



DYSLEXIA ASSOCIATION OF SINGAPORE

# DAS HANDBOOK

# 2014

Editor: Emeritus Professor Angela Fawcett

Managing Editor: Deborah Hewes



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## EDITORIAL NOTE

The views expressed in this book are those of the individual contributors, and do not necessarily represent the policy of the Dyslexia Association of Singapore (DAS). Whilst every effort has been made to ensure the accuracy of information given in this handbook, DAS cannot accept responsibility of the consequences of any errors or omissions in that information. In certain articles a gender pronoun, eg. his/her, this is used purely for the sake of convenience by the author.

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DYSLEXIA ASSOCIATION OF SINGAPORE

# DAS HANDBOOK

# 2014



*A collection of articles, essays, research, case studies and practical information for people with dyslexia, their families and for the professionals who work with them to help them embrace dyslexia.*

*Editor: Emeritus Professor Angela Fawcett*

*Managing Editor: Deborah Hewes*

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# INTRODUCTIONS





# Welcome Message

**Lee Siang**

*Chief Executive Officer*

*Dyslexia Association of Singapore*

I am delighted by the outstanding efforts of Angela Fawcett, Professor Emeritus and the DAS Team for putting together this excellent Handbook.

While the growth of DAS in the past decade has been immense, the Handbook reflects the range and scope of DAS programmes and makes clear the specific areas which still require further exploration and development in support of people with dyslexia and associated learning differences.

Presently, there are 3,000 students enrolled in the 13 DAS Learning Centres and more Ministry of Education schools with the School Dyslexia Remediation Programme. However, there could be as much as 20,000 students in preschools, primary and secondary schools with not just dyslexia, but dyslexia severe enough to warrant intervention. So, we are still just the tip of the iceberg in terms of the number of students the Ministry of Education and DAS should be helping.

Another area of need is expanding support to other age groups. Currently, DAS provides services to primary and secondary school students. We have only just begun our work with preschoolers and we still need to reach out to post-secondary and adult dyslexics.

DAS must continue to expand in scope and size to be able to cater for older children and higher order literacy skills, help our students in their academic subjects and well as in life skills. Additionally, we must provide support for dyslexics who have associated learning differences such as ADHD, dyspraxia, dyscalculia, etc.

Our region, as a whole, still lacks sufficient support for dyslexics. As we develop our programmes and services in Singapore they will be of interest

*“... we are still just the tip of the iceberg in terms of the number of students the Ministry of Education and DAS should be helping.”*

to our colleagues in neighbouring countries and we must be responsive to their enquiries to further spread awareness about dyslexia and associated learning differences.

Building a pool of expertise in dyslexia and associated learning differences in Singapore is a main objective of DAS. DAS staff must not underestimate the experience and expertise we have already accumulated and we must continue to invest and give our colleagues, many of whom are below the age of 30, the opportunity to pursue professional development and gain exposure.

Most research into dyslexia is still originating in the UK and US. Our database of several thousand children with dyslexia has tremendous potential for research. This is especially true in our unique multi-lingual, multi-ethnic environment where there is tremendous emphasis on academic excellence.

Here are some highlights of some recent DAS expanded efforts:

- ◆ DAS Specialised Educational Services (SES) Preschool Programme doubled its enrolment in the past year to over 250 students.
- ◆ SES has also begun to conduct psychological assessments and specialist tutoring for young adults.
- ◆ The Ministry of Education-aided DAS Literacy Programme (MAP) has introduced an expanded integrated curriculum to provide for the literacy needs of a much wider range of students.
- ◆ To complement our Essential Maths Programme and Speech and Language Therapy, SES introduced a Chinese Programme, an English Exam Skills Programme and the Speech and Drama Arts Programme in 2013.
- ◆ From 2014, SES also introduced a series of school holiday programmes covering creative writing, presentation skills, social skills, goal setting and maths word skills workshops.
- ◆ We have responded to requests from Malaysia, Indonesia and Philippines with DAS subsidiary DAS International staff making several visits to provide psychological assessments and speech and language therapy to our international clients.
- ◆ To further expand the academic pathway for professional development in our field in Singapore, DAS Academy, another DAS subsidiary,

launched a new MA in Special Educational Needs in partnership with the University of South Wales in 2013.

- ◆ DAS Educational Therapists have also taken on the challenge to broaden their expertise and become “Dual Specialists” by training to teach both Literacy and Maths or both English and Chinese, for example
- ◆ DAS has compiled for the first time an Annual Programme Evaluation report for 2013 for all major programmes.
- ◆ The SES Chinese Programme Team prepared a research paper based on the findings of their programme which was subsequently published in the July 2014 issue of the Asia Pacific Journal of Developmental Differences.
- ◆ The SES Chinese Team, SES Preschool Team and the MAP Team will also be making presentations based on the results of their programmes at the International Dyslexia Association’s Conference in San Diego, USA in November 2014.

These efforts, and in combination with the DAS Handbook, reflects the breath and complexity of the needs of our clients with dyslexia and associated learning differences. It also defines and demonstrates the vibrancy and energy of DAS staff which is critical as we continue to be in pioneering country in almost everything we do as we strive for benefit of our clients.

With all of this in mind, the DAS strategy for the next five years is clear – To build and deliver a comprehensive and holistic range of programmes and services for our dyslexic clients. I am more than confident that the essays in this first issue of the DAS Handbook will encourage DAS staff, government teachers, parents and all stakeholders to further explore dyslexia and the research and support it requires.

*“Our region, as a whole, still lacks sufficient support for people with dyslexia. Building a pool of expertise in dyslexia and associated learning differences in Singapore is a main objective of DAS.”*



## ABOUT THE AUTHOR

### LEE SIANG

*CEO—Dyslexia Association of Singapore*

*Mr Lee Siang assumed the post of Chief Executive Officer on 1st September 2014. He oversees the work of the DAS HQ Branches operations, supervises the management of the three DAS Divisions, namely the MOE aided DAS Literacy Programme (MAP), Specialised Educational Services (SES) and the Learning Centres and Outreach Division. He also sits on the Board of DAS subsidiaries, DAS Academy and DAS International. Siang is a member of the US - based International Dyslexia Global Partners Committee. He has 25 years of experience in leadership and management of which 15 years is at senior level in non - profit organisations.*

*Siang observes that "unlike other industries, work in a non-profit organisation gives you immense satisfaction that your efforts are helping clients who need your support and who are likely to not receive it otherwise!"*

*Siang joined the DAS in December 2001 and has played a key role in the rapid growth of the DAS Family into a thriving social enterprise with a multi-disciplinary professional work force that provides a continuum of psychological, educational and training services . He emphasises that the DAS must view itself as a social enterprise and management "must strive to fulfil our social mission by combining entrepreneurial and business skills with the philanthropic characteristics of non-profit organisations".*

*Siang obtained his Bachelor's Degree from the National University of Singapore via the sponsorship of a Singapore Armed Forces Training Award. He also has a Postgraduate Diploma in Financial Management from the Singapore Institute of Management, a Masters in Business Administration from the University of Western Australia, a Certificate in Dyslexia Studies, a Postgraduate Certificate in Teaching and Learning in Higher Education from the London Metropolitan University and a Postgraduate Certificate in Specific Learning Differences, also from the London Metropolitan University. It is this unique balance of experiences and qualifications that has allowed Siang to oversee the diverse services and functions of the DAS Family.*



# Editors Message

## Emeritus Professor Angela Fawcett

*Academic Director*

*Dyslexia Association of Singapore*

It is with great pleasure that I am able to share with you our brand new DAS Handbook. This handbook is the brain-child of our former CEO, Robin Moseley.

I had the privilege of meeting Robin Moseley at many British Dyslexia Association and International Dyslexia Association conferences in the UK and USA. We shared an instant rapport through our experiences of dyslexia and of studying as mature students. I developed immense respect and affection for Robin, and admired the changes he had been able to make at the Dyslexia Association of Singapore (DAS). My husband David and I became personal friends with Robin and his wife, Glynis. We discussed my work in early screening and intervention and in 2009 when DAS planned a conference on that topic, I was invited as keynote speaker. In 2010, I started lecturing on the Masters course, supervising the Masters dissertations for Michelle-Lynn Yap, June Siew and Priscillia Shen from the DAS Academy staff, amongst others. I was delighted with the success they were able to achieve!

In 2011, I had taken retirement from my Chair in Child Research at Swansea University, and I had begun to think my academic career might be over. Truth to be told, I was bored with retirement after just three short months! So, I was very happy to continue on with my mentoring of DAS staff in Singapore. When Robin asked me if I would consider a role as Academic Director for DAS in 2012, working from the UK and visiting three times annually, I was delighted to take up the opportunity. So how has this worked out and what have I learned?

I have learned that the DAS is the largest and most successful dyslexia association in the world, working with over 2900 children, many with financial support from the Ministry of Education

*“I have learned that DAS is the largest and most successful Dyslexia Association in the world.*

*...I have learned that DAS has a depth and breadth of understanding of dyslexia that is second to none”*

(MOE). I have learned that DAS has a depth and breadth of understanding of dyslexia that is second to none, and I speak as Vice President of the British Dyslexia Association.

