscores decisions made by the NICHD about interventions. A meta-analysis of research findings conducted by the NICHD has shown that effective beginning reading programs include the following components:

- Children are taught to connect letters and letter patterns to the sounds of speech;
- Children are taught to apply decoding and word recognition skills accurately and fluently;
- Children have adequate background knowledge and vocabulary to ensure connections between what is known; and,
- Children are taught language form and function (e.g. semantics, syntax, voice) to enhance comprehension and strategies and can monitor their own comprehension.

The importance of early identification, early intervention, parents as teachers and regular classroom teachers working collaboratively with special education teachers are also considered critical factors in literacy development. The NICHD acknowledges that of the weakest 20 percent of students who experience significant literacy difficulties 20 percent (or up to four students) will not overcome their difficulties using approaches that are otherwise effective for their peers. However, this group, considered to be “learning disabled” and/or “dyslexic” by the NICHD will progress, but not at the same rate as their unimpaired classmates. Schools are advised to allocate timely and intense support for these individuals at an early age before motivation and self-esteem is negatively affected.

In January 2003, a Taskforce titled: *A New Era: Revitalizing Special Education for Children and Their Families* was convened by the National Institute of Child Health. The Taskforce noted that:

- too many students in special education failed to graduate from high school;
- current assessment methods of specific learning disability detection be amended to not require achievement tests and discrepancies (this move would eliminate IQ tests from the identification process except for individuals with possible intellectual disability), and;
- assessment progresses based on response to intervention and progress monitoring were suggested.

To address the need for timely intervention and assessment, the Taskforce suggested the following three-tiered model of intervention:

**Table 4** The NICHD Three-Tiered Model of Intervention

| First level: | The regular education teacher tries extra interventions |
5 Provision of services for children with Dyslexia in France and Brussels

While it appears that the needs of individuals with dyslexia are better addressed in the United States of America, United Kingdom and Canada, than in Western Australia, other countries, such as France and Belgium provide limited support. After meeting with European academics at a conference, the opportunity to investigate this issue, as a point of contrast with the superior services provided elsewhere, arose. According to one researcher there is very little support for dyslexic children in France. “Teachers are not well educated about dyslexia, neither are educational psychologists. Speech therapists are usually the most informed but see only a fraction of dyslexic children and quite late, because children with dyslexia are not detected early” (Dr Franck Ramus, Laboratoire de Sciences Cognitives et Psycholinguistique Paris, 2003).

In France there are as few as ten specialised schools for dyslexic children and recently a few diagnostic centres were established in certain hospitals, whose goal is to provide diagnostics and orientation for children with learning, particularly language based learning difficulties. Billard, a neuropaediatrician who runs a diagnostic centre in Paris and tries to raise awareness at the national level noted that, “teachers in France do not understand why a student who ought to be doing better, is failing to acquire literacy”. According to Billard about three percent of students have dyslexia as defined as being at least two years behind their chronological age in reading and spelling, however teachers do not understand dyslexia and there is no funding supplied to assist these children (Dr Catherine Billard, Paris, 2003). Educational support for students living in Belgium is very similar to France except for international schools, who follow the British or American system and are often staffed by teachers with specialist qualifications in the area of special education.

As French and English are spoken in both France and parts of Belgium and are regarded as two of the least transparent and most complex languages to learn to read and spell, it is surprising that dyslexia is not more widely recognised within the school system. From a research perspective this is not the case, however, educational authorities are yet to formalise support for students with dyslexia.

By contrast, European countries such as Denmark, Norway, Sweden and Greece are regarded by the research community as providing a high quality of early identification and support for students with dyslexia. Norway in particular supports adults with dyslexia by providing government funded programmes.

6 Perspectives from research

Many eminent researchers from fields as diverse as paediatrics, neurology, education and psychology have contributed to present understandings about Dyslexia. Findings from such research arguably provide the most effective measure against which to evaluate assessment, support services and interventions for individuals with Dyslexia.
6.1 The Neurological perspective

We must all learn that none of our categories work. These children are too heterogeneous - they fail to learn to read for many different reasons and some of them are neurological in nature (Dr Maryanne Wolf, Tufts University, 2003).

We know that the brain systems are different in these children and adults. Brain imaging is the evidence you need to convince teachers, schools and governments to accept that dyslexia and dyscalculia are ‘real’ disabilities and these affected children need extra help (Dr Brian Butterworth, University College London, 2003).

Recommendations outlined by the United States of America NICHD were influenced by independent research funded to investigate the neurobiology of reading and dyslexia. A selection of studies featured at conferences attended and discussed in interviews with some of the authors follows.

Dr Albert Galaburda is a highly respected neurologist whose pioneering work on the neuroanatomical differences in dyslexic and non-dyslexic brains remains current to this day. The most striking difference Galaburda and his research team at Harvard Medical School continue to report is a form of malformation of the brain cortex. Put simply, neurons are found in clusters where they should not be. In experimental animals these abnormalities change the brain in a significant way. Both in dyslexics and in the rats, the thalamus becomes abnormal as a result. The thalamus is the region where sound is processed soon after it enters the brain. In the thalamus, there is a change in the proportion of the different types of brain cells in dyslexics and non-dyslexics. Although Galaburda’s work is primarily at post-mortem or conducted on rats, it has influenced the work of less invasive research methodologies, including fMRI (Functional Magnetic Reaonance Imaging). Galaburda has also indicated that visual and auditory processing systems in the brains of dyslexic people are frequently as much as 27 percent smaller than in so-called “normal” brains. Correspondingly, they work more slowly and less efficiently, although the dyslexic person’s understanding may be as acute as anyone else’s.

Research conducted by Pugh, Mencl, Jenner, Katz, Frost, Lee, Shaywitz and Shaywitz (2001) reported evidence from neuroimaging studies that suggest skilled word identification in reading is related to the functional integrity of two consolidated left hemisphere (LH) posterior systems: a dorsal (temporal-parietal) circuit and a ventral (occipito-temporal) circuit. This posterior system appears to be functionally disrupted in developmental dyslexia. This means, relative to non-impaired readers, individuals with dyslexia demonstrate heightened reliance on both inferior frontal and right hemisphere posterior regions, presumably in compensation for the LH posterior difficulties. Put simply, areas in the brain that mediate: the decoding of unfamiliar words; the faster recognition of known words; and, the matching of word meaning to the orthography (sequence of letters, e.g., pear, pare and pair) differ between dyslexic and non-dyslexic readers.
Shaywitz (2003), a contributor to the aforementioned study, recently described the differences in unimpaired and impaired readers in terms of brain regions and pathways. In particular, while the non-dyslexic reader moves from a relatively piecemeal process of matching letters to sounds and decoding words, to faster and more efficient recognition of words as the brain ‘learns’ the alphabetic code and attains a degree of automaticity, this does not occur for the dyslexic reader. Rather, this group of students register neurological responses in areas to the front of the brain (Broca’s Area LH) and the upper parietal and temporal region (temporal-parietal dorsal region LH) and show under-active posterior reading systems (occipital-temporal LH). These findings are summarised as the individual with dyslexia ‘shifting’ reading function to the front and right side of the brain while proficient readers register activity in the back and left hemisphere of the brain in areas that mediate skilled reading, Shaywitz (2003) interpreted this to mean that while most children will reach a stage of automaticity based on experience and practice, a smaller population who do not attain pre-requisite skills as easily, become reliant on other brain areas to compensate for this lack of rapid letter-sound recognition. Although most of these children eventually do learn to read, they never do so with the same fluency as do good readers.

Shaywitz (2003) argued that dyslexia has a strong genetic basis but can occur in families with no history of the disorder. According to Shaywitz the resulting ‘neural signature’ for dyslexia shows a physical basis for why these children experience difficulty reading. A promising aspect of research conducted by Pugh, Mencl, Jenner, Katz, Frost, Lee, Shaywitz and Shaywitz (2001) and reported by Shaywitz (2003) involves fMRI brain scanning technology. In this study, Pugh et al (2001) used a technology known as functional magnetic resonance imaging (fMRI), which produced computer-generated images of the brain while the children were reading. Children with reading difficulties were given a brain scan prior to the intervention and there was physical evidence of changes in neural activity after the reading intervention.

6.1.1 Assessment

While there is subtle variation between researchers investigating aspects of the neurological basis of dyslexia the battery of tests to ascertain whether children meet the criteria of ‘dyslexic’ are similar and include the following measures:

Table 5 Components of a Neuropsychological Dyslexia Assessment

<table>
<thead>
<tr>
<th>Family History</th>
<th>Verbal Memory Tests Naming Subtests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>Visual Spatial Skills</td>
</tr>
<tr>
<td>Phonological awareness</td>
<td>Set Shifting and Attention</td>
</tr>
<tr>
<td>Rapid Naming Tests</td>
<td></td>
</tr>
</tbody>
</table>

6.1.2 Intervention

*We need to organise studies that are controlled to investigate different methods and factors, such as the personality of the teacher and whether he or she likes the method, to determine, scientifically, which approach is best. We need to control all the variables to see what makes one method better than another. There*
is not enough of this going on in education right now (Dr Al Galaburda, Harvard Medical School, 2003).

When questioned about appropriate interventions to support individuals with reading disabilities, Galaburda was in two minds because he was unsure that any approach could fix something that is, by definition, ‘broken’. Galaburda was alluding to the view that if an individual’s phonological machinery is faulty it causes reading disabilities. As the ‘machinery’ is not a neurologically correct model, the individual will be unable to learn to read. An analogy can be drawn in the following way. If a bird’s wings are too short and the bird makes them flap faster they will never fly as well as their peers with wingspans in the ‘normal’ range.

On the other hand, Galaburda noted that there are some approaches that help children with reading disabilities because there were certain types of structural brain abnormalities that, when exercised, got stronger. While it seemed unlikely in Galaburda’s mind that dyslexia could ever be ‘fixed’, certain approaches, in particular the Orton-Gillingham program, were helpful.

There are presently four neurological studies reporting on the pre and post brain scanning results after periods of intervention. While this aspect of dyslexia research is still in its infancy, each study has reported changes in neural activity after the intervention period. Unfortunately, the areas of activation in the post-intervention scan were not the same, however each study has used different interventions, varying intervention periods and unique brain scanning technology which has compromised any generalisations. Despite this, the interventions were all based on systematic phonics instruction, were teacher directed and took, on average 20 minutes three times a week to deliver.

6.1.3 The Sound of Reading

One of the reading interventions used in the fMRI studies, The Sound of Reading (McCandliss, 1999), is an instructional program on a CD-Rom that is administered by a volunteer tutor or teacher assistant. The instructional program includes phonological awareness, word building and sentence reading. Ascertaining where to begin with each student is determined as a part of the computer program and the approach lends itself to multiple tutors. Revision components of the program ensure students engage in sufficient practice to achieve mastery. Results of an initial intervention reported positive changes in reading skills as well as evidence of changes in brain structure in the reading pathway of the left cerebral hemisphere as measured by fMRI (McCandliss, Beck, Sandak & Perfetti, 2003).

Similar findings described by de Fina (2002) report a breakdown in neural circuitry in impaired readers, in particular, underactivity in the insular cortex. The insular cortex is known to speed up the process of decoding and is located in the occipital-temporal region described by others as critical in the development of automatic decoding (e.g., Pugh et al, 2001; Shaywitz, 2002; 2003).
6.2 Cognitive Psychology

*Everything is not phonology – we need to look at the other systems that underpin reading instruction* (Dr Maryanne Wolf, Tufts University).

