

# Preface

## Hugh Catts

*Professor and Director,  
School of Communication Science and Disorders  
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Reading is a wonderful ability; it informs us, entertains us, and brings us great joy. With the appropriate opportunity and experience most children acquire the ability to read in the early school grades and go on to use their reading skills for educational and recreational purposes. A small portion of children, however, experience significant difficulties learning to read. These difficulties often lead to a host of negative consequences including academic failure, poor self-concept, truancy, or limited employment opportunity. Fortunately, research indicates that the severity of reading problems and the associated negative consequences can be significantly reduced with early intervention. However, for early intervention to take place, children must be identified in a timely fashion. Because the primary symptom of a reading disability is difficulty learning to read, practitioners and educators have typically waited until considerable reading instruction has been provided before a diagnosis could be made. This practice often has delayed identification until second grade or later. Fortunately, research has begun to uncover early factors related to a reading disability (RD) as well as educational practices that allow practitioners and educators to identify children at risk for RD prior to, or at the very least, the beginning of formal reading instruction.

One of the earliest signs of risk for reading disability is a family history of RD. Children with a parent or sibling with RD have a 40-60% chance of having RD themselves. Early behavioral signs of risk for reading disability are delays in the development of oral language. Children who are late to speak or who show delays in the acquisition of spoken vocabulary or grammar often go on to have difficulties in learning to read. Other early language problems that may foretell later reading difficulties are poor verbal short-term

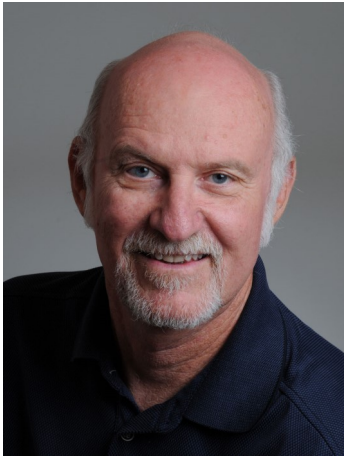
“... research indicates that the severity of reading problems and the associated negative consequences can be significantly reduced with early intervention.”

memory and/or a lack of an awareness of the sounds in words (i.e., phonological awareness). The latter difficulties can lead to problems recognizing the relationship between how words are pronounced and how they are spelled, i.e., the alphabetic principle.

When family risk or early language problems are not apparent, universal screening can be used to identify children who are at risk for RD. This screening is often completed as early as the beginning of kindergarten and has been shown to be quite accurate in identifying children at risk. In addition to screening, progress monitoring in response to instruction/intervention has been used to improve accuracy even further. Measures of phonological awareness and oral language are frequently used in screening and progress monitoring. In addition, letter knowledge and/or sight word reading have been assessed. The latter assessment has proved to be particularly informative.

Research has shown that children who get off to a slow start learning the letters of the alphabet and/or initial sight words (after appropriate instruction) typically have subsequent difficulties in learning to read. Very few children appear to have what might be considered a developmental delay in which an initial slow start is followed by rapid growth and benchmark attainment. Because of this, intervention should not be delayed and should begin as early as possible to achieve the best outcomes. Early intervention cannot only accelerate the acquisition of reading skills but can limit the negative consequences associated with RD. Early intervention can also assure that children do not miss opportunities to acquire vocabulary and word knowledge through reading in the early school grades. Finally, timely intervention can prevent the acquisition of inaccurate and/or unreliable reading strategies often seen in struggling readers.

This volume includes a series of papers that are relevant to early intervention. Several articles address the nature of screening instruments, their effectiveness, and/or how screening tools should be evaluated. Other papers discuss strategies for early intervention as well as evidence for the importance of such intervention. Taken together, this volume demonstrates that through early identification and intervention we can better assure that all children experience the joy of reading.



## **ABOUT THE AUTHOR**

### **HUGH CATTS**

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*Dr Catts' research interests include the early identification and prevention of language-based reading disabilities. He is currently a investigator on two projects funded by the Institute of Education Sciences. One project involves a five-year longitudinal study that is designed to increase our understanding of the role of language skills in reading comprehension, and knowledge of how to effectively increase reading comprehension through systematic classroom-based instruction. The project involves a consortium of researchers from the Florida State University, University of Kansas, Ohio State University, University of Nebraska, Lancaster University (England) and Arizona State University. In the other project, Dr. Catts and his research team at KU are examining the effectiveness of Response to Intervention as a framework for the identification of kindergarten children at risk for reading disabilities. Both of these projects provide excellent opportunities for student research experience and training.*



# Welcome

## Nor Ashraf Bin Samsudin

*Director, Specialised Educational Services*

*Dyslexia Association of Singapore*

It is with great pleasure that I introduce the DAS Handbook of Early Intervention, a collection of recent and relevant articles relating to the topics of early childhood education and specific learning differences. This handbook is useful, in particular, for practitioners, who are looking for materials that are relevant to our context in the Asia Pacific.