I have recognised a willingness to self evaluate and to regularly upgrade provision to ensure that our children receive the best support tailored to their needs. I have worked with staff whose warmth and concern have moved me, and whose ideas excite me. I have begun to understand the challenges faced in a multi-lingual society. I have had the opportunity to develop and launch a new journal, as well as continue to maintain an international presence and create impact in the field of dyslexia. Most recently, I had had the opportunity to present at the EARAS in Tokyo Japan, with DAS staff, and I hope to be attending their next conference in Taiwan in February 2015.

I am happy to continue working with DAS after Robin's retirement and return to England. Naturally, I am cheered to have Robin and Glynis within the same time zone as me, and I look forward to our continued friendship. However, I am also delighted to see DAS moving forward in the safe hands of Lee Siang. My role with DAS has brought me new friends and new opportunities, and I have been particularly impressed by the calibre and enthusiasm of the staff. I would like to thank them for their friendship, their co-operation and for the very real strides they have all made in developing their skills in publishing as we continue to work together.

In presenting this DAS Handbook, the fruit of our labours, I am delighted to share with you the exceptional range of expertise and skills I have found at DAS. These seem to me to be examples of best practice in reflective self-evaluation, which should enrich all who read it. The first chapters include evaluations of all the programmes run by DAS, including those funded by the Ministry of Education, and the continued progress with setting up a new banding system to empower teachers. This is followed by a series of articles on "Embrace Dyslexia" the theme of a recent visit by celebrated dyslexic author Thomas West, who contributes extensively here. Thomas Sim the DAS Academy Director of Research contributes an article here on the role of happiness in learning, echoing the new movement towards 'Positive Dyslexia', led by Rod Nicolson from the UK. Next we present international perspectives including maths from Steve Chinn and phonology. A new section on adults, drawn from best practices in the UK, introduces the topic of the rights of adult dyslexics in employment and further/higher education. This provides a marker for working with adults in policy and practice, an area that DAS are planning to move into. A series of case studies of current good practice in dealing with children with co-morbid problems is drawn largely from members of the DAS team. Finally, we present a range of practical implications for dyslexia, again compiled by members of the DAS team. We hope this contribution to the literature

will showcase the work of DAS across the world and will generate further fruitful collaborations.

## ABOUT THE EDITOR



### **EMERITUS PROFESSOR ANGELA FAWCETT**

*Academic Director*

*Dyslexia Association of Singapore*

*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.*



# My Journey to DAS

## Robin Moseley

*Retired CEO*

*Dyslexia Association of Singapore*

I stepped into a classroom in a not very nice area of London as a qualified teacher for the first time on Monday, 2 September 1968. Never in my wildest dreams did I think that 46 years later I would end my career as a CEO in Singapore.

At the time I was too anxious to think of anything but survival. My class had 52 pupils and only seven could speak English. Fortunately I had taken over my class from a very eccentric and absent-minded man. Once, he set a London double decker bus on fire by throwing his cigarette into the collection box instead of his used ticket. He often forgot to turn up for lessons so the class had learned to fend for themselves. Luckily they were able to show me how to run a classroom and I learned more about teaching from my class than I had during three years of teacher training.

Although I found teaching to be very demanding, I quickly grew to love it. Significantly, in that first class, there was an 11 year old who could barely read or write and it was through helping him that I began to realise that both he and I were dyslexic. I had never heard of dyslexia before this.

Looking back now, I realise that my father was probably dyslexic. He was a very bright man but worked as a draughtsman for British Railways, a job that he hated. He was a skilled artist and I have some of his drawings still. He was wise and witty, although often depressed. I remember that my mother handled all the family correspondence, usually with my father dictating what to write. Sadly, my son has inherited my dyslexia and has struggled to overcome his difficulties.

I hated school and was delighted when I left for the world of work. My secondary school days were particularly unhappy. In those days in Britain, children took a selection test at age 11 to determine which type of secondary school they would attend. As the test involved mainly reasoning puzzles, which

*“I hated school and was delighted when I left for the world of work.”*

I enjoyed and was good at, I was selected for an academic grammar school. What a disaster! I had only started to read fluently at nine and still could not write very well. The next few years were a misery and I became a successful truant. My teachers never complained when I was missing from their classes and I suspect they were only too pleased not to see me in their lessons.

Fortunately, I became much more successful in real life. This is true for many dyslexic people and there is one obvious reason for this. At school, a student cannot go to his teacher and say, "I am not very good at writing, so let's cut it out of the curriculum." He is far more likely to be told to repeat the writing assignment and his parents - anxious to help - send him to extra writing tuition. As a result, dyslexic children often end up concentrating on all the areas with which they have difficulty and spend little time enjoying those areas where they can be successful. And then, people wonder why dyslexic children get depressed and can be badly behaved.

In real life, of course, you can often concentrate on the areas you are good at and largely ignore all those activities in which you are poor. For instance, you will never see me on a dance floor as I have very poor motor coordination and look ridiculous when attempting to dance.

Dyslexics need good strategies in order to succeed. My best strategy was to marry my wife, Glynis, who has loyally and ably supported me for nearly 50 years. I discovered I was good at understanding and working with people. I came to understand my own profile of weaknesses and strengths and learned to maximise my strengths. I set about learning to spell by rote and practised until I could spell all common English words. I still cannot easily distinguish the sounds in words, and therefore have to learn by heart new words and names. Technology has also helped enormously and I have been very lucky to live in a world of fast developing computerisation.

Although people have "discovered" many cures and solutions to solve the problem of dyslexia, my own experience is that skilled diagnosis and teaching, together with hard work and persistence, is the key to success. What motivates me in my work with the DAS is the thought of so many children still suffering in school, as I did over 50 years ago, when they could so easily be helped to succeed.

In Singapore today, the DAS is helping over 2,600 dyslexic children to achieve success, but that still leaves many more dyslexic students who have not been identified and are not receiving the help and support they need. We can and must help these children and young adults.

I suppose like many dyslexics, my career has just happened without any planning. I started as a teacher, but I quickly found that I liked teaching children with learning

issues so I studied psychology in the evenings whilst continuing teaching full-time. I then trained as an Educational Psychologist and this became my role for the next 36 years.

In 1982, I became an expatriate working in Cyprus, then Hong Kong and finally in Singapore, where I have lived for the last 22 years. Of all the jobs I have had over the years, I can sincerely say my time with DAS has been the most satisfying. Helping so many dyslexic children succeed has been great, but it is the great pleasure of seeing young people becoming outstanding professionals with DAS that has been the greatest joy.

Although my career of 46 years has come to an end, the problems caused by dyslexia and other specific learning differences will continue for generations to come. Therefore, the work of the DAS has only just begun and many challenges and opportunities lie ahead. I leave Singapore happy in the knowledge that DAS will continue to grow and develop to meet the needs of children and adults well into the future.

*“Helping so many dyslexic children succeed has been great, but it is the great pleasure of seeing young people becoming outstanding professionals with DAS that has been the greatest joy..”*

## ABOUT THE AUTHOR



### **ROBIN MOSELEY**

*Educational Psychologist*

*Retired CEO—Dyslexia Association of Singapore*

*Robin was a resident of Singapore for 22 years and is now retired and living in the UK. Robin came to Singapore to work as an Educational Psychologist for the international school Tanglin Trust (1982 to 2002), then became the CEO of DAS in 2002. He retired as CEO in August 2014.*

## Vital Visionary—Robin Moseley

### “Helping Dyslexic People Achieve”

#### Deborah Hewes

*Head of Publicity and Publications  
Dyslexia Association of Singapore*

Robin Moseley joined the Dyslexia Association of Singapore as a member of the Executive Committee in 1996. He then took up the position of Chief Executive Officer in 2002. He spent 12 years at DAS building the DAS into a world-renowned organisation that helps dyslexic people achieve.

Robin is a teacher and Chartered Educational Psychologist with over 46 years’ experience. He qualified as a teacher at Newland Park College, Institute of Education, Oxford University in 1968 and started work as a teacher in London where he specialised in teaching children with learning, emotional and behavioural difficulties. In 1973, he qualified as an Educational Psychologist after studying at Birkbeck College, the Institute of Education and University College, all three institutions being part of London University. He holds three degrees in Psychology, Child Development and Educational Psychology. Robin practised as a psychologist in Essex, London and Herefordshire and then in 1982 started working for the British government in Cyprus and from 1985 in Hong Kong. For six years, he was a part-time tutor in Educational Psychology at Hong Kong University.

Robin moved to Singapore in August 1992 to work at Tanglin Trust School where he was Consultant Educational Psychologist and Head of Learning Support. Robin’s involvement with the Dyslexia Association of Singapore (DAS) started in 1996 when he was invited to become a member of the DAS Executive Committee. On his retirement from Tanglin Trust he was encouraged to take up the CEO position of DAS and in September 2002 he joined DAS as the Chief Executive Officer. Little did he know then that he would be staying in Singapore for another 12

*“To build a world class organisation dedicated to helping dyslexic people and those with specific learning differences in Singapore.”*



years. Robin was instrumental in creating a new vision and mission for DAS which over the last 12 years has grown into a social enterprise that can claim to be one of the largest Dyslexia Associations in the world, in the context of staff, students it supports, scope of services and its annual turnover.