According to Wolf, Bowers and Briddle (2000) reading is a complex process facilitated by five linguistic processes: morphology, syntax, phonology, semantics and orthography. Compared to other researchers who focus on the difficulties children experience applying the letter-sound correspondences to recognising words, Wolf maintains that a deficit in any one of these multiple and different pathways may compromise final fluency and comprehension. This alternative conceptualisation of developmental dyslexia is based on a double-deficit hypothesis (Wolf & Bowers, 1999), in particular, that phonological deficit and processes underlying naming-speed deficits represent two separable sources of reading dysfunction. In other words, while Wolf acknowledges that a core deficit in phonological processes impedes the acquisition of word recognition skills, she believes that evidence of naming speed deficits is equally compelling.

*Getting the words off the page is half the story. There are some children, almost ten percent who are not referred by teachers, that we discover in schools, who understand very little of what they read* (Dr Kate Nation, Oxford University, 2003).

Researchers from Oxford University’s Department of Experimental Psychology, in particular, Stein (2001), Nation and Hulme (1997) and McArthur (2001), also share the view that dyslexia is more than a phonological processing disorder and their research has centred on causal aspects of dyslexia and relationships between cognitive processes. Stein’s (2001) work has focused on visual magnocellular deficits in the neurological pathway and he claims that the magnocellular deficit is related to poor motion sensitivity and unstable binocular control causing the individual difficulty in processing text accurately and efficiently. The most recent work of Nation has been investigating the extent to which children experience difficulties comprehending what they read, inspite of normal range intelligence and adequate decoding skills. That is, children are able to ‘get the words off the page’ but do not understand what they read. These same children do not understand the text even if is read to them. Finally, McArthur’s work has centred on children with auditory processing and the role of phonology in learning to read. While each researcher from the Department’s work is experimental in nature and not centred on interventions, Nation and McArthur emphasised the importance of teaching those particular skills, such as self monitoring strategies for comprehension, vocabulary, phonological awareness and decoding as critical pre-requisites for effective reading.

The researchers interviewed separately, but working in the same department were of the view that dyslexia is a condition underpinned by deficits in a number of different areas including working memory, attention, phonological processing, auditory processing and visual processing. In short, an individual could demonstrate a weakness in any one area and not have difficulties learning to read, however, combinations of these processing deficits were the likely cause of dyslexia. Academics often take the separatist view that dyslexia has a singular cause, or at the
very least favour either phonological, visual or motor deficit model, however the work at the Department of Experimental Psychology at Oxford supports the view that subtypes of dyslexia may fall into three broad categories: phonological disorders (phonological dyslexia), visual-attentional deficits (surface dyslexia) or a combination of the two (mixed dyslexia).

I like Jolly Phonics for what it is intended to do for a first introduction to for 5 year old children to get them reading but I would not use it for older children. Programs such as Hickey, Alpha-to-Omega, Lindamood-Bell, Direct Instruction and even the Edith Norrie Letter Case – which seems to have disappeared, are all very effective programs depending on the individual child and their needs. I think programs such as Alpha-to-Omega are an excellent way of showing teachers what they need to do (Dr Morag Stuart, London University, 2003).

According to Stuart (1999), a researcher and teacher educator based at London University, the importance of early intervention is paramount and rather than wait and see which children have difficulties learning to read and spell, it is preferable to begin with an effective literacy approach. Thus, while Stuart (1999) accepts approximately three percent of students have dyslexia, she acknowledges that up to ten percent experience difficulties for cultural and social reasons. However, to single out either group in Stuart’s mind is irresponsible, and it is preferable to begin with an approach that meets the needs of the greatest number of children. In Stuart’s view the main difficulty children demonstrate learning to read is appreciating and applying the sound-symbol code of written language and this is common to children with literacy difficulties, including those with dyslexia.

Stuart’s (1999) research has particular applicability to a Western Australian context because she investigated the efficacy of a phonic based beginning literacy program, widely available in WA, to address the beginning literacy difficulties of students in the London Borough of Tower Hamlets, an area where literacy outcomes are generally poor and many children are second language learners. The beginning literacy program, Jolly Phonics was introduced in the equivalent of ‘reception class’ (WA pre-primary school) for a period of twelve weeks and compared with an approach known as ‘big books’. The use of literature, such as ‘big books’ as a stimulus through which teachers incidentally teach letter sounds and beginning reading, is one of a number of activities associated with the Whole Language Approach to teaching beginning literacy is also prevalent in Western Australia.

The students who received explicit instruction in phonological awareness and letter-sound relationships outperformed the cohort who received ‘big books’ after the period year of intervention. Interestingly, Stuart (1999) returned each year for three years after the initial intervention and the children who received Jolly Phonics continued to outperform their ‘big book’ peers on reading measures, but other control measures remained the same. This means, the instruction they received during their first year at school that included Jolly Phonics had a sustained impact on reading achievement and was an effective ‘kick start’ to beginning reading. One of the most prevalent issues reported by teachers implementing Jolly Phonics was the need and appropriateness to teach very young children (in this case five year olds), phonological awareness,
alphabet knowledge and letter combinations. While research findings reported by Stuart (1999) suggested that these two abilities are ready to be trained and easy to train in four and five year old children and validated the importance of very early intervention, teachers involved in the study indicated their surprise at the ease at which most children learned these reading sub skills.

Whereas one year earlier, there had been general acceptance of slow progress (in reading) and of the view that failure to make progress was inevitable for some children, there was now an assumption that rapid progress should be expected as the norm, and that good progress could be made by children, given adequate teaching (Stuart, 2003, p.32).

6.2.1 Assessment

As I see it you have two choices. You can either set up your own criteria for ‘dyslexic’ versus ‘non-dyslexic’ based on the research of which ever group you subscribe to, or choose children that have already been identified by others, such as specialist schools, psychologists, teachers or parents (Dr Barbara Riddick, University of Durham, 2003).

Subjects included in studies of dyslexia conducted by the Center for Reading and Language Research at Tufts must meet the following criteria. Low reading achievement and greater than one standard deviation below in:

- Three subtests of the Woodcock Reading Mastery Test (1997): word identification, word attack and passage comprehension.
- Reading subtest of the Wide Range Achievement Test
- The Kaufman Brief Intelligence Test (KBIT).

At the Department of Experimental Psychology at Oxford University, subjects included in studies of dyslexia are screened on many different measures sensitive to the particular focus of the study. For example, Nation (in Nation & Hulme, 1997) includes children with a standard score below 85 on measures of reading comprehension but above 95 on a measure of reading accuracy. Assessments of phonological awareness and non-word decoding are also a feature common to all screening processes.

When screening potential dyslexic students for research purposes, Stuart (1999) noted that her criteria included normal range IQ, that is, one standard deviation above or below the mean and reading two years below their chronological age. Stuart also administers the British Scales Single word reading test, aspects of the Woodcock Reading Mastery Test (including word attack) and a measure of reading comprehension and undertakes a more detailed assessment for students who are two or more standard deviations below the mean on these measures.
6.2.2 Intervention RAVE-O

Some children have a curricular disability. This is not a neurological basis – these kids have had ‘whole language’, they need a different approach....I have always avoided developing interventions because they are too messy and thought we would not be able to control the teacher variables – and you can’t. But we can do a very good job by having semi-scripted programs. (Dr Maryanne Wolf, Tufts University).

RAVE-O is an experimental, multi-componential approach to reading fluency instruction. The approach was developed by Wolf and others for children aged seven to eight years old and includes aspects of phonology, fluency and metacognitive approaches to the teaching of reading. Described in detail by Wolf, Miller and Donnelly (2000), the RAVE-O program (Retieval, Automaticity, Vocabulary-Elaboration, Enrichment with Language, and Orthography) simultaneously addresses both the need for automaticity in phonological, orthographic, semantic, syntactic and morphological systems and the importance of teaching explicit connections between these linguistic systems. Ideally, children receive the intervention once per week for one hour, on a one-to-one basis with a tutor.

RAVE-O has three overarching and interconnected goals that motivate the selection and design of activities within it. The ultimate goal of the program is the development of fluency in over reading behaviours, including word identification, word attack and comprehension. It follows that practice in all subskills is critical to the RAVE-O approach. RAVE-O’s second goal incorporates lexical and sublexical levels such as faster visual-related processes, left to right scanning, letter recognition and orthographic pattern recognition. The final goal of RAVE-0 is for children to demonstrate growing command over the language through incremental success in daily practice and an accumulation of metacognitive tools (strategies) aimed directly at decoding and retrieving words.

Wolf and Donnelly (2000) described the intervention as leading children through the process of taking letters and connecting them to other letters to make words and joining those words together into sentences. The multiple meanings of words is a unique part of the RAVE-O approach. For example, words such as bug, read, track and well have multiple meanings. RAVE-O has a strong emphasis on games and approaches that emphasis success and there is a computer component to the RAVE-O program that children reportedly enjoy in particular.

RAVE-O is presently being trialed at the Center for Reading and Research and has produced superior results when compared to control treatments and systematic decoding programs that only address phonological processing. The approach is being prepared for release through a commercial publisher.

7 Intervention programs and specialist schools

Specialist schools for students with literacy based learning difficulties were visited as well as a number of school and independent professionals, some of whom are
affiliated with universities, who offer interventions considered to be representative of ‘best practice’ by non-profit organizations and academics from within the field.

7.1 **Schools Attuned**

_Preliminary data suggested that Schools Attuned creates positive changes in teaching thinking and behaviour, in student achievement and in school climate and culture_ (Richard Goldman, California State University).

According to Levine (2002) a professor of paediatrics at the North Carolina Medical School and the director of the university’s Clinical Centre for the Study of Development and Learning “some children end up paying an exorbitant price for having the kind of mind they were born with” (p. 14). Levine has popularised recent neurological research showing that brains are wired differently. Rather than group students under broad labels such as “learning disabled” and “attention deficit hyperactivity disorder”, Levine has developed a positive non-categorical system for pinpointing children’s learning strengths and weaknesses and understanding why some are more successful at school than others.

While Levine’s (2002) approach does not attach labels to students, he accepts that some students may have specific sensory, intellectual and physical disabilities that result in learning differences. However, the main focus of his theory is the plight of a broad group of students who would otherwise not be ‘noticed’ by teachers or receive educational support by government agencies. Thus, Levine (2002) includes all students (between 8-15 percent) who experience difficulties with learning for ‘whatever reason’ and a subset of this group are students with dyslexia/learning disability. Levine’s (2002) intention is to train all regular teachers to support students with a diverse range of needs in an inclusive learning environment.

7.1.1 **Theoretical perspective**

A professional development program titled *Schools Attuned* outlines Levine’s theoretical perspective on learning differences for teachers and parents. The following nine principles underpin Levine’s (2002) neurodevelopmental model:

1. A positive view of neurodevelopmental diversity acknowledges differences in individual learning styles and that ‘no one can be good at everything’.
2. Neurodevelopmental profiles are highly individual and contextually based resulting in a spread of strengths and differences.
3. Labels can be overly simplistic, pessimistic, therapeutically ineffective, as well as potentially hazardous, self-fulfilling prophecies. The more precise teachers can be describing a student’s learning profile, the more effective educational accommodations and interventions will be.
4. Teachers are in a natural and unique position to gather ‘observable phenomena’ and behaviours that are a window on learning and neurodevelopmental learning. Specific phenomena, such as “temporal sequential ordering” and “attention” are identified as utilised or under-utilised strengths or weaknesses. The process of classifying observable phenomena is referred to as ‘attuning’ a student and the teacher, parent and student are key stakeholders in this process. The resulting
profile of specific strengths and weaknesses rather than individual children are identified and named.

5. A commitment to collaboration among professionals, parents and children is central to understanding and addressing a child’s individual learning strengths and weaknesses.

6. As well as addressing learning weaknesses, it is essential for educators to highlight and develop the strengths and affinities of children.

7. Children must be made aware, in behavioural terms, of their strengths and affinities in order to ‘demystify’ differences in learning. Children cannot improve something if they don’t know what it’s called. The term ‘Learning Disability’ is ambiguous whereas telling a child that his or her specific difficulties reside in the areas of language, attention and spatial ordering and result in poor literacy and numeracy performance ‘demystifies’ and accounts for differences in learning.