Singapore is a multiracial, multireligious society that is heavily reliant on its manpower to fuel its GDP. It is well known for its high educational standards and good performance in international tests such as the Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS). One of the notable traits to highlight is that these good performances have been consistent since 2001. In the area of reading for example, Singapore has been consistently been improving on its overall score and managed to achieve 4th in the overall rankings of 45 educational institutions worldwide.

One of the key attributing factors to this good performance is the emphasis on “levelling up” the academically weaker once they have been identified. The Ministry of Education of Singapore has developed a programme called Focused Language and Assistance in Reading (FLAIR) to help preschool students, identified at PAP Community Foundation (PCF) centres, with learning difficulties develop their oral and aural abilities. In 2013, it was announced that MOE would be extending this programme to their K1 students. The Ministry for Social and Family Development, on the other hand, has also developed an early intervention programme called the Development Support Programme (DSP), which was piloted in 2012.

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The programme which costs approximately \$4 million a year to run, aims to support students with mild developmental delay or learning differences so that they can have a smoother transition into primary school.

The DAS Preschool Early Intervention Programme (EIP) is part of the services provided by the Specialised Education Division of the Dyslexia Association of Singapore and aims to complement the content of these programmes, with what it currently has, to prepare a child to be school ready. Due to its emphasis on remediating students with a learning difference and its focus on building up key literacy skills, this is easily possible.

Due to Singapore's heavy emphasis and investment into education, a lot is expected of each child as they enter into Primary 1 at the age of 7. All subjects, with the exception of the student's mother tongue language are taught in English. To be school ready, a Singaporean child is expected not only to be able to recognise their alphabets but to be able to read, spell and write relatively proficiently. In Singapore, a child is expected to have already mastered their emergent literacy skills by the time they have entered Primary 1. Students with a learning difference may have difficulties with these expectations and this is where we hope that the DAS Preschool EIP is able to provide the necessary intensive and high quality support to help them to 'level up'.

The DAS EIP curriculum encapsulates the important emergent literacy skills (and knowledge) within our scope and sequence. To deliver a programme that caters to the student's needs, all children will have to go through a Comprehensive Literacy Assessment on their first lesson. Through that, an Individualised Intervention Plan (IIP) will be formulated and educational targets will be set. Lessons are conducted by qualified teachers using principles that have been proven effective for learners with a learning difference. It is heartening to note that the recent study conducted by the DAS Preschool Programme provided strong evidence that a multi-skill 2-hour a week DAS EIP is effective in helping our students acquire the necessary literacy skills required for school readiness.

DAS would also like to express our deepest gratitude to our kind sponsors, NTUC OrangeAid who have, to date, donated close to \$730,000 in support of needy students attending our classes. Their generous sponsorship has certainly gone a long way in ensuring that finance does not become a barrier to a child receiving the necessary intervention before entering primary school.

It is my hope that you will find the contents of this handbook useful in enhancing your understanding of Specific Learning Differences in the early years which will in turn benefit the lives of many children in helping them to cope and transit into their formal schooling years smoothly.

**ABOUT THE AUTHOR**



**NOR ASHRAF BIN SAMSUDIN**

*Director, Specialised Educational Services  
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*Ashraf has spent the last 10 years teaching and coaching students with dyslexia and other learning differences and is now the Director of Specialised Educational Services of which the Preschool Early Intervention Programme (EIP) is one of many services provided by DAS in this division. Prior to this, he was appointed as the Assistant Director of Education, taking the lead in various curriculum development projects across the different programmes at DAS. During this time, he also presented numerous workshops and talks to parents, educators and professionals around the island to help spread the awareness of learning differences as well as to provide useful and practical strategies for them.*

*Ashraf has a Post Graduate Certificate in Learning and Teaching in Higher Education, London Metropolitan University and is currently undergoing his Masters in Education (Leadership, Policy and Change) with Monash University. With his training in dyslexia and in Neuro Linguistic Programming, he blends knowledge from these two fields to deliver programmes which emphasises importance on the acquisition of not only the hard skills but the soft skills as well.*

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*Nurturing individuals with learning differences to achieve success and impact society positively*