Robin, a proud dyslexic, has a passion for helping all individuals with learning differences. His vision for DAS has allowed the organisation to grow and support thousands of children with dyslexia as well as enabling others who support those with learning differences by providing professional development opportunities by the way of workshops and courses, international conferences and tertiary programmes.

He has also ensured that DAS empowered its parents with the skills to support their child at home by sharing of his personal story and by providing a series of DAS workshops and courses to meet that need.

Robin retired from DAS on 31 August 2014, DAS would like to wish him all the best in his retirement. Robin's legacy will continue to grow and meet its mission for people with dyslexia in Singapore.

## ABOUT THE AUTHOR



### **DEBORAH HEWES**

*Head of Publicity and Publications  
Dyslexia Association of Singapore*

*Deborah has been with DAS since May 2011. Deborah is a dyslexic and passionate about raising awareness about learning differences. All three of her children have learning differences and as a result she has spent the majority of the last 17 years supporting her children's academic careers as well as helping other families with children who have learning differences. Deborah has lived in Singapore for 13 years and she has devoted the first 10 years working in an International School as a Learning Support Assistant and parent volunteer supporting students who learn differently with math, reading and literacy. She has also worked as a shadow assistant for students with behavioural issues and Asperger's Syndrome.*

*Deborah completed her Psychology honours degree at UNISIM in Singapore and her thesis was titled "Adolescents with learning disabilities: an investigation of academic self-concept, self-esteem and depression in International school students."*





# EVALUATION OF DAS PROGRAMMES



# MOE-AIDED DAS LITERACY PROGRAMME MAP

## WHAT IS THE VISION FOR THE MAP PROGRAMME?

To MAP the way for young dyslexics to live a life of beauty and promise through a comprehensive, high quality service provided by inspired professionals

## WHAT IS THE MAP PROGRAMME?

MAP or the MOE-aided DAS Literacy Programme provides a comprehensive and quality curriculum to support dyslexic students facing literacy challenges. The MAP Curriculum integrates key essential learning components that are crucial in remediating students with learning difficulties.

- **PHONEMIC AWARENESS AND PHONICS.**

The provision of a multi-sensory and highly structured phonetic instruction through the Essential Literacy Approach (ELA) has been incorporated into MAP lessons to promote and facilitate reading and spelling development in our students.

- **READING FLUENCY**

MAP lessons emphasise the importance of reading fluency through the deliberate planning of reading tasks that take into account students' reading fluency and accuracy to ensure that reading comprehension is not impaired by effortful and inaccurate reading.

- **READING COMPREHENSION**

As comprehension is a constructive and integrative process, MAP aims to equip students with the essential comprehension skills needed to draw inferences as well as to use general knowledge to make meanings and connections of what the students have read.

- **VOCABULARY**

Beyond phonics, MAP explicitly emphasises oral, reading and writing vocabulary development of sight and high frequency word instructions through the use of Assistive Technology to improve students' language acquisition skills.

- **WRITING**

The MAP curriculum team has also developed localised writing packs, materials and resources that cater to the diverse learning needs of students to improve their writing skills.

# MOE-aided DAS Literacy Programme - MAP

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## INTRODUCTION

### Definition and Population

The Dyslexia Association of Singapore's (DAS) mission is to help dyslexics achieve. DAS has adopted the Professional Practice Guidelines (PPG) definition of dyslexia which recognises it to be a specific learning difficulty of language learning and cognition that primarily affects accurate and fluent word reading and spelling skills with associated difficulties in phonological awareness, verbal memory and processing speed (Ministry of Education, 2011). All MOE-Aided DAS Literacy Programme (MAP) students require a diagnosis of dyslexia by a registered psychologist to receive help at the DAS.

### MAP

MAP offers intervention, taught in accordance to Orton-Gillingham (OG) principles, which is language based, cognitive, structured, sequential and cumulative, multisensory, diagnostic/prescriptive and emotionally sound. It aims to skill dyslexic students in the areas of phonics/phonemic awareness, reading, comprehension, spelling and writing.

The DAS intervention programme, which was reviewed in 2010, focuses on these elements:

- ◆ the recommended areas of instruction for learners with dyslexia (National Reading Panel, 2000; Rose, 2009)
- ◆ individualised group lessons taught in accordance to the OG principles (Ritchey & Goetze, 2006; Rose & Zirkel, 2007) and modified in view of institutional and funding limitations

- ◆ a suggested framework of information bearing in mind cultural sensitivities and emphasising conceptual teaching of language components as "[k]nowledge organisation is one element that has been used to differentiate novices from experts" (Ridgeway & Dunston, 2000)

Since its inception, MAP has provided intervention for over 5000 students.

*“Given the sizeable population of dyslexic students that MAP helps, it is of utmost importance that it continually evaluates its intervention programme.”*

## **PROGRAMME EVALUATION**

Given the sizeable population of dyslexic students that MAP helps, it is of utmost importance that it continually evaluates its intervention programme. This is so that it is able to understand its impact on the population it serves, provide valuable information to parents and other stakeholders about the strengths and limitations of its intervention programme, improve on the quality of the intervention it delivers and increase the DAS' contribution to evidence based knowledge to the field.

There are several ways to evaluate an intervention programme. One of the most obvious ways include evaluating the amount of progress students make after receiving a period of intervention, which, in this case, may be quantified by literacy measures or school grades. Other forms of evaluation may include demonstrating the quality of its content and delivery of intervention as well as gathering the views of those who have received the intervention.

## **PROGRESS OF STUDENTS IN THE FIRST YEAR IN MAP**

### **Background: Annual Testing**

MAP psychologists have been conducting annual reviews of MAP students' reading and spelling skills at the end of the each calendar year since 2003. The purpose of these reviews was to determine MAP students' reading and spelling skills as they received intervention.

The focus of the review was placed on reading and spelling skills as basic reading and spelling tests were deemed to be fairly quick measures for students to take and that improvements in reading and spelling skills were natural outcomes of MAP's multisensory phonics-based teaching.

## **Procedure**

To investigate the effects of intervention, the first year of MAP students' progress was closely looked at. The data came from MAP's records of student profiles from 2003 to 2009. Given the varied nature of the dataset (i.e., different students taking different cognitive and literacy tests or different versions of tests), it was necessary to focus on a sample of a group of students within the MAP population whose profiles come from the same tests and participated in annual testing over the first year of intervention. A sample of 202 students was used in this analysis.

### **1. Significant gains made in first year in reading and spelling**

MAP students were found to make significant progress in the first year of their intervention. This is impressive given that the measures were norm-referenced and therefore meant that MAP students were not only improving in their absolute reading and spelling levels (i.e. able to read and spell more words), they were also closing gaps in these skills compared to their typically reading peers.

These results are consistent with the findings by Chia and Houghton (2011) that showed gains in reading following one year of OG based instruction. Further, our current results are an improvement given that we included a larger number of dyslexic students compared to Chia and Houghton's (2011) study. Secondly, we showed improvements in standard scores instead of showing age equivalent gains in reading. Thirdly, while Chia and Houghton (2011) focused primarily in reading measures, we demonstrated gains in spelling standard scores as well.

In all, MAP students demonstrate commendable reading and spelling progress after one year of intervention within a large scale phonics-based intervention programme. These findings add to the evidence-based knowledge in the dyslexia field.

### **2. Significant reading and spelling gains are related to age**

We also found that the younger students were at admission into MAP, the better their progress in both reading and spelling. In particular, it appears that the greatest gains were made by those in Primary 1. The finding that a younger age of beginning intervention is associated with higher reading and spelling gains is consistent with evidence showing that early intervention results in better outcomes (Ehri, Nunes, Stahl, & Willows, 2001).

Furthermore, it was interesting to note that variables such as verbal, non-verbal, spatial and phonological skills were not related to reading and spelling gains. This suggests that MAP works for those in the programme regardless of certain cognitive

or phonological factors. These findings collectively provide greater insight into how individual differences play a part in intervention and have important implications for practice.

### **3. More gains made by those who have poorer reading and spelling scores**

It was found that MAP students whose reading and spelling scores were lower at beginning of intervention tended to make more progress than those who entered with higher scores. That said however, students with higher reading and spelling scores at the beginning of intervention still show reliable, albeit lesser gains. Taken together, these findings indicate that students with lower baseline reading and spelling scores may have more room for growth and reduce individual differences in literacy skills. Conversely, students with higher baseline scores may be already performing at optimal levels and a more intensive intervention may be needed to drive additional gains.