8. Children have a better understanding of their learning differences if teachers explicitly and consistently use the language that underpins the neurodevelopmental model. This process is contingent on teachers understanding the terminology and applying this language to daily classroom experiences.

9. While it is accepted that adults cannot be ‘good at everything’, children are often expected to be generalists and this expectation is unrealistic. Children with different learning styles are individuals and teachers should value individuality and encourage children to accept their affinities and weaknesses.

7.1.2 The Neurodevelopmental Constructs

The diagram below indicates the eight neurodevelopmental constructs:

![Neurodevelopmental Constructs Diagram](image_url)

Figure 1 The Eight Neurodevelopmental Constructs (Levine, 2002)

Through a seven step process of data gathering and naturalistic observation, teachers ‘attune’ a student against each of the neurological constructs that are further broken down with examples of behaviours to look for and ‘check off’. Teachers may also undertake this process in an online environment and download a short report to share with parents and colleagues. Once teachers become proficient at ‘attuning’ a student, the process should take no longer than 30 minutes over a two to three week period. However, the Schools Attuned project highlights the importance of ongoing review and data gathering and teachers are recommended to follow this process:
7.1.3 Interventions and accommodations

_Schools Attuned_ is based on the understanding that learning strengths must be exploited and weaknesses addressed. This direct process of ‘remediation’ is known as an intervention because children are required to develop the target skill. At the same time, however, it is recognised that students who experience enduring difficulties may not attain particular skills and accommodations are required. The following example of difficulties copying from the board highlights the difference between interventions and accommodations:

**Intervention:** Show the child how to chunk information into meaningful units, verbally rehearse and repeat while copying down the notes.

**Accommodation:** Provide carbon paper and ask the child to take responsibility for requesting a peer to take notes for them or photocopy another’s notes. This relieves the child of the stress of taking the notes and allows them to focus on the concepts being presented. The child may be required to verbally explain the concept to the teacher at another time.

7.1.4 The _Schools Attuned_ program

Since 1998 over 11,000 educators across the United States of America have completed the professional development program _Schools Attuned_. The program is presented by an experienced facilitator over five days (35 hours) either offered continuously or broken into sessions over a school term at a cost of $1200 per staff member. Both teachers and administrators are encouraged to attend to promote a collaborative approach. The primary goal of the sessions is to train participants to recognise and “tune” into the minds of the students, particularly those who do not fit the conventional mould of the ‘all around successful student’. Participants are also taught to be diagnosticians and match interventions and accommodations to student profiles. The program is also based on the view that professional development is a cyclical and ongoing, not one-off experience. Rather, a series of mentoring sessions
with all school staff meeting to share case studies and interventions and accommodations is planned with the original facilitator in attendance.

7.1.5 Outcomes of Schools Attuned

As the individualised nature of the ‘attuning’ process and resulting interventions and accommodations does not lend itself to empirical evaluations of student performance, other measures have been developed to evaluate the efficacy of the professional development program.

One unexpected, but measurable and laudable outcome is a reduction in requests for school psychologist assessments. As one Second Grade teacher at Campbell Independent School in West Hollywood noted at a recent meeting attended by the present writer, “I don’t want Billy to go to another school – I’ve seen what they offer, we can do a much better job here”. Listening to this teacher and her colleagues confidently use the potentially complex terminology to describe individual children’s learning strengths and weaknesses in a positive and constructive way endorsed claims made by Levine in press that teachers can be empowered, in a relative short period of time, with appropriate mentoring, to apply the neurodevelopmental constructs to the classroom context.

In partnership with California State University outcomes of the Schools Attuned program will be evaluated independently in 2003 with a particular emphasis on changes to teachers’ perceptions of their ability to support students with diverse learning strengths and weaknesses. Prior to this, Levine’s work was endorsed by academics and educators who intuitively believed in the humanistic basis of the approach. Like many individuals who develop intervention models or programs because of their own or their children’s inconsistent academic achievements, Levine co-founded All Kinds of Minds, of which Schools Attuned is the main strategy, as a non-profit institute. This precedent in conjunction with Levine’s scholarly publications, academic position and the credibility of many respected educators who choose to be associated with the Schools Attuned program underscore its perceived value.

Criticisms of the Schools Attuned program are mostly ideological. An executive director of the Learning Disabilities Association of America expressed concern that the non-labeling approach “euphemises disabilities” and may lead parents to gloss over the seriousness of their child’s situation. Arguments to the contrary about the negative impact of labelling students to secure funding and support without actually noting the individual variation between broad categories of “learning disabilities” highlight another side of this view.

The conceptualisation of learning disabilities in the Schools Attuned Program as ‘learning differences’ has been opposed by some not-for-profit organizations and academics because of the legal ramifications. In particular, if the word ‘disability’ is removed from definitions the laws and rights for individuals with learning disabilities that have been steadily achieved over many years of government pressure may be taken away leaving students with no accommodations.
7.1.6 Applicability of the Schools Attuned Program to a Western Australian context

As one of California’s leading specialists in teacher training, Cal State University hopes to introduce aspects of the professional development program to the undergraduate program. This strategy has been employed to ensure some post graduate Education students at Edith Cowan University complete the Stepping Out program as a part of their training.

Levine’s (2002) model represents a significant shift in conceptualising learning differences and given the present rejection of ‘non-categorical’ labels.

7.2 Boys and Girls Harbor School New York City

Boys and Girls Harbor School is a ‘charter’ school in the upper north eastern side of Manhattan. The categorisation of ‘charter’ is given to a school that has been developed by a ‘private’ but non-profit organization that is endorsed by the state governing body, retains a high degree of autonomy but receives state funding in order to run. Children attending Boys and Girls Harbor are required to sit nation-wide literacy and numeracy tests, unlike private schools, but the school administrators are afforded far greater flexibility than public schools with regards to staffing and curriculum development. In order to gain entry to a Charter school parents must win a lottery ballot and ‘winning’ a place is considered highly advantageous because charter schools are not fee paying but are thought to provide a superior quality of education to public schools.

Early literacy intervention is offered to children ages four to 13 years by a team of six intervention teachers. The school already has lower than State average class sizes (20-25) and one teacher and one teacher assistant per year level. Literacy specialists aim to work with five children per year level in groups sizes from one to three students. Lessons are conducted for up to 45 minutes twice per week. Children are withdrawn to a series of resource rooms close to their classroom. The students are not expected to attend these classes for longer than necessary to catch their peers in literacy performance and assessment is ongoing to ensure progress is monitored carefully.

7.2.1 Terminology

In order to qualify for special education services in United States of America a student must undergo psychological assessment and have a recognised learning disability or disability. The term ‘learning disability’ in this context includes dyslexia and schools are required to fund special educational provisions for the student to maximise his or her performance at school and prepare an Individual Education Plan. This group of students may not access the literacy intervention program as once they are classified as ‘learning disabled’ they receive assistance from the Special Education Department of Boys and Girls Harbour that is equally well resourced.

As many of the children have not experienced delays attaining literacy they have not attracted a label to describe their difficulties. Thus, according to the specialist teachers, while a small proportion of the group presently in the program “most probably” have learning disabilities, these students have not been formally identified.
When probed, the teachers were of the view that their classes comprised of any children who experienced difficulties with acquiring literacy, whether it be due to learning English as a second language, low socio-economic status, a history of learning disabilities in the family or inexplicable reasons most likely neurological in basis. The teachers were united in the view that knowing the precise reason was of little educational use and would not affect the content of the programs they presented more than incidental information they noted about students’ learning styles, strengths and weaknesses during their teaching.

Given the number of students withdrawn from each classroom (up to 25 percent) and the terminology used to describe this group, it would appear that the teachers are applying criteria associated with the term ‘learning difficulties’ but accept that a smaller proportion of students within this group may have ‘learning disabilities’.

7.2.2 Identification

In order to fulfil the obligations associated with receiving government funding the administrators at Boys and Girls Harbour School are required to complete pre and post testing on a yearly basis to ascertain student gains. Thus all students complete a battery of tests including reading, writing and maths assessment from the IOWA State Test of Achievement. A discrepancy of two or more years below chronological age of any measure qualifies the student for literacy intervention. For students attending the four year old program teacher nomination determines who will be selected.

7.2.3 Assessment

Additional testing is conducted on an individual basis prior to entry to the program to determine individual strengths and weaknesses and a precise place to commence remediation. These measures include:

**Table 6 Components of the Boys and Girls Harbor Schools’ Dyslexia Assessment**

<table>
<thead>
<tr>
<th>Age</th>
<th>Test</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – 5 yrs</td>
<td>Howel</td>
<td></td>
</tr>
<tr>
<td>6 – 13 yrs</td>
<td>Roswell-Chall Diagnostic Reading Test of Word Analysis Skills (1986)</td>
<td>Phonological Awareness Alphabet knowledge High frequency words Regular words Letter Combinations</td>
</tr>
<tr>
<td>6 – 13 yrs</td>
<td>Reading Inventory</td>
<td>Print Awareness</td>
</tr>
<tr>
<td>6 – 13 yrs</td>
<td>Wide Range Achievement Test (WRAT)</td>
<td>Reading, Spelling and Maths subtests</td>
</tr>
</tbody>
</table>

7.2.4 Intervention Approaches

The literacy goals of reading accuracy and fluency, reading comprehension and basic writing skills underpin the intervention program and teachers follow programs that are essentially phonic and delivered systematically in a multi-sensory way. While the
range of programs, their content and the teaching strategies offered by Boys and Girls Harbor School is determined by the Director of the literacy intervention program, teachers are able to choose between these resources. The decision to limit the choices available to teachers was pragmatic in terms of the cost of purchasing materials as well as the availability of ongoing professional development for new staff members. Put simply, some staff brought specialist literacy/learning disabilities qualifications to their role while other teachers had no such training. In order to ensure uniformity in the content of literacy instruction, new staff members are required to undertake training in particular approaches that include: Alphabet Phonics, Letterland ABC (Wendon, 1989), Orton-Gillingham, Primary Phonics, Spector Phonics (Spector, 1978, 2002), Basic Writing Skills (Hochman, 2001) and Wilson Phonics. While the decision to limit the types of programs made available to students was based on pragmatic issues, this also included the reported efficacy of the approaches in the research literature and the cost effectiveness of continued use of the programs, once purchased by the school.

7.2.5 Applicability of the remedial program conducted by Boys and Girls Harbor School to a Western Australian context

As children are not generally withdrawn for intervention in State schools in Western Australia, unless at the discretion of the individual school administrator, the applicability of the approach taken at Boys and Girls Harbor School would be restricted to those schools who could allocate sufficient resources to staff and fund the purchase of materials to support the high number of children included in the model reviewed. Nevertheless, the principle of maintaining a small and generic library of resources and committing ongoing funds to ensuring all resource teachers attend professional development on the programs offered has merit, as many programs are purchased by schools and used for a limited time only. The value of pre and posttesting to demonstrate improved literacy levels is also a critical aspect of the continued support for the intervention program Boys and Girls Harbor School offer. If similar measures were in place in Western Australian Schools, an impartial assessment of interventions in place in some Western Australian schools would give a more objective indication of the efficacy of some intervention approaches.

7.3 Heritage Academy

Heritage Academy is a private school located in the West End of Ottawa, which offer courses for Elementary and Secondary students in English or French. Heritage Academy also offers specialised tutoring for students with reading difficulties/dyslexia using Orton-Gillingham or the Simultaneous Multi-sensory Teaching Method (SMT). Heritage Academy provides a range of personal development programs to foster a student’s confidence and self-esteem. Karate, gymnastics, music and drama programs are included in the school curriculum.