**OUR MISSION:**

*Unlocking the potential of individuals with learning differences.*

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*Specialised Education Services (SES) is a division of the Dyslexia Association of Singapore which aims to uncover the true strengths of individuals with learning differences and empower them with the necessary skills and strategies to succeed. SES has a dedicated team of professionals who are committed to delivering a quality service focusing on the needs of the individual and strives to bring out their very best.*





# Editor's Message

**Emeritus Professor Angela Fawcett**

*Research Consultant*

*Dyslexia Association of Singapore*

To celebrate the visit of Hugh Catts, an expert in the area of early intervention, and in recognition of the importance of the topic, we are drawing together a series of articles drawn from the first few issues of the Asia Pacific Journal of Developmental differences (APJDD) in conjunction with further research evidence in to this book, DAS Handbook of Early Intervention.

We have encouraged researchers with material pertinent to this issue to submit their work for review. This is an area of research very dear to my heart, through many years of experience working with children in the early school years. The articles presented report important results and highlight the need for continued provision of specialised support at this age level, in order to prevent reading failure and the subsequent damage to self-esteem and potential.

The handbook falls into two sections. The first section draws on preschool material largely from Singapore, and the second on the early school years, with material from the USA, UK and Europe and Asia more generally. Don't forget here that children start school at very different ages across countries, the September following their 4th birthday in the UK, age 6 in the US, and age 7 in Singapore and many European countries.

## Section 1: Singapore Preschool Landscape

Following the preface and welcomes, we start from a general perspective, with an introduction from me, on how to evaluate screening and intervention. Let me explain the plan here, as we move through the preschool years.

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The next set of articles again move from general to specific on preschool provision for children at risk of dyslexia by the DAS in Singapore, outlining the types of support that can be provided for these children. The section starts with an article from Wong Kah Lai adapted from the DAS Handbook, 2014, including a case study with new material and examples of children's work and parent, children and teacher reflections. The children's ratings of smiley faces are particularly interesting here, and have inspired the development of the new Social and Emotional Learning kit, developed by Wong Kah Lai in conjunction with students from the Ngee Ann Polytechnic School of Humanities and Social Sciences. The article by Thomas Sim and colleagues from DAS focuses on the importance of early intervention for children at risk of dyslexia and is reprinted from the Asia Pacific Journal of Developmental Differences (APJDD). In this study, 56 children aged 5 to 6 undertook structured multi-sensory intervention over periods ranging from 10 to 70 weeks. The results indicated strong improvement in all aspects of the skills targeted, and revealed effect sizes that surpassed many of the findings from the National Reading Panel meta-analysis in 2001. Moreover, the improvements included striking increments in reading, which can be notoriously hard to improve even when phonological skills are remediated. The next article by Lois Lim examines the progress of 201 children on starting the MAP programme, and finds striking evidence of greater impact in reading and spelling for those children starting in P1, in line with international research on the benefits of early intervention.

DAS is interested in the development of the whole child, and so we also include here a section on drama at DAS, for 7-8 year old children that emphasises the whole child emotional development moving into the drama for literacy approach, a programme that many parents opt to join in addition to the MOE-aided DAS Literacy Programme (MAP) which is based on Orton Gillingham principles. An article from Shuet Lian Ho from DAS illustrates the effectiveness of speech therapy in working with young children at risk for dyslexia. Following on from this, a case study from Shuet Lian Ho shows the speech therapy approach in action with an 8 year-old boy over a 20 week period.

A section on the effectiveness of screening tools used by DAS in Singapore follows. The article by Brookes et al, reprinted from the Journal of Educational Psychology with permission, focuses on the usefulness of the CoPS Lucid screening tool. The article by See Shuhui Jacey and Koay Poay Sun reviews the impact of screening on the identification of children at risk for dyslexia within DAS, using the Dyslexia Early screening test (Nicolson and Fawcett, 2004). The 2nd article on this topic by Fawcett and colleagues 'Sustained benefits of a multi-skill intervention on preschool children at risk for reading difficulties' considers the value of screening and intervention with children in nursery in the UK and demonstrates lasting impact for a short-term intervention at age 4 years in

comparison with controls. These two articles are again reprinted from the APJDD. Finally in this section Wong Kah Lai and her preschool teachers from DAS presents a series of practical solutions for preschool teachers – See, Say, Do! to enable teachers to apply the approach themselves.

## Section 2. Early School Intervention

The second section of the Handbook moves on to consider the literature on early school intervention in the UK and USA, with my comparative review of the effectiveness of a range of interventions, drawn from the National Reading Panel, Brooks and Singleton’s reviews and the What Works clearinghouse.