**As such, it is clear overall that MAP demonstrates significant reading and spelling norm-referenced gains in the first year of intervention and these gains are strongly related to age and the literacy levels at which students enter the programme. These provide greater impetus to direct more efforts to reach out to struggling readers as early as possible.**

### **VIEWS OF THOSE WHO HAVE RECEIVED THE INTERVENTION**

Parent and student feedback on student progress can also be sought to demonstrate the level of impact it has on the student's literacy progress, learning attitudes as well as self esteem levels. Some of the views of students who have received intervention at DAS include the following:

#### **Lim Kimm Aerin - DAS Alumni Student (FACETS 2014, Vol. 2, pg. 64)**

"I enjoyed my specialist literacy intervention classes immensely. My classmates were always so energetic and participative as we learned to read and write during lessons. I also loved my teacher, who was extremely patient, encouraging and understanding towards all her students. To inspire us, we were introduced to the famous figures that had overcome dyslexia to excel in their respective areas of expertise and their pictures along with their achievements were pasted all around the classroom walls. In fact, I was filled with sadness and reluctance when I had to graduate a few months later."



**Teo Heng Soon - Winner of Excellence in Dance and Volunteerism in 2014  
(FACETS 2014, Vol. 2, pg. 74)**

“In Primary School, I was diagnosed with dyslexia, a condition which hampers my ability to spell and interpret words... It was a new experience for me when I entered DAS. I was with other students who were the same as me and the DAS centre in Queenstown Primary became like my second home. Like me, other students my age had extra time for their assignments, had problems remembering things, and struggled with Chinese!

At DAS, I picked up useful skills from articulating my words more accurately to answering comprehension questions. Everyone at the DAS Queenstown learning centre were amiable and warm, always there to lend a helping hand, even when it came to helping me with my money collection for a charity. My teachers consisted of Mrs Jane, Mrs Ganga and Mrs Phoebe who were very bubbly and hospitable to me and who knew how to draw the line and instill discipline in my friends and myself. I guess I felt a sense of belonging in DAS which I could not get anywhere else, and the effective lessons definitely helped me to soar in the academic arena.”

**Heng Yi Zen – Winner of Excellence in Academics and Leadership in 2014  
(FACETS 2014, Vol. 2, pg. 70)**

“I joined DAS when I was in Primary 1, after my mother sent me for an assessment. Luckily for me, I managed to join DAS FengShan Centre as there was a vacancy. As I was diagnosed with dyslexia very early on it helped to mitigate difficulties my learning curve.

Before I enrolled into the DAS programme, I had already noticed that I was struggling more than my other peers at school. I had multiple problems such as skipping lines whilst reading, spelling mistakes and “atrocious” handwriting. My teachers used to say that I had doctor’s handwriting.

It was at DAS that I learned new skills and techniques that helped me to overcome some of the obstacles to learning that dyslexia had caused. My parents helped in my learning and I was able to catch up in my studies and no longer fell behind my peers.

My greatest struggle was reading aloud, skipping lines and using incorrect pronunciation was a

*“It was at DAS that I learned new skills and techniques that helped me to overcome some of the obstacles to learning that dyslexia had caused.”*

common occurrence. It was embarrassing, and because of that I disliked reading aloud. Back in the day, I remember sitting in the car and reading aloud to my dad before every DAS lesson. It was traumatic initially but as time went on I got better and better, eventually I enjoyed reading aloud.

It was through my Teacher Madam Aisyah that I finally grew out of my shell and learned to express myself more, build confidence and start to try out things that I had initially avoided. She constantly reminded me that dyslexia never limits your learning potential, at most it hinders your learning capability. I remember this distinct phrase "Einstein and Lee Kuan Yew had dyslexia too" it served as a reminder to me, to never limit your own possibilities."

## **FUTURE EFFORTS**

### **Exploring the use of other measures**

The limitations of using norm-referenced tests to determine dyslexic students' progress is that it may place them at a disadvantage in showing continual "progress" given the existing hurdle of having poorer literacy scores compared to their normal peers. The creation of curriculum based measures that may be more sensitive to the teaching provided as well as in the changes in students' own literacy growth is important. It may also be useful to consistently collect information on students' performance at school in addition to these measures.

### **Demonstrating high quality of content and delivery of intervention**

An examination of MAP in view of these results reveals the need for the following enhancements:

- ◆ The main objective of the curriculum is to move a learner from the learning to read stage to a reading to learn stage and there is evidence that suggests that an effective early intervention programme could prevent a learner's early literacy difficulties translating into long-term deficiencies (Goswami, 2008). The findings suggest that DAS effectively enables acquisition of the early literacy skills.
- ◆ Enhancement to the programme will focus on the implementation of the *Placement-Intervention-evaluation (Ple) Matrix*, with an aim to:
  - ◇ reinforce the relationship between psychologists and educational therapists in supporting learners with dyslexia
  - ◇ respond swiftly to the needs of the learner, to ensure intervention is provided in a timely manner in the relevant areas

effectively integrate higher order skills into the programme in response to the increasing sophistication of the learner's literacy needs, following the first year of intervention.

- ◇ monitor student progress.

The MAP Quality Assurance Team recognises the importance of measuring students' progress in both a norm-referenced and criterion-referenced manner and is actively creating progress monitoring tools that closely mirror what is taught in the MAP curriculum. For instance, creating informal tests of phonological decoding, reading and spelling that are matched in difficulty level with the scope and sequence taught in MAP.

### **Conducting intervention studies, with comparison groups**

In order to increase the rigour of evaluation, it would be important to select a subset of the MAP population and conduct randomised controlled intervention studies with comparison groups of typically developing readers.

## **CONCLUSION**

This programme evaluation paper is one of the first of its kind in the DAS that investigates the effectiveness of MAP. It forms the first of many steps in moulding and directing the future of MAP and how it continues to improve and adapt its teaching to meet the needs of dyslexic students in the DAS. It is clear that MAP works for dyslexic students particularly those who are struggling to develop reading and spelling skills at a very young age and strengthens the DAS' mandate to continue its efforts in reaching out to young students in lower primary and preschool levels so that more students will be enabled in achieving success despite their learning differences.

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# MOE-aided DAS Literacy Programme Admissions: The Admission Process

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## THE ADMISSIONS PROCESS

The Dyslexia Association of Singapore (DAS) receives referrals directly from parents or the Ministry of Education (MOE), Singapore. For parent referrals, parents are required to complete a referral form and attach relevant documents such as psychological reports for processing. For MOE referrals, only a psychological report and cover letter addressed to DAS is necessary.

All referrals to DAS are sent to the MOE-aided DAS Literacy Programme (MAP) Admissions department. It ensures that all necessary documentation is present before making a decision about placement.

The admissions process is overseen by an Admissions panel of MAP specialist and educational psychologists. The Admissions panel of MAP would determine if the student has met the admissions criteria. Each referral would be looked at by at least two members of the MAP Admissions panel

## ADMISSIONS CRITERIA OF MAP

Each referral is checked for the following:

- ◆ A clear statement of the diagnosis of dyslexia (or its equivalent)
- ◆ A psycho-educational assessment conducted by a registered psychologist
- ◆ A report that is valid (within three years of the assessment(s) conducted)
- ◆ Singaporean citizenship of the student or at least one parent
- ◆ Student's attendance at an MOE Primary or Secondary school

When a referral meets all of the above mentioned criteria, the student will be recommended to join MAP.

When a referral does not meet any one of the first three above mentioned criteria, an assessment to verify dyslexia may be recommended. Where the school and citizenship criteria are not met, recommendations to **DAS Specialised Educational Services (SES)** or other relevant external agencies may be suggested. With the given information, parents are the ones who make the choice as to which service is suitable for their child.

### REFERRAL STATISTICS IN 2013

DAS received 1375 referrals in 2013. Of these, about 30% of them were from MOE, 20% from private or hospital based psychologists and the rest were from parents and/or teachers. The distribution of the proportions is as follows:

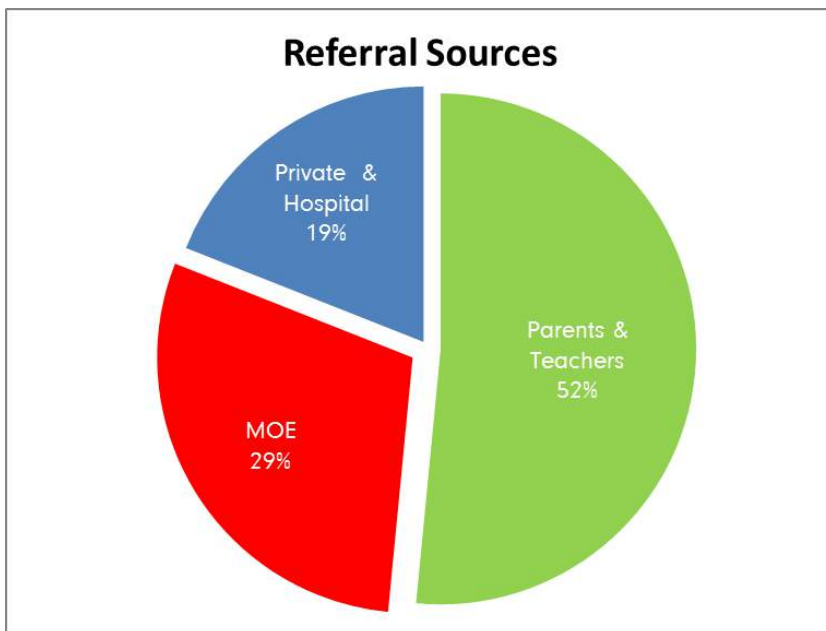


Figure 1: Referral Sources

Of the 403 MOE referrals made in 2013, the DAS accepted all of them. Of the 260 private/hospital based referrals, 23% of them underwent further assessments by MAP psychologists as they did not meet admissions criteria. Out of the 199 of the remaining private/hospital based referrals, 22% were referred to SES or other organisations due to various reasons such as having severe developmental issues and no diagnosis of dyslexia.