Heritage Academy is committed to maintaining a small teacher/student ratio of 1:10 and only 40 students are accepted into the program each year. Individual attention is guaranteed in basic reading, writing, spelling and mathematical skills. Every student has access to a computer and printer.
Lessons begin at 8.30am and finish at 3.00pm and the ‘standard’ Ontario curriculum is delivered in a way sensitive to the individual learning styles of students. Before and after school programs begin at 7.30am and finish at 5.00pm and enable students to receive literacy instruction in the Orton-Gillingham / Simultaneous Multi-sensory Teaching method. Tuition fees for the 2002-2003 school year is $12,000 Canadian.

7.3.1 Terminology

Being designated Learning Disabled (LD) has become relatively effortless as attested to by the present number of students with LD. LD has captured a large number of students, including a significant portion who are low achievers and non achievers. Dyslexics have significant difficulties acquiring literacy and numeracy and learning as well as their peers, but they don’t belong in this category. Dyslexia ought to be a unique category (Brazeau-Ward, Principal, Heritage Academy, 2003).

While the Canadian school system does not recognise ‘dyslexia’ as a term, this is the preferred term at the Heritage Academy. The principal of the Academy resists association with the term ‘learning disability’ and argues that dyslexia represents the greatest subset of the learning disabled community. However, in Canada students who have reading disabilities must be classified as having a ‘learning disability’ to receive special education services, so the term dyslexia is not used in the public school system. As Heritage Academy is a private school, they choose to use the term dyslexia and reject any perceived negative association with mild learning disabilities that are termed ‘non-categorical’ and include Asperger’s syndrome and mild intellectual disability. A student who is 3-4 years below year level with no evidence of intellectual disability is considered to have severe learning disabilities and a ‘categorical’ disability. Other students whose categorical disabilities include those with moderate to severe physical disability, hearing impairment or Autism. According to this classification dyslexia is considered a reading impairment due to a phonological processing problem with average to above average range intelligence, and is termed a categorical disability.

7.3.2 Identification

The Heritage Academy is a specialist school for Dyslexic students. Prospective students is evaluated to determine his/her basic learning difference, as well as interests and talents. Admission procedures includes an invitation for students to attend an Observation Day at Heritage Academy, an interview with the student and a trial placement for a period of three weeks. If students enrol at the Academy a review of a written/class work, visual and hearing screening tests and a family history are completed. A detailed dyslexia assessment follows:
### 7.3.3 Assessment

**Table 7 Components of the Heritage Academy Dyslexia Assessment**

<table>
<thead>
<tr>
<th>Test</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Raven Progressive Matrices</td>
<td>Non-verbal abilities test to solve problems in abstract figures and designs.</td>
</tr>
<tr>
<td>Intelligence Test (WISC 111 or WAIS 111)</td>
<td>Non-verbal and verbal intelligence test</td>
</tr>
<tr>
<td>Listening Comprehension Test</td>
<td>Non reading language comprehension test</td>
</tr>
<tr>
<td>Informal Writing Test</td>
<td>Information about writing behaviour, fluency, word usage and spelling.</td>
</tr>
<tr>
<td>Motor free test of visual perception</td>
<td>The MFVPT is a visual perceptual test which avoids motor involvement.</td>
</tr>
<tr>
<td>Jordan Left-Right Reversal Test</td>
<td>This test measures the ability to distinguish between the orientation of letters, numbers and words.</td>
</tr>
<tr>
<td>Bangor Dyslexia Test</td>
<td>This test reveals areas of difficulties usually found in persons with dyslexia. Such difficulties include: repeating polysyllabic words, months forwards, months reversed, reversing digits, b-d confusion and left-right (body parts).</td>
</tr>
<tr>
<td>Swassing-Barbe Modality Test</td>
<td>This is an individually administered test that identifies the modality through which an individual learns best. A modality is any of the sensory channels through which an individual receives and retains information and includes visual, auditory, tactile and kinaesthetic learning.</td>
</tr>
<tr>
<td>Light Sensitivity Screening</td>
<td>This test reveals whether has a sensitivity to light, commonly known as scotopic sensitivity syndrome.</td>
</tr>
</tbody>
</table>

**Plus one of the following Dyslexia Screening Tests**

<table>
<thead>
<tr>
<th>Test</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLCT Pre-Dyslexia Letter Coding Test</td>
<td>Early identification screening test for preschool age children.</td>
</tr>
<tr>
<td>DSF Dyslexia Screener for First-Graders</td>
<td>Early identification screening test for Grade 1 students.</td>
</tr>
<tr>
<td>DDT Dyslexia Detection Test (Grades 2-12)</td>
<td>Spelling and rapid reading of regular and irregular words. This test differentiates students who demonstrate characteristics of dyslexia.</td>
</tr>
<tr>
<td>ADT Adult Dyslexia Test (18 years+)</td>
<td>This test assesses an adult’s decoding and encoding skills. It identifies specific patterns of errors associated with various characteristics of dyslexia.</td>
</tr>
</tbody>
</table>
After dyslexia screening, the Heritage Academy ascertains which of the three fundamental types of dyslexia (and the associated seven sub-categories) the student has. The three main types are dysnemkinesia (motor), dysphonesia (auditory) and dyseidesia (visual) dyslexia. According to Brazeau-Ward, the greatest incidence of dyslexia is a mixed classification of dysphonesia (auditory) and dyseidesia (visual) dyslexia.

**Table 8** Classification of dyslexia subtypes at the Heritage Academy

<table>
<thead>
<tr>
<th>Subtype</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphonesia (auditory) alone</td>
<td>10%</td>
</tr>
<tr>
<td>Dyseidesia (visual) alone</td>
<td>10%</td>
</tr>
<tr>
<td>Dysnemkinesia (motor) alone</td>
<td>3-4%</td>
</tr>
<tr>
<td>Mixed</td>
<td>80%</td>
</tr>
</tbody>
</table>

### 7.3.4 Intervention Approaches

The Simultaneous Multi-sensory Teaching (SMT) method was developed by Brazeau-Ward (1998) and is based on the Orton-Gillingham approach. The critical difference between Orton-Gillingham and SMT is the amount of direction teachers or tutors are given. The SMT method is completed scripted.

The SMT method is a language re-education method developed to meet the needs of students of all ages, who need a more thorough knowledge of the structure of written language, and a solid understanding of the association of sounds and symbols, before learning how to apply the concepts and rules of written language.

The objective of SMT is to teach reading, writing, and spelling, with an emphasis on reading accuracy in the early stages, followed by thorough comprehension of written language and its structures. The material is presented in short sequential steps to help students develop self-confidence. Irrespective of age, students commence at lesson one of level one and proceed through the 12 levels. Students progress at their own pace and the average time to complete the program is 12 months. Young children who are severe difficulties may complete one lesson every two days, whereas lesser impaired adults may complete two to three lessons per day. Brazeau-Ward noted that the quickest period to complete the program was three months and the longest time period took three years. It is recommended that students receive one 60 minute tutoring session three times each week.

To be of practical use by most teachers and parents, this method entails detailed lesson plans that outline the pedagogical objectives and expected outcomes for each step. The manual includes explanatory notes on the causes and effects of dyslexia to give teachers insight into the dyslexic person’s perspective. SMT differs from other multi-sensory teaching approaches. It incorporates the development of phonological awareness in the following learning techniques and strategies:

- Visual and auditory discrimination
- Bimanual reading in Braille dots to develop a ‘tactile vision’
• Direct teaching of non-image words (such as it, because, coincidentally).
• An emphasis of diction
• The etymology of English words

The SMT includes a common lesson plan framework for all 144 lessons presented to students. Each lesson includes the following 20 steps:

1. Alphabet review
2. Grapheme (letter) and key word (picture cue) review
3. Phoneme (sound) review
4. Kinesthetic and tactile (movement)
5. Concept review (grammar and spelling rules are taught)
6. Auditory discrimination (differentiation between sounds and exercises in auditory sequential memory)
7. Visual discrimination (between letters and numbers)
8. Laterality (own left and right) and directionality (other’s left and right) exercises.
9. Introduction of a new letter (this includes eight different ‘linkages’ to associate graphemes to name, sound, picture cue, writing)
10. Handwriting
11. Health break (toilet/drink/stretch)
12. Non-image words (prepositions such as it)
13. Red words (irregular words such as inn and if)
14. Reading (nonsense, words and sentences)
15. Copying (copying text)/dictation (auditory sequential memory)
16. Phonological awareness (identify sounds in words)
17. Spelling (application of spelling rules and spelling of irregular words)
18. Tongue-twisters (development of articulation with ‘pop stick’ under tongue)
19. Oral/written expression (use a picture cue to describe what they see)
20. Listening comprehension

Brazeau-Ward (1998) maintains that SMT is 100 percent effective with all students and claims that SMT has the following advantages:

• SMT can be taught to all ages and all grade levels
• It allows much earlier intervention for dyslexic students, if they have not been formally diagnosed, because it can be taught as early as Grade One.
• Although developed specifically for dyslexic students, this method can be used for all Grade One students to prevent reading failure and to reduce the need for remedial help later on.
• Teaching the SMT to the entire class can reduce the cost of specialised teaching for a limited number of students at one time
• Each lesson is detailed and meticulously prepared, and could be used immediately by most elementary (primary) school teachers.

There is no question that the SMT is a comprehensive approach to all components of written and oral communication. The International Dyslexia Association (IDA), formerly known as the Orton Dyslexia Society, recommends that re-education programs for individuals with dyslexia teach the following concepts: phonological
awareness, sound-symbol association, syllable instruction, morphology, syntax and semantics. The IDA also recommends that the teaching methodology includes these elements: simultaneous and multi-sensory, systematic and cumulative, direct instruction, diagnostic teaching and synthetic (parts to wholes) and analytic (wholes to part) instruction. As SMT complies with the ‘best practice’ outlined by the IDA it would appear to be a highly effective intervention.

Of concern, however, is the claim made by the author of the SMT program that no child or adult, irrespective of the reading disability has failed to acquire literacy using the approach. Representatives from the National Institute of Child Health Development and academics have asserted that there are a group of students for whom even the most revered programs, such as Orton-Gillingham that are not successful. Some researchers have described these students as ‘remedial resistant’ and as no empirical studies have been completed on the SMT approach, or evidence of pre and posttest literacy scores given, this claim cannot be validated.

7.3.5 Applicability of the Simultaneous Multi-sensory Teaching Method to a Western Australian context

The SMT is a one to one tutoring program that is individualised to student need. As such, SMT has limited applicability to the classroom situation. For those schools who conduct ‘withdrawal’ program, the SMT Method appears to have merit. In particular, teacher training is minimal compared to the professional development and time required to prepare teacher resources and present other multi-sensory tutoring programs. Because lessons are scripted, teacher preparation is reduced and students become familiar with the sequence of activities. Many parents have taken SMT training in Canada and find the structure and organization of the program helpful.

For an organization such as Dyslexia SPELD-Foundation, SMT would be an ideal intervention to recommend to tutors. The detailed nature of the program is an impressive amalgamation of many features of programs recommended by others interviewed in this report as most successful to teach literacy to children and adults with dyslexia.

7.4 Primary Movement

*I think you may be disappointed with my response to the popularity of Primary Movement – I like to understate the successes because people start to see it as a ‘cure all’. Motor programs have got a bad name because people have pinned too much hope and spent too much time and money on approaches that do not work (Dr Martin Mc Phillips, Queens University, Belfast, 2003).

*It is only when educational decisions are based on empirical data and not just something that ‘sounds like a good idea’, that all children will maximise learning experiences (Dr Ian Robertson, Trinity College, Dublin, 2003).