I am then proud to present an authoritative review from Professor Joe Torgesen and colleagues from the USA on the importance and value of early intervention. The evidence from Torgesen on the impact of intervention at an early age has been seminal in the move towards universal early screening and support which I have been advocating since the 1st edition of our early screening test, the Dyslexia Early Screening Test (DEST) for children aged 4.5-6.5, in 1996. It is clear that even a short-term intervention at this age, the early school years in the UK, can have lasting effects, on the principle ‘a stitch in time saves nine’.

An important article from Hugh Catts considers whether or not it is possible to differentiate between children with Specific Language Impairment and Dyslexia, and is reprinted with permission from The Journal of Speech, Language and hearing research. The first experiment follows 527 children identifying specific language impairment in kindergarten and assessing continuity with diagnoses of dyslexia. The article concludes that despite the co-morbidity between the two conditions, these are separate conditions. A second experiment with a subset of participants identifies a continuum of impairments on phonological processing, with dyslexic children more affected than those children with Specific Language Impairment.

The articles that follow all derive from the first three issues of the Asia Pacific Journal of Developmental Differences.

The next two articles address a key area for language learning in Asia, the difficulties encountered by dyslexic children in learning Chinese. The Lee and Poon article addresses, ‘The impact of teaching methods on learning Chinese characters in bi-lingual children with dyslexia’. The authors show that the Stroke method is more effective than Hanyu Pinyin in teaching children Chinese characters in Primary 1.

The article from Kevin Chung at the Hong Kong Institute of Education represents a highly innovative approach to measuring the skills of poor and adequate readers of Chinese, focusing on differences in executive function as well as phonology. The approach adopted involved measuring performance across a broad range of skills in 78 children, including poor readers and matched controls. Interestingly, executive skills, in this case self-regulation measured by a test of inhibition, the Heads Toes Knees and shoulders test. In this novel test, children are required to inhibit a command to touch their head and instead touch their toes. This measure of self-regulation accounts for unique variance in reading comprehension after controlling for age and IQ. This may be either a causal factor or a consequence of difficulties in learning to read in Chinese. It would be extremely interesting to use tests of this type in evaluating readers in English, because it is clear that executive skills of this type contribute to readiness to read.

The final two articles in this section are drawn from Europe. The first considers one of the major theoretical contributions of recent years has been the recognition that naming speed may be a factor in deficits arising in dyslexia, with those children who experience both phonology and speed deficits the most difficult to remediate. This is based on the research of Professor Maryanne Wolf and her colleague Professor Pat Bowers. Naming speed is an interesting test, because it involves eye movements, keeping your place on the page, and retrieving names from your lexicon, while maintaining your speed of articulation. It has been called a compendium test with the ability to identify a range of different problems, particularly when there are difficulties in object naming. However, it is clear that this knowledge has not yet been widely disseminated across the Asia Pacific region. Therefore a review of the area provides a useful adjunct to our understanding of deficits in dyslexia, in this article by Dr Kadi Lukanenok from Tallin University.

It is important to recognise the many manifestations of dyslexia in different subtypes of dyslexia, while not denying the importance of the overarching phonological deficit. In the next article by Jost from the Czech Republic, the progress of a young child in developing literacy is followed, with a case study of the predictive value of eye movements, amongst other tests for learning differences. Over a five year period, a group of around 100 children were tested on eye movements, IQ, reading, motor skills, attention and self-esteem. The case study from this child provides some support for the use of eye movements as a possible prognostic indicator for dyslexia and other learning differences. This suggests that eye movement differences may be important in a small subset of children with dyslexia, and may be an additive factor for some other dyslexic children.

In conclusion, the DAS Handbook of Early Intervention provides a theoretical rationale for the need for early intervention based on evidence based practice from around the world, and illustrates the approach that DAS have adopted in order to fulfil this need. We hope that you will find this publication both interesting and useful!



**EMERITUS PROFESSOR ANGELA FAWCETT**

*Research Consultant*

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*Emeritus Professor Angela Fawcett is a leading international researcher into dyslexia and other developmental disabilities, encompassing a range of theoretical and applied contributions to this field. Angela is also an Honorary Professor at the University of Sheffield. Her approach is broad and interdisciplinary ranging from child and cognitive development to educational screening and intervention, as well as developmental cognitive neuroscience. She is the Vice President of the British Dyslexia Association and also the Former Chair and Director of the Centre for Child Research at the Swansea University, UK.*