As such, it can be concluded that not all referrals to the DAS result in direct placement of students. The MAP Admissions panel refers about 6% of the external

referrals (i.e. MOE and private/hospital based referrals) and MAP psychologists directly take on the assessment of dyslexia for about 50% of all the referrals made to the DAS.

## OVERVIEW OF ADMISSIONS INTO MAP

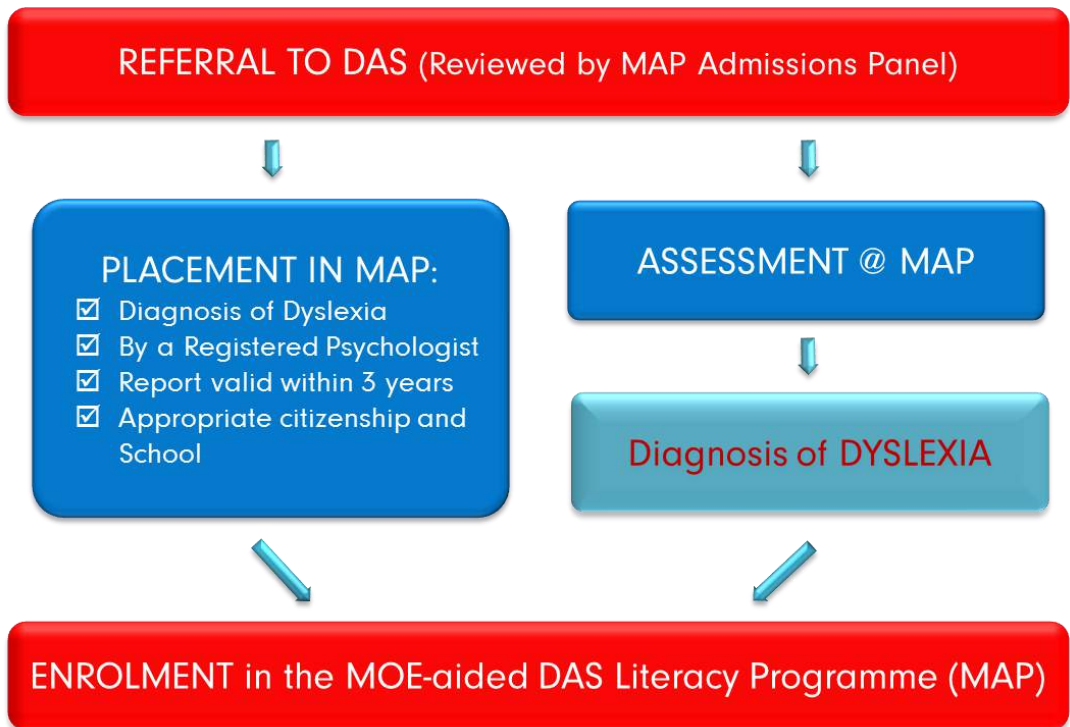


Figure 2: Flow of referrals into MAP

## RE-ENTRY INTO MAP

Students who have left MAP and wish to re-enter the programme are required to submit their psychological reports and other relevant documents to Admissions. The Admissions Panel will review the referral to ensure that he meets Admissions criteria. The Admissions panel may make recommendations that the student re-enter MAP immediately or be assessed again to update his learning profile.

## **1. ASSESSMENTS AT MAP**

### **MAP Specialist Psycho-educational Assessments for Dyslexia**

MAP specialist and educational psychologists currently conduct thorough specialist psycho-educational assessments for dyslexia. They are guided by the definitions of special educational needs, including dyslexia, found in the Professional Practice Guidelines, commonly accepted in Singapore.

MAP specialist and educational psychologists understand that a psycho-educational assessment is a systematic process that aims to find out about a student's strengths/needs and interactions with the environment. It seeks to understand learning and developmental concerns, considering behavioural/emotional and medical issues. It significantly contributes to and is irreplaceable in educational planning: the placement, intervention, and access arrangements for a student.

MAP specialist and educational psychologists' purpose of assessing is to determine a student's profile of strengths and weaknesses and his/her learning needs in relation to the diagnosis of dyslexia.

Where there are co-occurring difficulties such as those associated with auditory/visual, attention, motor, social and emotional needs, MAP specialist and educational psychologists also evaluate these in relation to the diagnosis of dyslexia. They then make referrals to relevant professionals for follow up assessments and/or intervention.

### **MAP SPECIALIST AND EDUCATIONAL PSYCHOLOGISTS**

#### **MAP Specialist Psychologists**

DAS is one of the few voluntary welfare organisations in Singapore that offers fresh psychology graduates the opportunity to train to be specialist psychologists. These fresh graduates are typically second upper class honours or first class honours degree holders from recognised local and overseas universities. Some of them may hold a Masters degree in related fields such as counselling.

MAP specialist psychologists go through a period of initial training that develops their interview and assessment skills under close supervision from a MAP educational psychologist. Some of the areas that they are skilled in include the theoretical underpinnings of dyslexia, developmental issues, other specific learning differences (e.g., attention deficit hyperactivity disorder, specific language impairment), the standard administration of cognitive and literacy tests as well as



test interpretation.

After their initial training, MAP specialist psychologists are closely supervised in every assessment they undertake. They jointly make a diagnosis of the student's issues under the supervision of a MAP educational psychologist.

Beyond their initial training, MAP specialist psychologists are required to attend further training and professional development workshops and conferences to enhance their interview and assessment skills as well as update themselves in the latest information on specific learning differences. In-service training sessions and journal presentations feature strongly in their regular professional development activities. Sponsorships are also available for MAP specialist psychologists to pursue Master or PhD degrees in psychology and to attain registered status with a recognised psychological professional body.

### **MAP Educational Psychologists**

DAS actively recruits qualified and experienced Educational Psychologists who are registered with recognised psychological professional bodies. MAP educational psychologists supervise MAP specialist psychologists in every assessment that they undertake through a comprehensive case consultation and report vetting process. They also conduct psycho-educational assessments under MAP, diagnosing dyslexia and referring other suspected issues to DAS SES International or other relevant external agencies.

## **THE ASSESSMENT PROCESS IN MAP**

MAP specialist and educational psychologists gather information through formal standardised testing, observations and interviews so as to integrate information and make appropriate recommendations on how to support the student.

### **Sources of information**

Some sources of information that are used in the assessment process include:

- ◆ MAP referral form
- ◆ Interviews with parents/student
- ◆ Written feedback from school teachers/ MAP Educational Therapists
- ◆ School report cards, student work samples
- ◆ Formal standardised testing
- ◆ Observations during testing

### Formal standardised tests used


Formal standardised testing include the use of widely recognised cognitive tests such as the Wechsler Intelligence Scale for Children – 4th Edition (WISC-IV), Differential Ability Scales – 2nd Edition (DAS-II) and British Ability Scales – 3rd Edition (BAS-3).

Literacy tests such as the Wechsler Individual Achievement Test – 3rd Edition (WIAT-III), Wechsler Objective Reading and Language Dimensions (WORLD<sup>Singapore</sup>) and Singapore Writing Fluency Test (SWIFT) are typically used.


Phonological tests such as the Comprehensive Test of Phonological Processing – 2nd Edition (CTOPP-2) are frequently used.

### Domains evaluated


#### Cognitive

- ◆ Verbal ability
  - ◆ Non-verbal/spatial ability
  - ◆ Working memory
  - ◆ Processing speed
  - ◆ Phonological processing
  - ◆ Rapid naming
- 
- Tested

#### Literacy

- ◆ Reading (Single word, comprehension, fluency)
  - ◆ Phonological Decoding
  - ◆ Spelling & Writing
- 
- Tested

#### Behaviour

- ◆ Attention span
  - ◆ Activity levels, impulsivity
  - ◆ Gross motor coordination/sequencing/planning
  - ◆ Fine motor difficulties such as handwriting issues
  - ◆ Sensory issues/rigidities
  - ◆ Physical concerns (auditory, visual difficulties)
- 
- Observed / Interviewed

### Socio-emotional well being

- ◆ Frustration
- ◆ Self esteem
- ◆ Defiance/non-compliance
- ◆ Depression/anxiety
- ◆ Social Interaction

} Observed /  
Interviewed

### FRAMEWORK FOR INTEGRATING INFORMATION

MAP specialist and educational psychologists integrate information using Morton & Frith's (1995) causal modeling framework to determine the student's need for educational support. This framework allows the consideration of protective and risk factors across biological, cognitive and behavioural levels and how they interact with each other and with environmental factors.

The framework helps MAP specialist and educational psychologists understand that what one observes at a behavioural level is merely what one sees as a result of processes occurring at a cognitive level and in turn these cognitive processes are subserved by biological factors such as genes and brain activation. And all of these are influenced by the environment where teaching, language exposure, stimulation, cultural expectations exert changes on how genes are expressed, how thought processes are shaped and how behaviour is modified. Above all, individual variation/differences are also taken into consideration.