It was when Dr Martin McPhillips, a psychologist and teacher began working with students with disabilities in the 1980’s, in particular, those with cerebral palsy, that he
became interested in the effect of primary reflexes on learning. McPhillips learned that one of the hallmarks of cerebral palsy is the inability to overcome primary reflexes and this lead him to pursue different movement based therapies. For children with cerebral palsy, severe persistence of primary reflexes indicates predominantly intractable ‘organic’ problems and these children experience extreme motor difficulties and reading difficulties despite adequate levels of intelligence. Relatively milder persistence, however, is associated with less severe disorders including specific reading difficulties. Drawing on the earlier work of researcher and anthropologist Dr Raymond Dart, McPhillips developed a series of motor exercises, put these movements to music and included them in his teaching programs while working with children with physical and intellectual disabilities including autism, specific learning difficulties and those from low socio-economic areas in Northern Ireland.

Primary reflexes are the survival mechanisms babies’ brains are ‘pre-programmed’ with at birth. These movement patterns emerge during foetal life and are critical for the survival of the newborn. Compared to other systems in the brain, the vestibular and balance systems are equipped with their own nerve supply six weeks after conception. After six months in-utero the foetus has a fully developed vestibular system and begins practicing thumb sucking for over twenty weeks so at birth the baby can ‘suckle’ for survival. Primary reflexes are universal to infants throughout the world, however, by six to eight months these stereotypical movements are replaced by secondary reflexes and there is a subtle shift from processing in the brain stem to the cerebellum.

Primary reflexes are obvious during the first six months of life and tests of these movements are used by paediatricians to assess the neurological integrity of the newborn baby. More than 70 primary reflexes have been identified and they may be classified in several ways according to function, time of appearance or the type of stimulus which releases them. Some reflexes are obvious such as the grasp reflex, where the newborn grasps a finger placed in its palm and the Moro reflex consisting of a immediate wide abduction of the arms and a rapid intake of breath in response to a sudden change of light or a loud noise. In normal development the primary reflex system is inhibited or transformed in the first year of life and a secondary or postural reflex system emerges.

When foetal reflexes persist the effects can be arranged on a continuum of severity and present in academic and social situations. For example, young infants move in an alternating and synchronised motion from one side of their body to other to support the birthing process and strengthening of neck and back muscles. If this ‘fencer’ reflex is not overcome children may find it hard to move their head without moving their arms and this has ramifications for reading and writing. Children who have not resolved the ‘fencer’ reflex may also suffer from difficulties with bladder control and may wet the bed. Unresolved primary reflexes can result in other difficulties. The Moro ‘startle’ reflex evident in young children alerts the infant to the environment, however, this sensitive monitoring system is highly disruptive in adulthood, because the individual is unable to ‘filter’ out their surroundings and may not develop selective attention. When other primary reflexes remain active, the student’s eyes may not follow the printed word fluently or they might be insensitive to the rhythmic nature of spoken language and be unable to detect individual sounds in words.
Unresolved ‘suckling’ reflexes can lead to difficulty developing a lip seal and the student may be regarded as a ‘messy eater’ and may ‘not be able to get their tongue around words’. Persistent foetal reflexes indicate an immature central nervous system.

While a neurodevelopmental basis for a range of learning difficulties including reading delay, is suggested by the substantial body of literature linking the persistence of primary-reflexes and balance problems with learning difficulties, McPhillips argues that the link between motor development and a cognitive skill like reading is sometimes overstated in simplistic terms. While this is not to say there is no connection, McPhillips prefers to understate this as it is sometimes assumed that by overcoming motor difficulties individuals with learn to read.

It is difficult to provide a detailed model of how the primary-reflex system impinges on the early precursors to reading acquisition as the teaching of reading begins relatively late in the developmental process. However, it can be said that learning to read follows a substantial period of interaction between cognitive, social and neurological maturation and persistent of primary reflexes beyond their normal time span interferes with this development and indicates neurological impairment (Dr Martin McPhillips, Queens University, 2003).

In McPhillips’ view simplistic connections between movement and learning underpin a number of popular interventions that are not supported by empirical data. By contrast, McPhillips’ research into the effect of early movement on learning has been based on the unerring principle to report objective, valid and reliable data. This was verified when a report on a series of pilot studies on the efficacy of Primary Movement was published in the highly respected medical journal, The Lancet. McPhillips, Hepper and Mulhern (2000) conducted a randomised, individually matched, double-blind, placebo-controlled comparison of children with and without reading difficulties and unresolved primary reflexes. The findings of the study showed that the children who completed the experimental movement program, which was based on primary reflex replication, made very significant progress in reading, saccadic frequency (eye movements), writing speed and the phonological sub-test, naming speed, with concurrent significant inhibition of primary reflexes.

The intervention Primary Movement consists of a series of exercises that replicate primary reflexes. This approach is based on the view that the repetition of primary reflex movements plays a major role in the inhibition of primary reflexes and that inhibition can be brought about at a much later stage in development than was previously assumed.

This is where Primary Movement stands alone compared to other motor programs such as the Dyslexia, Dyspraxia and Attention Deficit Treatment (DDAT Program) and Educational Kinesiology (also known as Brain Gym) that are available in Australia, and other parts of the world, but have limited empirical studies to support purported successes. While the writers of DDAT and EK have at times claimed their interventions have ‘cured’ dyslexia, McPhillips does not subscribe to this view and notes that although the brain stem and cerebellum have important roles to play in the integration of sensory information and co-ordination of movement, differences in
these areas of brain function do not cause reading problems, rather they are by-products of the same genetic or neurobiological ‘glitch’ in the individual.

While there is a strong connection between motor development and academic performance, Mc Phillips stresses that if a student with dyslexia took part in the Primary Movement program it would only be effective if the student had not overcome primary reflexes. In this instance, the exercises in the program would allow the student to take advantage of any reading instruction provided. Even if these primary reflexes were overcome, these students would still need support to develop their literacy skills. Put simply, the sequence of exercises teachers use to address persistent foetal reflexes does not teach children how to read.

7.4.1 Theoretical perspective

The Primary Movement program is based on neurobiological evidence that supports the link between the development and subsequent inhibition of primary reflexes and other aspects of cognitive development, including learning to read and write. The exercises in the Primary Movement program are designed to enable the individual who practices to inhibit primary reflexes and enhance motor development. Consequently, McPhillips, the author of Primary Movement does not view the exercises as an educational intervention alone, rather as a potentially new approach to treating children with reading difficulties involving assessment of underlying neurological functioning and appropriate remediation.

7.4.2 Implementation of Primary Movement

Since 2001 over 300 teachers from schools in Northern Ireland, Ireland, the United Kingdom, Australia, France, Spain and Malaysia have completed the professional development program Primary Movement. There are two stages in Primary Movement training and Stage 1 must be completed before Stage 2. Stage 1 is the foundation course comprising of three separate days of intensive tuition in small groups. The foundation course is suited to pre-school/primary teachers working with 3-7 year old children and for teachers with older children/young adults wishing to do Stage 2 training. Stage 2 is an extended five day course for teachers, particularly those working with children/young adults with learning difficulties. This course follows on from Stage 1 and is suitable for teachers working with children/young adults aged seven and older. The course consists of five separate days of intensive instruction in small groups. McPhillips, the author of the program, presents the professional development and the Department of Education in the United Kingdom funds teachers to attend the professional development. Fees begin at £380 for the introductory course.

Teachers attending the professional development are trained to screen children using a series of basic neurological tests for inhibited primary reflexes and design appropriate programs around a series of 14 ‘movements’ put to music. The music can vary from nursery rhymes with actions, such as Hickery-Dickery-Dock to contemporary music that is more appropriate for older children. What is essential is that children follow the sequence of movements demonstrated by the teacher. During lessons observed in a class or five year olds and a class or children aged between six and eight years with Autism, both groups sang along with the rhymes and completed four rhymes in under
ten minutes. The ideal time to conduct the lessons is immediately after lunch as the Primary Movement sequence begins with a series of short relaxation exercises which have the effect of calming the group. Both teachers observed commented that they enjoyed delivering the program and had learned the sequence of movements and rhymes very quickly. While McPhillips is unsure of the optimal time to deliver the program, he believes that the junior primary school years are most likely to yield the best results. In addition, a follow-up program towards the end of primary school for those children who have slipped through the ‘safety net’ is one approach currently being trialed in a number of schools in the Belfast area.

After the initial popularity and media attention the results of Primary Movement received, McPhillips established the Primary Movement charity, a not-for-profit organization that oversees the organization of professional development for teachers and requests for support from parents. The charity was established to bring a specific movement program into the public domain through the provision of training courses and other facilities for teachers working with children and young adults. The major focus of the organization is to promote early intervention through movement and support scientific research in this area.

Ideally, Primary Movement is offered to all children, particularly those most at risk of developing learning difficulties. For children in low socio-economic areas who bring under developed language and motor skills to school (often as a result of inactivity in early childhood) the approach is a preventative measure to address potential issues before they require remediation as a consequence of academic failure.

7.4.3 Outcomes of Primary Movement

Primary Movement is regarded positively by the Department of Education in the United Kingdom who have funded aspects of the research conducted by McPhillips as well as the attendance of many teachers who have expressed an interest in the approach. This is mostly due to interest from schools, anecdotal comments from parents and teachers and a series of ongoing empirical studies. The academic rigour applied to evaluations of Primary Movement easily substantiate the modest claims by the author McPhillips who notes that the approach “seems to make a real difference to the social and academic outcomes of some children”.

7.4.4 Applicability of Primary Movement to a Western Australian context

Considering the relatively short time required to complete the Primary Movement exercises with a class or junior primary school children and the potential benefits to a significant number of children, particularly if the school is in a lower socio-economic area suggest that Primary Movement is a program worth investigating. Teachers who have implemented the program have commented that their children seem better able to sit still than in previous years and are certainly better and more confident singers than other classes who are not a part of the program. As singing is a part of most junior primary school days, it would be relatively simple to allocate some time to Primary Movement. Finally, as many songs children sing have hand actions already, it would not look out of place to include the Primary Movement exercises.
7.5 Nunnykirk Centre for Dyslexia

*Our school is a place where individuals are valued for themselves and where all are expected to give of their best* (Simon Dalby-Ball, Head Teacher, Nunnykirk Centre for Dyslexia, 2003).

Nunnykirk is a secondary school in Northern England reviewed positively by CReSTeD in 2003 (see Section 2.2) for providing a ‘broad curriculum giving careful attention to students’ emotional needs with skilled teaching which addresses their particular pattern of learning difficulties’. The school was established over 25 years ago to provide for the educational and social needs of male and female students of average or above average intelligence who experience specific learning difficulties, including dyslexia. The school admits students aged between seven and 16 years old on a day or weekly boarding basis. Fees range from £3850 for a day student under the age of 14 to £6990 for a weekly boarder over the age of 14.

Entry to Nunnykirk is by psychological assessment prior to interview and additional diagnostic assessment by staff at the school to determine individual learning strengths and weaknesses. This assessment forms the basis for an IEP that is reviewed on an ongoing basis in conjunction with the student. The majority of the staff at Nunnykirk have specialist post-graduate qualifications in the field of dyslexia and class sizes are no greater than eight students. When appropriate, students are withdrawn for specialist literacy and numeracy support and in particular, literacy results are evaluated on a yearly basis.

As well as differentiating the curriculum to meet individual student needs, Nunnykirk provides students with the opportunity to take subjects that are better suited to students with dyslexia. The range of post-compulsory English units available for study best illustrates the availability of different subjects. Students may take subjects that are prerequisites for university courses, but for those students whose literacy skills do not meet the requirements of this academic standard, an alternative program that enables students to enter vocational courses is made available. As Nunnykirk acknowledges that English is by far the hardest of subjects for students with dyslexia to pass, additional support is given to students who require it with a teacher with specialist qualifications in the field of dyslexia.

In addition, an extensive work experience and ‘hands on’ component to learning is offered in the nearby community and within the rural setting of the school. Administrators at Nunnykirk attribute their success to the relationships developed with students and the opportunity to offer a flexible approach to learning.

8 Not-for-profit Organizations in the United Kingdom

*There has been a dyslexia awareness movement for thirty years in Britain. Not so long gone are the days of battling mothers in the provinces, who took on educational officials, and got little support other than that from other parents or the occasional avuncular academic……..But now things are different. The acrid fumes of controversy have lessened, as the level of public awareness and understanding has increased. Dyslexia may still be considered*
The British Dyslexia Association (BDA) and the Dyslexia Institute (DI) are two educational charities in the United Kingdom that support children and adults with dyslexia. While the two groups work independently of one another and have different foci, each is highly respected and well known. The main focus of the DI is the provision of professional services, in particular teaching, assessment, teacher training and research. By contrast, the BDA is involved in supporting parents through a comprehensive website and parent help line. Both groups aim to raise awareness about dyslexia and lobby government and educational authorities for increased support.

8.1 British Dyslexia Association

It is possible to acknowledge the existence of dyslexia as a distinct disability without it being hugely expensive to governments (Dr Lindsay Peer, British Dyslexia Association, 2003).

The British Dyslexia Association is the national charity for specific learning difficulties (dyslexia). One of the primary functions of the BDA is to translate and publicise research to parents, educators and the wider community that leads to changes in policy that ultimately benefit those individuals with dyslexia. The BDA has strong affiliations with a number of universities who conduct research on dyslexia and oversees the accreditation of dyslexia courses for teachers and related professionals. The BDA is staffed by a combination of 20 paid and unpaid employees and is a service ‘umbrella’ organization that supports over 100 smaller dyslexia organizations throughout the United Kingdom. The BDA maintains a very detailed website and provides a comprehensive parent help advice line.

In terms of political influence, the BDA is the organization credited with bringing about significant educational reform in the area of dyslexia, specifically influencing the Code of Practice that describes the support children in non-government schools are now entitled to receive. While representatives of the BDA acknowledge that there is variation between Local Educational Authorities (LEAs) on the level of support available to students with dyslexia, the high number of teachers specifically trained to work in the field, a number of initiatives established by the BDA such as ‘Dyslexia Friendly’ schools and the high profile of the BDA has ensured dyslexia is more widely accepted and understood by the educational community.

8.1.1 ‘Dyslexia Friendly Schools’

Where schools have implemented the dyslexia friendly schools charter on a planned basis it has quickly become clear that there are wider benefits, including improvements in literacy across the curriculum, better teaching of literacy for all pupils, greater awareness of individual learning needs and the use of more varied teaching strategies (Dr Lindsay Peer, British Dyslexia Association, 2003).
I think there definitely is a kind of brain that learns differently and that there are sufficient numbers of these people in society for this brain to be a part of normal human development. The dyslexic brain seems to have a preference for non-linear, global processing. The owner of such a brain is often better seeing the ‘whole picture’ rather than the parts, problem solving, pictorial thinking and divergent thinking. If the dyslexic brain was not of any benefit to the human race, it would have died out genetically by now. As an institution we must not disable students by our practices. Schools do not call upon the skills of the right hemisphere in education systems enough. We disable students with dyslexia because of this (Dr David Pollack, DeMontford University, 2003).

The concept of Dyslexia Friendly Schools is an initiative that was developed in conjunction with the British Dyslexia Association and Local Education Authorities across the United Kingdom. Being an effective school and being ‘dyslexia friendly’ are viewed as two sides of the same coin and the power of the concept appears to lie in the fact that the changes made to become more dyslexia friendly also enable schools to become more effective generally. Effective schools enjoy strong leadership, value staff development and pay close attention to the quality of instruction and learning. Most importantly, when these principles are applied to student learning in ‘dyslexia friendly’ schools all students, including those without dyslexia benefit. An example of how all teachers can create a ‘dyslexia-friendly classroom’ from the BDA Guidelines (1999) follows:

- Create a positive image of dyslexia
- Teach in a multi-sensory way
- Be familiar with the student’s IEP
- Consult the student about the targets and how they would like any classroom-based support delivered.
- Ensure the student receives more positive than negative feedback and that they receive at least as much attention and positive feedback as other students in the class (e.g., is their work displayed as often as other student’s?)

The County of Swansea is cited as an example of successful implementation of the ‘Dyslexia-Friendly’ school approach. In 1997 approximately 4 per cent of the school population in this County of Wales had statements of special educational needs including an increasing number for dyslexia – one of the highest percentage figures among LEAs in the UK. There were more than 100 requests for Stage 3 support but no teachers qualified in dyslexia were employed within the authority’s SEN support service. Amidst growing parent concerns and increased formal complaints that the needs of students with dyslexia were not being adequately addressed in the public school system, a program of reform commenced. The crucial elements of the first action plan were to:

- Hold parent meetings to listen to parent concerns and to discuss the LEA’s proposals for improving the provision of services for students with dyslexia.
- Meet with the principals of primary and secondary schools to establish a greater understanding of the issue of dyslexia and develop a shared commitment to the LEA strategy.
• Develop a resource pack for teachers following intervention at the School Action stage of the Code of Practice.
• Host a high profile conference in collaboration with the BDA.
• Reorganise the Special Education Needs services to establish a team of qualified specialists able to provide support to schools and for students at the School Action, School Action Plus and Statement stage of the Code of Practice.
• Review, and if necessary adjust, the LEA funding of students with SEN to ensure appropriate provision for students with dyslexia.
• Create a package of training initiatives, including in-service training and school-based awareness training and seek BDA accreditation for the course.

As a result of these forums and in collaboration with the BDA the Swansea LEAs developed guidelines for the early identification and support of students with dyslexia followed, packages for teachers to assist in this process were also developed and a major ‘awareness raising’ professional development program was offered to all teachers in the County of Swansea. In addition to the provision of accredited BDA training (up to two years part time) for at least one teacher in most, if not all, schools to provide advice and leadership at a school level, the LEA appointed a team of qualified teachers to provide support for students identified as having dyslexia. This translates to ‘School Action Plus’ and ‘Statement’ stages of the Code of Practice (2001). While the Swansea LEA was constrained by limited funds, resources were reallocated, when appropriate, to support students with dyslexia.

In 2000 the Swansea LEA reported the following outcomes:
• Only three new dyslexia Statements in 2000 compared to 40 in 1997. The provision of Statements for dyslexia fell from 14 per cent to two per cent.
• Most children with dyslexia are provided for by the school. Requests for school action, plus advice are normally met within half a term. Only 29 such requests were made in 2000 compared to 125 in 1997.
• By July 2003, eighty-eight percent of Swansea’s primary and secondary students will have their own specialist dyslexia teacher with BDA accreditation
• Parents’ complaints are massively reduced. Local agencies (i.e., non-profit organizations such as the BDA, parent advocacy groups etc) reported a higher level of parental satisfaction.
• There is evidence of an increased confidence and levels of collaboration between teachers in Swansea.

Known as the ‘Dyslexia Friendly Schools Charter’, the City and County of Swansea LEA’s good practice guide offers specific suggestions to promote dyslexia friendly schools. The guide says that each school should have a suitably qualified and experienced teacher to work with students with dyslexia and that all staff should participate in whole school awareness training. The guide also stipulates that active support must be provided to translate policy into practice in every classroom. The LEA advocates clear, written guidelines for teachers and it is explicitly stated that the needs of the student with dyslexia should be an integral part of whole school planning and policy.

*So having accepted the principle, the key issue is how to get there, given little time, money and increasing pressure to deliver more*
A whole school approach to translate written policy into tangible action was a critical component of the Swansea County experience with ‘Dyslexia Friendly’ schools. The need to overcome initial scepticism, offering comprehensive training, formulating a common approach, setting targets and putting in place monitoring and evaluation systems lead to educational change. School principals had to ensure that being dyslexia friendly underpinned the philosophy of the school to the extent that, for example, it was used as a factor to select appropriate teachers. The importance of ‘zero tolerance of failure’ where the onus is on teachers and administrators to find alternative ways to present different learning experiences to enable the student to learn, rather than blaming the student for underachievement, is another critical component of the approach. In ‘Dyslexia Friendly’ schools all children are important, regardless of ability or difficulty.

With respect to a Western Australian context, District Education Offices, the closest equivalent of LEAs, would have to provide the following:

- Policy acknowledging the existence of dyslexia as a distinct disorder
- Dissemination of this policy to all school personnel including psychologists, teachers and administrators
- Guidance on in-school assessment of specific learning difficulties
- Guidelines on how to support students with dyslexia within the mainstream classroom
- Provision, in the form of resources and personnel, to provide intensive instruction to students at risk of not achieving their potential due to a specific learning difficulty within the school, but outside of the classroom.
- A resource bank of learning materials to assist with the teaching of dyslexic students including computer software and other materials.
- A programme of professional development for designated Students at Educational Risk Co-ordinators or nominated personnel in a school to advise on the provision of support for students with dyslexia.

### 8.2 Dyslexia Institute

Unlike the BDA that is mainly staffed by volunteers, the Head Office of DI has over 30 paid employees (Laura Sercombe, Head of Southern Region, DI, 2003).

Founded in 1972 the DI is an educational charity for the assessment and teaching of people with dyslexia and for the training of specialist teachers. The Patron of the DI, Her Royal Highness, Sophie Countess of Wessex and the President, acclaimed author Ken Follett, contribute to the high profile of the organization. The DI also produces its own publications and teaching materials and undertakes a continuous research program with strong affiliations with major universities in the United Kingdom who specialise in dyslexia. The Head Office of the DI houses departments of finance, referral services, facilities management, human resources, southern regional management, fundraising, sales of books and DI products, public relations and marketing. Each year the DI assess approximately 7000 children and adults, teach
over 3000 children and adults and train over 250 teachers through post graduate programs. The DI Bursary Fund also greatly benefits from donations, both large and small from businesses, trusts and individuals.

The DI believes that all individuals with dyslexia should have the opportunity to reach their full potential in order to make the maximum contribution to society. The DI mission is to ensure that all individuals with dyslexia are identified and educated to allow them to be successful by:

- Providing accurate assessment and the most appropriate teaching
- Working to influence and improve the practice of mainstream educational services for children and adults with dyslexia, through specialist teacher training, the development of high-quality teaching tools, the evaluation of teaching methods to achieve better practice and by improving awareness and understanding of dyslexia.

8.2.1 Assessment and tuition

*About 4 percent of the population of Great Britain is severely dyslexic and about 10 percent overall are affected but may go unnoticed.* (Jan Townend, Head of Training, DI, 2003).

When an assessment for dyslexia is requested parents or adults are referred to their closest DI Centre for a psychometric assessment conducted by a chartered psychologist. The psychological assessment includes diagnostic tests, attainment tests and tests of general ability and usually takes two and a half hours. At DI Centres parents are able to attend a brief meeting after the initial psychological assessment for an explanation of the report, without charge. If tuition is recommended parents attend a planning meeting and tutoring commences.

The DI employs over 240 teachers and 70 educational psychologists on a consultancy basis to work in 22 teaching centres across the United Kingdom. Children are withdrawn from school to attend tutoring during the day at the Centre usually twice per week. Tutoring is available between 8am and 8.30pm for one to one, pairs, trios and groups of up to five students six days per week. Each Centre has an administrator who oversees the delivery of teaching programs and student achievement. The following table indicates the range of fees paid by parents, the proportion paid to the professional delivering the services and the fees collected by the DI. Differences in fees reflect the various locations of Centres throughout the United Kingdom with London being the most expensive of the venues.