This framework allows MAP specialist and educational psychologists to take into account a student's personal strengths and difficulties within the context of his/her environment according to the definition of dyslexia and to make appropriate recommendations for the educational support of the student.

### MAP Diagnoses

MAP specialist and educational psychologists are trained to diagnose dyslexia. During the course of the assessment process, other issues may surface. These issues may include language, social, emotional, behavioural and motor issues. These may co-occur with dyslexia or occur in isolation, affecting the student's learning. Where there are other issues, MAP specialist and educational psychologists make relevant referrals to DAS SES Assessments or other relevant external agencies.

A sample of the distribution of MAP diagnoses from a period of January to September 2013 is depicted in the following pie chart. The pie chart illustrates that

after MAP assessments are carried out, approximately 35% of referrals are referred to SES or other organisations that would better address their learning needs, where relevant. About 65% of assessments by MAP educational and specialist psychologists end in referrals to MAP.

## Distribution of Diagnoses for MAP Assessments

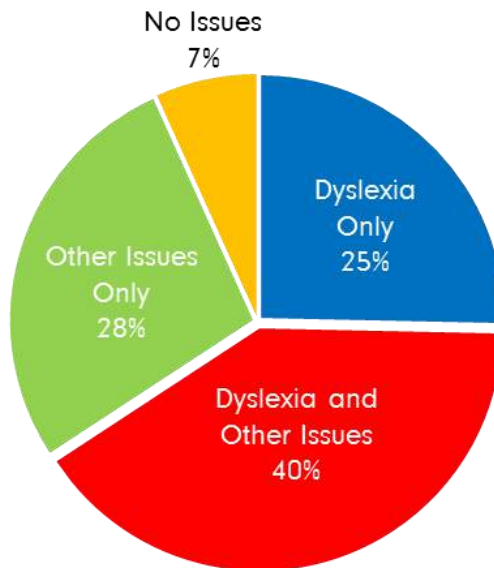


Figure 3: Distribution of diagnosis for MAP assessments

## 2. THE MAP MATRIX

### Introduction to the Matrix

The matrix has been designed to assist in the identification of what components work best with each unique learner and research clearly demonstrates that "[p]rograms that systematically integrate multiple-focused interventions are considered the most effective" (Shaywitz et. al., 2008, p.466). The Matrix contains the full range of the MAP curriculum and based on the student profile, derived from the psychological assessment(s), assists the educational therapists to define the needs of the learners by targeting specific knowledge and skills. And by doing so, it also encourages the educational therapists to be mindful of the subsequent stages for the child and to be more aware of the progress (or the lack of) that the students make.

The Matrix therefore represents the three main functions within the MAP programme:

- a. Admissions
  - ◆ Placement of students within the programme
  - ◆ Placement of students within a group
- b. Curriculum
  - ◆ Intervention that students will receive
  - ◆ Identification of appropriate learning components
- c. Quality Assurance
  - ◆ Evaluation of student progress
  - ◆ Effectiveness of programme and instruction

## **Objectives**

The introduction of the Matrix into MAP also aims to satisfy the following objectives:

- a. reinforce the relationship between psychologists and educational therapists in supporting learners with dyslexia
- b. respond swiftly to the needs of the learner, to ensure intervention is provided in a timely manner in the relevant areas
- c. effectively integrate higher order skills into the programme in response to the increasing sophistication of the learner's literacy needs, following the first year of intervention.
- d. Monitor student progress

## **3. THE MATRIX - BANDING**

### **Purpose of Banding**

Once the Admissions panel determines the student to be suitable for MAP, the student's learning profile would be further analysed to determine and assign an initial banding for his educational placement within the MAP curriculum. This initial banding is worked out by the Admissions panel with the information from the student's psychological report in accordance to what is taught in the MAP curriculum.

The purpose of this banding is to ensure that:

- a. Student's learning needs are matched with the level of teaching within the MAP curriculum
- b. Educational targets are set at the start of the intervention and adjusted as the student progresses through the MAP curriculum.
- c. Teaching is more responsive to the student's changing literacy profile and so that measures can be put in place to address any lack of response to intervention.
- d. Programme evaluation can occur and quality assurance standards can be met
- e. Student's exit from MAP may be based, in part, on his progress from his initial banding

### **Banding criteria**

Upon entry into MAP, the students are grouped in three educational bands A to C. Band A covers emergent literacy skills and students who are assigned to be in this band typically have language or cognitive weaknesses that co-occur with their dyslexia. Band B covers functional literacy skills and students who are placed in this band would likely have fairly developed language skills (e.g., verbal scores above 80) but significant basic literacy difficulties (reading and spelling scores less than 80). Band C covers functional to advanced literacy skills and students who are placed in this band would likely have fairly developed language skills and some functional literacy skills but continue to struggle with reading fluency, reading comprehension and composition writing.

MAP Admissions has put into operation a through system which begins with a child's entry into the programme to the relevance of the learning and teaching strategies that are implemented, setting in motion a programme that is in accordance to the needs of each and every learner.

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# MOE-aided DAS Literacy Programme: Curriculum

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## 1. MAP CURRICULUM

The MAP curriculum offers individualised lessons taught in accordance to the Orton-Gillingham principles (Ritchey & Goeke, 2006; Rose & Zirkel, 2007) and modified in view of institutional and funding limitations. According to the PPG (2011, p.37) and the National Reading Panel, an appropriate literacy programme should include the following components: phonemic awareness, phonics, fluency, vocabulary and comprehension. Further, the Rose Report too elaborates on what constitutes an appropriate literacy programme. The MAP curriculum therefore follows Singaporean, US and UK guidelines for good practice.

The MAP integrated curriculum targets to cater to the various learner profiles, which include the younger and older students, and covers these components in two hours every week. Most significantly:

*“...there is often a tendency to search for the one (magical) program that will address all struggling readers' difficulties. Current knowledge supports several types of intervention programmes as effective. Evidence is not yet available that would allow the selection of one specific program over others or to support the choice of an individual program that would be specifically more beneficial to particular groups of dyslexic readers.”*

*(Shaywitz et al., 2008, p.463)*

The MAP integrated curriculum makes reference to a range of programmes and strategies in order to support the development and improvement of the learners.

## **Phonemic Awareness and Phonics**

Research shows that phonics is a crucial aspect of specialist remediation, it is axiomatic and cannot be excluded and there have been many developments with regards to phonics instruction. DAS reviewed its educational policy on its phonics curriculum (also known as the Essential Literacy Approach) in 2009 and the current phonics curriculum grid, also referred to as the Suggested Scope and Sequence, reflects these developments.

## **Fluency and comprehension**

While instructional support for dyslexics has traditionally focused on improving single word decoding skills and overall reading accuracy, there has been an increase in the recognition of fluency as crucial for efficient reading (Shaywitz et al., 2008). Furthermore, "the consistent improvement in phonologically based word attack and decoding skills has not always generalised to accurate, fluent text reading or adequate comprehension, the ultimate goal of all reading intervention" (Shaywitz et al., 2008, p.463). DAS and MAP recognise this and emphasise both accuracy and fluency needs.

## **Vocabulary**

Beyond phonics, the MAP curriculum explicitly emphasises vocabulary development through sight and high frequency word instructions, as well as through oracy, reading, writing and morphology instructions. As many Singaporean learners with dyslexia are exposed to more than one language, their competence in either language is at times compromised, leading to uncertainty regarding both the quantity and quality of their English language exposure. This makes vocabulary instruction vital.

## **Writing Curriculum**

The writing curriculum was developed to suit the varying needs of our students and it comes along with the writing packs that have been developed meaningfully to ensure that the writing lessons had clear and specific objectives to prepare the students to write about specific topics. The writing framework adopted is the process genre approach whereby the process of writing does not only emphasise on the linguistic skills such as planning, drafting, revising and editing, it also stresses upon the importance of linguistic knowledge, such as knowledge about grammar and text structure that are taught explicitly to students. These concrete reminders of critical steps provide students with a structure that prompts or encourages them as they work towards developing a written product. Additionally, such a process also enables students to systemically acquire a meta-linguistic awareness of the English



Language which in turn, empowers them to manipulate information and accomplish different purposes through writing. Invariably, these plans of action were encapsulations of the procedures that skilled writers use when they write (e.g., Englert, Raphael, Anderson, Anthony, & Stevens, 1991; Graham & Harris, 1989b).

One of the key writing instructions that has been weaved into the writing curriculum across the different levels includes devoting some time to engage the students in planned and purposeful brainstorming activities to help stimulate their thinking as well as to organise writing information before they embark on their actual writing tasks because engaging in meaningful dialogue and discussion can become a central construct in the development of literacy (Kucan & Beck, 1997).