**Table 9 Fee Schedule for Dyslexia Institute**

<table>
<thead>
<tr>
<th>Professional Services</th>
<th>Fee</th>
<th>Paid to Prof.</th>
<th>DI fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological assessment</td>
<td>£330-375</td>
<td>£210-250</td>
<td>£120</td>
</tr>
<tr>
<td>Explanation of report</td>
<td>N/C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning interview</td>
<td>£40</td>
<td>£40</td>
<td></td>
</tr>
<tr>
<td>Tutoring</td>
<td>£20-25</td>
<td>£16-20</td>
<td>£4-5</td>
</tr>
<tr>
<td>Post-tutoring assessment</td>
<td>N/C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The DI maintains a rigorous system of quality control for psychology and teaching services provided. Psychologists are required to attend regular one-day conferences to enhance their skills and maintain comparability in assessment procedures. Once qualified to teach DI programs, teachers attend regular in-service training to ensure they are familiar with current research, teaching methods and available materials/technology. Students enrolled in DI teaching programs are re-assessed every six months and the principal of the DI Centre monitors individual progress. The average student usually attends tutoring for up to two years, however the aim of the DI approach is to ensure all students exit the program as independent learners.

Teachers who work for the Dyslexia Institute provide tuition that is standardised in as much as tutors may select from a small range of endorsed DI programs. This is done in an attempt to control the quality of the instruction provided and to ensure, if a tutor leaves, there is continuity in the program. The DI approach is a highly structured multi-sensory approach that incorporates reinforcement, timed activities and practice. Students may work on the Dyslexia Institute Literacy Program (DILP) and/or the Units of Sound Multimedia Program. A number of teaching aids are available for purchase from the DI and these are also recommended to tutors working in Centres. These include the computer programs Word Shark and Spelling and Tracking in addition to two programs for parents developed by the DI: the DIY Readers’ Support Pack for Parents and Listen, Think and Do. Computers usually form an integral part of the lesson and gradually, study skills or aids to effective learning, are introduced with the aim of producing independent learners.

In order to be employed as a tutor by a DI Centre teachers with at least three years post graduate experience must undertake training in the DI method. This can take up to two years of study for one day per week in the internal mode and externally for the same period of time. External mode is particularly popular as many teachers are unable to be released from school and cannot afford to take time off work to study. Course costs vary due to the length and range of diploma, certificate and professional development courses offered however, teachers taking the two year post graduate course Diploma pay fees of up to £2800. A Teacher Assistant may take a one year course for as little as £370. DI courses are accredited by the University of York. Teachers with existing qualifications are required to take a three days course on the specialist components of the DI approach in order to tutor students in a Centre.

8.2.2 The Dyslexia Institute Approach

For parents who can afford it, specialist literacy tuition is as common as piano lessons (Laura Sercombe, Head of Southern Region, DI, 2003).

The DI describes dyslexia as “a language difficulty in which tiny differences in brain organization lead to problems in handling verbal codes or symbols” (p. 3). It therefore follows, that the theoretical approach underpinning the strategies included in DI programs is based on the view that the phonological deficit theory is the major cause of dyslexia (see Snowling, 2000), although the role of the processes of visual, attention and memory processes are also acknowledged and addressed through the multi-sensory nature of the approaches endorsed by the DI.
All DI lessons are aimed at building confidence, encouraging a positive attitude and involving students in taking responsibility for their learning. In terms of the content of the program those aspects of phonological awareness, alphabet knowledge, decoding and comprehension strategies that are difficult for children and adults with dyslexia to attain are emphasised. In addition, handwriting, spelling, written language are also aspects of the program. A cumulative, structured and multi-sensory approach is evident in all lessons.

8.2.3 Dyslexia Institute Literacy Program (DILP)

During the 1990’s public concerns mounted about the initial teaching of literacy in primary schools. For the first time the deleterious habits of dyslexic children – guessing at words from context and picture cues – had been elevated as a model to which all children should aspire. When it became clear, that as a result of this method, children were failing to learn to read in increasing numbers a series of government-backed reforms was instituted to restore the place of phonics in initial literacy teaching. These reforms have continued, indeed intensified, under the Labour Government (elected in 1997), showing that concern about the teaching of reading transcends party divisions (Turner & Townend, 2000, p. xi).

Special education teachers are usually by nature acquisitive and eclectic, ever on the look out for a good idea to help their students. However, they needs to confine themselves to one particular language program around which to structure their teaching if they are to be truly effective or it is too confusing for the students (Townend, 2003).

The Dyslexia Institute Skills Development Program (DILP) is the core component of the DI intervention program that is supplemented by the CD-Rom package developed by the DI titled *Units of Sound*. The approach is most suited to primary aged children, however, there are no graphics or pictures on either text that preclude use, if necessary, with adolescents and adults.

Lessons are standardised and numbered to follow a particular sequence and the order of introduction of phonic knowledge and spelling rules is dictated. For example the “Skeleton Letter Order” begins in this way (Dyslexia Institute Literacy Program, 1993, p. 11):

(t) as in ten  
(i) as in insect  
(i) as in Ivy  
(p) as in pen  
(n) as in nose  
(s) as in sun  
(z) as in pins  
(st), (sp) and (sn)
The approach, while unique in the order of presentation and integration of interactive technology, has much in common with other multi-sensory phonic based approaches. An outline of a lesson plan follows:

- Sequencing activities (alphabet order with wooden letters, tracking and dictionary skills)
- Reading cards and practice (Reading and spelling cards* are produced by the teacher and student together to help reinforce sound-symbol links and to build a framework or spelling rules. They are practised during every lesson and at home).
- Spelling cards, practice*
- Reinforcement exercise (Reinforcing the work of the previous lesson using computer, cards, language master, work sheets)
- New teaching point (Materials are presented to help the student to discover a spelling or reading pattern for himself).
- New reading card*
- Multi-sensory links (Opportunity to strengthen weak learning modalities and draw on all senses).
- New spelling card*
- Word reading (Words* are read in and out of context and word meaning and reading comprehension is emphasised).
- Sentence reading*
- Repeat-spell-write-check (A multi-sensory approach to teaching spelling)
- Further word spelling
- Dictation or sentences/prose (Spelling in a written context and to revise previously learned concepts)
- Individual special need (This could be a memory skill, study skill, development of listening skills, handwriting or reading practice).
- Review (The student reviews the content of the lesson with the teacher)
- Game or story reading (to practice reading, spelling or memory).

8.2.4 Evaluation of the DI methodology

Children who receive no support fall further behind their peers and progress is made less quickly when support is eventually given – a compelling argument for early intervention (Dr John Rack, Research Director, DI, 2003, p. 2).

Successful intervention is more than the program. We had a lovely teacher for a year at the Dyslexia Institute then she got sick and another person took over. The new tutor did not get along with my son, the program remained the same but Ben wouldn’t go anymore. How do you keep a child engaged with something that is aversive to them? (Dr Barbara Riddick, University of Durham, 2003).

DI is committed to research and Rack (2003) undertook a three year national research project to investigate literacy difficulties in primary school children to develop methods of assessment and to evaluate different methods of teaching, including
specialist teaching and home support programs. SPELLIT stands for Study Program to Evaluate Literacy Learning through Individualised Teaching and the research was partly sponsored by the DI, a publisher and the University of York. The SPELLIT research project is of particular significance to a Western Australian context because the project examined the efficacy of the DI intervention, the role of parent support and the appropriateness of withdrawing children for specialist support.

The SPELLIT Summary Report outlined the aim of the investigation:

- To provide scientific evaluation of structured multi-sensory teaching
- To explore ways of supporting parents to enable them to help their children learn
- To work in partnership with Local Education Authorities in order to help disseminate good practice Rack (2003, p.3)

The research design involved comparing the outcomes for 215 children aged seven years identified as either dyslexic or having difficulties with literacy learning receiving one of three different programs. Children who scored at least one year below chronological age were accepted into the program. Those children identified as dyslexic on the basis of familial history or the extent and range of their difficulties on average, had poor short term memory, slow naming speed, poor coding, poor phonological awareness in the context of average intellectual ability.

The first condition was a Home Support Program consisting of activities and exercises for around 15 minutes per day, for 5 days per week over a 30 week period. The second condition was structured, multi-sensory teaching using the DI’s approach, twice weekly over a 24 week period in sessions each lasting one hour. A third condition combined one hour per week of structured teaching provided by the DI with Home Support activities in 15 minute sessions, 3 times per week over a 30 week period. A control cohort received no intervention.

One of the key findings from SPELLIT research was that different children responded in different ways to the different learning programs. While all children, other than the control group, progressed at or better than their control peers, those who received the combined approach performed best. While noted that the combined approach can be effective, Rack (2003) concluded that much depends on the success in linking the Teaching and Home Support elements. Indeed, in some cases it was reported that parents appeared not to put as much effort into the home program when additional teaching was provided by the school. Other major findings included:

- Children as young as age 7 can be easily identified as ‘at risk’ of developing literacy based learning difficulties. The vast majority of children with literacy difficulties show the characteristics typical of dyslexia.

- Systematic observation of students with literacy based learning difficulties indicated that many are not fully engaged in whole classroom learning, indeed most developed work avoidance strategies and it appeared that some of the more able students did this more successfully at a cost to their literacy learning.

- Specialist multi-sensory tuition does help individuals with dyslexia of all ages but can also help those with generalised literacy difficulties.
Structured, multi-sensory teaching methods are more effective than alternative approaches and the 48 hours of instruction provided by the DI Centres in a withdrawal mode was highly beneficial for the children with the more severe reading difficulties, particularly those with phonological awareness programs.

The gains from learning programs were sustained once support was withdrawn, although accelerated or ‘catching-up’ to peer-group norms stopped.

That significant gains can be achieved through collaboration between Local Education Authorities (local school governing bodies), schools and private sector organizations such as the Dyslexia Institute.

8.2.5 Relevance to the Western Australian Context

At present, the withdrawal of students from the classroom context is eschewed by government education agencies in Western Australia, however Rack (2003) provides strong support for periods of specialist support in a one-to-one or small group environment. This position is endorsed by other researchers. Lingard (1994) has shown that small group instruction was more effective than in-class teaching in accelerating reading and spelling development. Marston (1996) reported that students who were withdrawn to a resource room to receive tuition in small groups made better progress with reading than those who received only in class support.

The review undertaken by Rack (2003) also endorses the importance of systematic, explicit instruction in phonological awareness and beginning reading and spelling knowledge from a young age. The highly structured nature of the DI approach and the quality of the training undertaken by post-graduate teachers who deliver the program is also highly significant. Presently, a small number of teachers who work with children with literacy based learning difficulties have the equivalent of a Masters degree or two year post graduate award, but these are in the minority. As noted by Rack (2003) in circumstances where the quality of the instruction could not be guaranteed, either at home or at school did no better than their control peers. This finding clearly underscores the importance of effective instruction as inclusion of the DI program as delivered by teachers specifically trained for this purpose was the most significant variable in the outcomes of the most severely reading disabled students. Thus, it would appear, given this and similar evidence reported from an American and Canadian context, that withdrawal can be highly effective if the instruction is timely and the approach is based on empirical findings known to support students at risk of literacy failure.

9 Summary: Not-for-profit organizations

Representatives from leading Dyslexia and Learning Disabilities not-for-profit organizations in USA, Canada and UK reported common concerns about definitions, funding, tutor registration and raising teacher awareness about teaching approaches to support students with dyslexia.
9.1 Definitions

Those groups who use the name ‘dyslexia’ in their title prefer to use this term irrespective of whether schools use this term or others such as Specific Reading Disability (USA), Learning Disability (USA) or Reading Disability (USA). Other not-for-profit organizations such as the Learning Disabilities Association of Massachusetts, prefer the broader interpretations of the term to include dyslexia as a subtype of the larger group of children who experience enduring difficulties learning that are neurological in nature and include problems in processing, memory and attention.

The Learning Disabilities of Massachusetts reported that one out of seven students, or 12-17 percent of the population have learning disabilities. This figure equates to 760,000 children and adults in Massachusetts or a total of 2.4 million in the USA. According to the LDMA the term dyslexia, while encompassing the broader definition of Learning Disabilities, is too specific to be used in isolation. Many students who do not have literacy difficulties have other processing, memory and attentional differences and cannot be classified as dyslexic, but have other learning disabilities.

9.2 Funding

Interestingly, in USA the term learning disabilities does not include Attention Deficit Hyperactivity Disorder (ADHD) when it occurs in 5 percent of children without the presence of other learning disabilities, but does include ADHD in the 95 percent of children who experience ADHD with co-morbid learning disabilities. The rationale for this decision is based on the view that if an individual takes medication to address their neurochemistry and their ability to pay attention positively changes, then they no longer have a learning disability. When ADHD co-exists with other learning disabilities, then medication may only address one aspect of neurological processing and residual learning disabilities remain. Interestingly the two not-for-profit organizations diametrically opposed to each other in terms of generating funding were from America.

The International Dyslexia Association – New York City branch, reported a shortfall in funding due, in part, to the timing of a conference. Held in annually, the IDA conference usually raises a significant proportion of the organizations funding, however the annual conference coincided with the start of the 2003 Iraqi War. The subsequent downturn in the American economy and the outbreaks of the SARS influenza virus also affected attendance and conferences, professional development sessions and other fee paying activities conducted by the IDA.

By contrast, the Learning Disabilities Association of Massachusetts (LDAM) reported their most successful year to date and has not felt any of the economic stressors reported by the IDA in New York City. The LDAM is a state affiliate of the national group of LD Association of America. A readership of 6200 receive journals, 90 percent of this group are from the state of Massachusetts with the remainder sold to a national and international audience. The annual LDAM conference in November 2003 was sold out and sales of videos, books and materials produced by the LDAM and purchased by organizations throughout the world outperformed previous sales. The President of LDAM explained that increases in sales were attributable to
targeting schools, universities and parents successfully with best practice approaches for children and adults with learning disabilities.

9.3 Tutor Registration

Tutor registration remained a contentious issue with all groups interviewed. In the United States of America organizations undertook a rigorous process of screening potential tutors, but recommended individuals cautiously to parents without a formal endorsement to avoid potential litigation. In the United Kingdom the Dyslexia Institute conducts tutor training and offers generic classes in specialist centres throughout the country, and therefore only recommends their approach. By contrast the British Dyslexia Association publishes guidelines for parents to follow when selecting a tutor. One of the criteria is a specialist qualification and the BDA evaluates post graduate courses as a part of their official role. It would seem that not-for-profit organizations must either conduct their own tutor training and monitor tutor performance to ensure some level of comparability, or give general guidelines to parents and encourage them to make their own choice. While the DI draw a considerable income from their tutoring enterprises, the infrastructure required to conduct tutor training and develop and independently evaluate the efficacy of the professional development and the tutoring program is significant.

10 Summary of findings

10.1 The identification, assessment and methods to teach children with dyslexia

There is consensus amongst most teachers and certainly academics working in the field of literacy difficulties in Belgium, Canada, the United Kingdom, France, Northern Ireland, and the United States of America that dyslexia is a distinct type of learning disability that is neurological in nature, highly inheritable and if not detected early can contribute to detrimental educational, social and health issues for individuals and the communities in which they reside. As dyslexia is not formally recognised in Western Australia as a distinct type of learning disability, and approximately the same number of children and adults appear to be affected, this consensus should influence current approaches to identify, assess and teach children with dyslexia in an Australian context. It is only when dyslexia is recognised as a type of disability that the ‘label’ will be legally enforceable and secure educational support.

There is also general agreement about effective early intervention practices in general and specific screening procedures for children at risk of being dyslexic. Those countries visited that recognise the need to identify individuals with dyslexia early in their school careers to prevent and minimise literacy failure have produced education policies, curriculum directives and initiatives that emphasise the importance of early identification and teaching particular literacy pre-requisites and skills. These literacy skills include: phoneme awareness, systematic decoding instruction, reading fluency, reading comprehension strategies; and, vocabulary development. The importance of early identification and providing instruction in these critical literacy pre-requisites and skills is based on the research findings of many empirical studies and underpinned by the view that many literacy based difficulties, including dyslexia, are prevented or ameliorated by including these elements in beginning literacy programs. As there are no guidelines highlighting the fundamental importance of explicitly
teaching these beginning literacy skills to teachers in the Western Australian government and non-government sector it is critical that schools are made aware of the preventative value in including these skills in their beginning literacy programs. Furthermore, as decisions to implement beginning literacy approaches in Australia are generally not based on research findings, it would be highly beneficial to adopt a similar approach to that of the National Institute of Child Health and Human Development (NICHD) in the United States of America and base educational decisions on empirical studies.

Dyslexia is a complex type of learning disability that is resistant to simplistic definitions. Individuals with dyslexia are heterogenous with not all indicators evident in all people with the condition. Put simply, dyslexia can affect a wide range of seemingly disparate tasks such as copying from the board, tying up shoe laces, remembering times tables as well as tasks more commonly associated with the attainment of proficient literacy skills. Approaches like Levine’s (2002) *All Kinds of Minds* suggest teachers and schools conceptualise dyslexia in the broadest possible way and identify children’s underlying cognitive or processing difficulties as well as activities or parts of activities the child might be good at. Specific intervention approaches adopted by individuals who specialise in the remediation of literacy difficulties take a different approach. What is critical about the range of approaches reported in this document is the implementation of the interventions in schools and dissemination of approaches to teachers is systematic and well resourced. Through knowledge and resources teachers and schools are empowered to provide the most appropriate support.

In addition, on the issue of general screening and specialist teaching, schools in the United Kingdom, Canada and the United States of America have established formal procedures for identifying, documenting and recommending students for additional testing and specialist tuition. Put simply, if an individual is positively identified as dyslexic, then specialist teaching is largely the appropriate, if not the sole, remedy. A variety of successful, but similar approaches to supporting students with dyslexia were described by teachers and academics in the countries visited. Such specialist assessment or tuition is not widely available in the Western Australian government school system. Specialist teachers who work with individual or small groups of children with dyslexia in the United Kingdom, Canada and the United States of America are required to have post graduate qualifications in the area. This is presently not the case in Western Australia. While some teachers receive support from their government employer to undertake further studies in the field of learning difficulties, this group is in the minority and many school psychologists and teachers are unsure of how to screen children for the early signs of literacy failure that may be attributable to dyslexia. Only specialist teaching from a fully qualified person is likely to make a decisive difference and schools in the countries visited who demonstrated a greater understanding of dyslexia reported a decrease in requests for additional funding for assessment. While this may be attributable to teachers feeling more confident in their ability to support students, than actually able, it indicates that a greater emphasis on the initial training of undergraduate teachers and psychologists as well as ongoing professional development of personnel presently employed in schools is highly recommended as a starting point to raise awareness about dyslexia.
Finally, of all the groups interviewed, academics reported the most conservative estimates of the incidence of dyslexia and not-for-profit organizations the highest. This is not surprising as those working in a research environment recruit cohorts of subjects who represent ‘pure’ incidences of the behaviour, in this case, dyslexia. By contrast, not-for-profit organizations draw from a wider population of children and adults with dyslexia or literacy related learning disabilities are more inclusive.

10.2 Research findings

There is a strong research basis for classifying, identifying and providing educational support for individuals with dyslexia. A brief summary of the research findings follows:

- Dyslexia is a ‘real’ condition for which a neural signature has been identified.
- Individuals with dyslexia who are identified before the age of 10 show a superior prognosis to those identified in the middle primary school years.
- It is possible to identify students at risk for dyslexia prior to formal reading instruction and provide additional instruction in critical pre-requisites known to ameliorate reading difficulties.
- Approaches that feature explicit, multi-sensory, systematic and sustained phonological awareness and phonics instruction in the beginning stages of reading instruction produce superior results than those that do not.
- Students identified from Year Three onwards require timely and systematic support, from a qualified professional that is prioritised and may involve small group or individual withdrawal from the mainstream class on a short term basis to ensure the individual has adequate opportunities to ‘catch’ his or her peers.
- Evidence, from a neurological perspective, underscores the efficacy of these approaches by demonstrating structural changes to the brain.

10.3 The role of government support

When governments acknowledge the existence of dyslexia as a subset of a broader group of students with learning disabilities, improved educational services follow. While educational bodies consider these services to be costly in terms of allocating scarce financial resources to meet a potentially large group of students, the classification of dyslexia as a type of disability is critical. This group of students require timely and intensive instruction to maximise their learning potential and this will not occur unless schools are required to demonstrate they have provided this service. While the process of obtaining an Individual Education Plan (IEP) is fraught with issues of correctly identifying this heterogenous group of dyslexic students, government systems such as the United States of America, Canada and the United Kingdom that have legislated to provide support services. Despite variations between what some States (in the USA) and areas (in the UK and Canada) consider as ‘learning disabilities’, those areas that are funding programs and support are achieving superior outcomes and greater community acceptance of the unique difficulties some individuals experience attaining basic literacy and numeracy skills.

Furthermore, financial support provided by governments is critical to fund early identification and remediation of children with dyslexia in all school settings. Government funding must be allocated on the basis on empirical research, not
conjecture, theories and ideological beliefs about effective literacy instruction for individuals with dyslexia.

10.4 The role of not-for-profit organizations

“If the difficulties children experience at school are considered health issues they get far more attention and funding than if the issue is viewed as purely educational. It is important to conceptualise dyslexia, like specific language impairment or Asperger’s syndrome, as a health issue” (Dr Kate Nation, Oxford University, 2003).

Charities and not-for-profit organizations who raise awareness and advocate for individuals with dyslexia have brought about significant changes in literacy instruction in schools in USA, Canada, UK and Northern Ireland. It is contingent on not-for-profit organizations in Australia to be more entrepreneurial in their pursuit of private funding to provide for support for individuals with dyslexia and to lobby governments to legislate for changes to education services.

11 Recommendations

A number of recommendations based on best practice observed in the United States, Canada and the United Kingdom and interviews with professionals working in the field of dyslexia follow. Changes to the process of identifying, assessing and supporting with dyslexia are recommended and will be undertaken by the present writer:

• The present writer will propose professional development sessions to schools and education districts on testing procedures, best practice interventions and research on the aetiology of dyslexia to raise awareness and promote discussion about the acceptance of this disorder as a distinct type of learning disability. In addition to schools, the present writer often addresses parent and community groups and will use this as an opportunity to promote successful practices in the identification, support and understanding of dyslexia.

• In the role of researcher, the present writer will undertake the trial of a number of literacy interventions and assessment procedures shown to be highly effective in overseas countries, in addressing literacy based learning difficulties. This research will be provided initially to individual schools with a view to extending the availability of programs based on the effect of empirical trials.

• As a lecturer in the School of Education at Edith Cowan University (the tertiary institution in WA with the highest number of Education graduates) the present writers will continue to emphasise dyslexia as distinct type of learning disability in undergraduate units and new courses will be proposed at a postgraduate level to support teachers and psychologists in schools in the specific areas of identification, diagnostic assessment and school based interventions.

• As a Board Member for Dyslexia SPELD Western Australia, the present writer will encourage the Board to work more proactively with SPELD organizations in other parts of Australia, and with contacts made with non-profit organizations in
other parts of the world, to share and disseminate new information to teachers and parents of children with dyslexia and the wider community.

- Finally, in the role of advocate for individuals with dyslexia, the present writer will undertake to lobby government agencies to acknowledge and adopt the general definition of dyslexia accepted by the USA, the United Kingdom and Canada and provide financial support to schools and the wider community to assist the 3-5 percent of the Australian population who experiences enduring difficulties learning to read, write and spell. It is the present writer’s view that government agencies must begin to view the issue of identification and support of individuals with dyslexia as a health issue that will lead to wide reaching social consequences if ignored.
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