### **Conceptual teaching**

The Rose Report also makes reference to the Simple View of Reading model (Gough & Tunmer 1986), which recommends that in addition to word recognition skills, learners also need to be supported to comprehend language. And for learners moving from 'learning to read' to 'reading to learn,' their word recognition skills need to be effectively sharpened. In order to achieve this, one key area of development is pertinent - the development of stores or concepts of phonics generalisations and rules as "[k]nowledge organisation is one element that has been used to differentiate novices from experts" (Ridgeway & Dunston, 2000). DAS students are taught the grapheme-phoneme correspondences and syllabic and morphological information within concepts or stores for learners to cognitively classify their phonics knowledge. The revised scope and sequence of the MAP phonics curriculum stresses the importance of establishing these stores.

### **Localisation of curriculum**

"An effective teaching and learning environment must be inclusive, and thus requires the use of instructional materials and classroom practices which reflect the diversity of cultures and life experiences that students deal with everyday at school and in their communities." (Ndura 2004, p.144). As Ndura explains, stereotypes, for example, emphasise the image of poverty and associate it with a country or turn a nation into a tourist attraction or as being exotic. The danger then of using such materials is that the learner develops a skewed perception of himself and others. Therefore, MAP curriculum and resources were localised to better benefit the Singaporean learners.

*“Research shows that phonics is a crucial aspect of specialist remediation.”*

For instance, some phonograms and concepts were

either removed or shifted from their original positions in the ELA scope and sequence. The phonetic word list, an important resource for educators, has also been amended to be more reflective of the local experience and vocabulary. In addition, the ELA Teaching Resources, a resource pack for teachers, was created to ensure that the context remains relevant to the learners and the teaching materials are now more localised, and therefore accessible, to our local students.

### **Assistive Technology**

As studies have shown that the use of technology increases students' self-esteem and motivation to learn because they are given the "tools to better perform a given task that truly reflect their knowledge and skills" (New technologies and applications for special education 1996, 4), the MAP Curriculum infuses assistive technology into the lessons as a complementary teaching approach to enhance students' academic success and independence as well as to personalise lessons and skills enhancement to each learner. Consequently, records on each learner's performance during lessons are readily maintained. It also encourages learning and enables learners to become familiar with a future strategy and life skill while improving their literacy skills.

The ultimate aim and endgame of the educational support given is to empower and enable students to cope with literacy.

## **2. MAP EDUCATIONAL APPROACH**

### **APIE Cycle**

The Assessment, Planning, Implementation and Evaluation (APIE) cycle is a systematic manner of approaching intervention programmes for students with learning difficulties and is defined as "the process of gathering information for the purpose of making a decision" (McLaughlin & Lewis 2005, p.3).

Further, Poon, Khaw and Li (2008) state that the:

*"... APIE is a linked system of support. Each component is connected to the next and the successful implementation of one depends on the application of the previous step. When applied within our context of special needs support, the planning of an intervention programme serving the special needs of a student should not be a one-off event but rather be a cyclical process where sufficient information from each component informs the next stage of action, further assessment and planning."* (p.2)

Various educational documents and materials, such as the scheme of work and educational targets, have been developed to ensure that DAS educational therapists commit to this cycle.

### Principles of effective instruction

The Orton-Gillingham Approach is based on key principles, which aid in ensuring that the instruction meets the criteria of being "focused, intense, systematic and explicit" (Shaywitz et al., 2008, p.463) and it also mirrors the Rose Report on principles of effective instruction:

OG Principles (TLP)	The Rose Report (p.13-15)
Language-based	Phonological skills, systematic phonic structure
Cognitive (conceptual teaching)	Encouraging generalisation
Structures, Sequential, & Cumulative	Highly structured, systematic allowing time for reinforcement, and cumulative learning
Diagnostic & Prescriptive	Personalised learning, 'little and often,' Small group or 1-1
Simultaneously multi sensory	Using graphic representation
Emotionally sound	Building learner's confidence

Figure 1: Comparison of OG principles with Rose Report's Principles

### Intensive remediation (IR)

The MAP programme acknowledges that some children need more intensive support and IR provides educators with the platform to apply to a multidisciplinary panel, seeking a more personalised instruction programme. This is in-line with the Response to Intervention approach, and is an accommodation provided to specific students following the close "monitoring [of] the progress of children in receipt of a given curriculum" (Snowling 2012, p.5) and Wave 3 in the Rose Report:

*"This is for those children who require the personalised approach of a programme that is tailored to their specific, often severe, difficulties. It is usually taught as a one to one programme by a teacher or a member of the support staff who has not undertaken some additional training for teaching children with reading difficulties."* (p.60)

The IR panel will review IR students every six months, aiming to reintegrate them into the main programme.

### **Constructivist theory of teaching**

MAP's approach to instruction requires learning and teaching to be interactive and constructivist. We emphasise active and participative learning and lessons and instructions are student centric.

To promote 'thinking teachers,' a more flexible phonics curriculum in the form of the 'suggested' phonics scope and sequence is in use, calling attention to the fact that the order provided is merely a suggestion. To mirror this flexibility and the experiential approach to the course design, educational therapists will be encouraged to pursue their own interests by identifying their preferred teaching tools such as their preferred phonics programmes, and create their own resources for their lessons.

### **3. THE MAP MATRIX - INTERVENTION COMPONENTS**

As mentioned previously, the Matrix provides educational therapists with clarity on what components need to be addressed based on what has been identified as the learner's profile based on the psychological assessments and for every Band - A,B and C, the components that are most urgently required in intervention and would most likely lead to progress are stated. All educational therapists are required to identify and plan for the specifics within the range of possibilities for each component and draw up educational targets for the learner. As such, MAP curriculum, in view of its content and delivery, ensures that the intervention programme is current and suitable for the differing profiles of learners that it provides intervention for.

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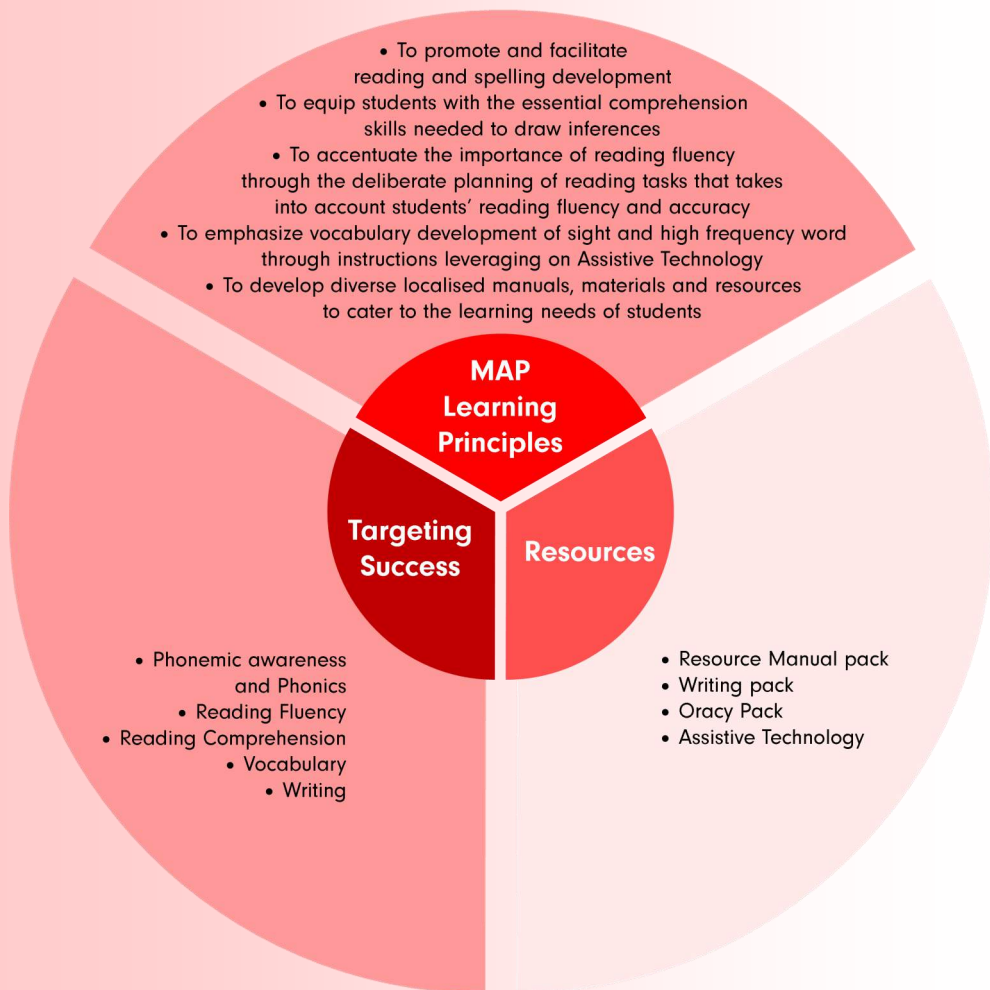
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# MOE-aided DAS Literacy Programme MAP

*“To Map the way for young dyslexics to live a life of beauty and promise through a comprehensive, high quality service provided by inspired professionals”*

*Curriculum Framework - Map provides a comprehensive and quality curriculum to support dyslexic students facing literacy challenges.*



# MOE-aided DAS Literacy Programme: Quality Assurance

Geetha Shantha Ram<sup>1</sup> and Sujatha Nair<sup>2</sup>

1. Director of MOE-aided DAS Literacy Programme & Staff Professional Development

2. Assistant Director, Quality Assurance

Dyslexia Association of Singapore

## 1. MAP EDUCATORS

"The quality of an education system cannot exceed the quality of its teachers' is an obvious truth, which applies to the assessment and teaching of learners of any age who are dyslexic." (Rose, 2009, p.15) and DAS recognises that "[i]t is important to develop high quality interventions for children with literacy and dyslexic difficulties and to implement them thoroughly. This will require well trained, knowledgeable teachers and support staff." (Rose, 2009, p.1)

### Teacher Training

Being a recognised teacher training organisation in the field of specialist education, DAS is one of the educational institutions in Singapore that offers fresh graduates and mid-career professionals the opportunity to train to be specialist educational therapists through their employment. Consequently, inexperienced staff are trained and developed into skilled practitioners through initial training. Not surprisingly, DAS would like their educational therapists to be better equipped to maneuver themselves through the demands of the local education system, their chosen field and profession and of course, DAS clients. To achieve this, educational therapists would not only need to be skilled practitioners, they need to be critical thinkers and lifelong learners (Biggs, 1996; Williams & Burden, 1997; Fry, Ketteridge & Marshall, 2008;

*“The quality of an education system cannot exceed the quality of its teachers' is an obvious truth, which applies to the assessment and teaching of learners of any age who are dyslexic.”*

Higgs & McCarthy, 2005), having developed their intellectual abilities as well as their ability to apply knowledge gained to different situations through the learning activities designed for the course. Therefore, beyond initial training, educators are required to attend further training and sponsorships are also available for higher education pursuits.

This is also in-line with suggestions made in the Rose Report regarding teacher training:

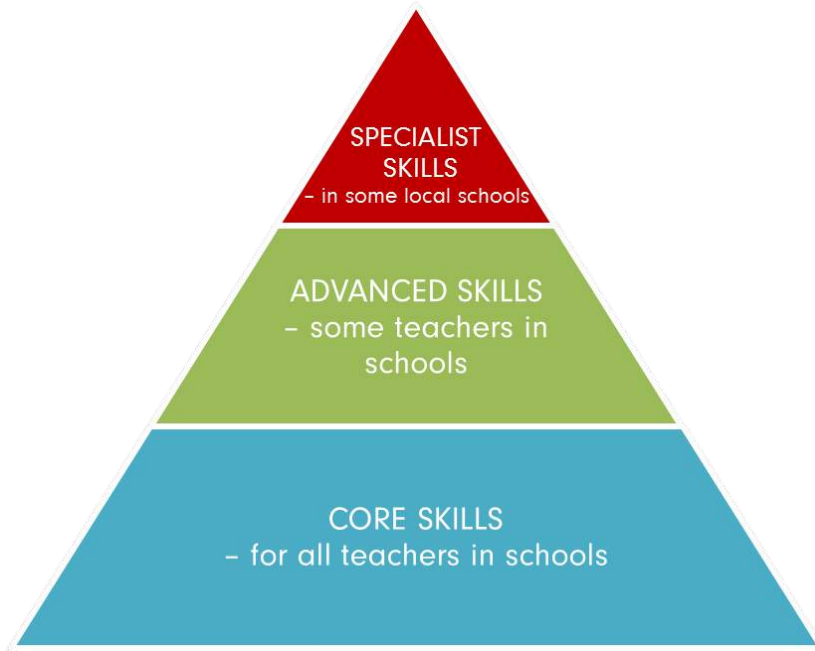


Figure 7: Taken from Rose 2009, p.16

And while the programme identified for the learner is crucial, the DAS is confident that the quality of its educational therapists contributes to the overall effectiveness of the programme, echoing Torgesen when he comments that "... given the right level of intensity and teacher skill, it may be possible to obtain these rates of growth using a variety of approaches to direct instruction in reading" (Torgesen, 2006, p.13).

### **Quality Assurance Audits (DAS QAA)**

DAS Quality Assurance Framework and QAAs are significant for several reasons and have been implemented to meet the following requirements:



- ◆ to satisfy our key stake holders of the standards we promise and deliver as a part of our service
- ◆ to motivate and promote good practices amongst staff
- ◆ to provide a platform to recognise excellent staff performance and contribution, and ongoing, continuous dialogue (rather than a annual exercise)
- ◆ to serve as a mechanism to improve training and support

Evaluation tools include the professional e-portfolio, surveys, feedback forms as well as learner performance against the educational targets set for the learner. By ensuring that the training, key performance indicators and evaluation tools are aligned, MAP ensures that the objectives mentioned above are met.

## 2. THE MAP MATRIX - PROGRESS MONITORING

In order to ensure that students' progress is at the forefront of educational therapists' efforts, the Matrix, in its identification of the incremental progress of the learner, will alert an educational therapist in the absence of progress as the learner will not be transferring to the next levels as expected.

Together with the educational therapists, the MAP Educational Advisors will be monitoring student progress in order to support educational therapists and the learners further. With the QAA framework and the Matrix, MAP is highly sensitive to the service that it provides to students with dyslexia

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## ABOUT THE AUTHORS



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*Geetha Shantha Ram is the Director of the MOE-aided DAS Literacy Programme (MAP) and has led curriculum enhancements for DAS through the Essential Literacy Approach and the current integrated curriculum. Formerly, the Assistant Director of the DAS Academy, Geetha trained Allied educators, parents and other professionals and continues to present at conferences, most recently at the 2014 International Dyslexia Association Conference. Geetha has a Masters in English (NUS) and a Post Graduate Certificate in Learning and Teaching in Higher Education (Distinction) (LMU) and with over 10 years of experience supporting children and adults in the area of dyslexia, Geetha constantly aspires to provide a quality service to dyslexics that searches for and realises their true potential and provides them with a view to appreciate their own unique gifts.*



### **DR ADAM OEI**

*Lecturer—DAS Academy*

*Dr Adam Oei has previously worked as a psychologist at DAS and Ministry of Education, Singapore. He has extensive experience in working with children of various special educational needs (e.g., dyslexia, ADHD, social emotional difficulties). He graduated with a Bachelor of Arts Psychology (Hons) from Murdoch University, Australia. At the postgraduate level, Adam is a cognitive and experimental psychologist by training and he has completed his PhD in Psychology at Nanyang Technological University. His research interest is in neuroplasticity as well as how human cognition and performance can be improved with various means. Adam's research has been presented and published in international conferences and various peer-reviewed journals respectively. His research has also been featured in local as well as foreign press.*



### **LOIS LIM**

*Assistant Director, Admissions, MAP*

*Lois has worked at DAS since 2005 as a psychologist. She graduated with a Bachelor of Social Sciences (2nd upper honours) from the National University of Singapore and later with a Master of Arts in Applied Psychology from the National Institute of Education, Nanyang Technological University. In addition to her interest in specific learning difficulties, she has developed a specialisation in the assessment of dyslexia and is actively involved in the training and supervision of psychologists at the DAS as well as in enhancing DAS' intervention efforts.*



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*Curriculum Development & Implementation, MAP*

*Serena Abdullah is the Assistant Director of the MOE-aided DAS Literacy Programme (MAP) and is currently overseeing the development and the implementation of the Integrated Curriculum at DAS. She is also a Senior Educational Therapist who enjoys working and teaching children with learning difficulties. Her love and passion for teaching has led her to continuously seek new and innovative teaching methods to bring out the potential and self-confidence in her learners. She graduated with a Masters in Education (Curriculum and Teaching) from NTU/NIE and has obtained a Cambridge International Diploma for Teachers and Trainers. She hopes to continue to enhance the Curriculum to ensure that learners from diverse backgrounds or with varying learning needs benefit and learn effectively in class.*



**SUJATHA NAIR**

*Assistant Director, Quality Assurance, MAP*

*Sujatha Nair has a Bachelor of Business in Accountancy (RMIT) and a Diploma in Management Studies (SIM). She also has a Cambridge International Diploma for Teachers and Trainers (Dyslexia). She joined DAS in 2006 as an Educational Therapist and became the Centre Manager of Bishan Learning Centre in 2008. In 2009, she moved on to open and manage Jurong Point Learning Centre and under her management this learning centre grew to become the 2nd largest DAS learning centre. In 2014, she took on the post of Assistant Director of the DAS MOE-aided Literacy Programme (MAP) and she is overseeing the Quality Assurance division. She is currently taking her Masters of Education from University of Adelaide. Sujatha is also a Senior Educational Therapist and an Educational Advisor and she provides guidance and support to new Educational Therapists. She guides and trains these new Educational Therapists to ensure that lessons that are delivered are of the best quality.*



# Specialised Educational Services

UNLOCKING POTENTIAL

## SPECIALISED EDUCATIONAL SERVICES

Specialised Educational Services (SES) is a division of the Dyslexia Association of Singapore which aims to uncover the true strengths of individuals with learning differences and empowering them with the necessary skills and strategies to succeed.

We are a team of professionals who are committed to delivering a quality service focusing on the needs of the individual, at a price which is competitive.

All of our professionals are highly qualified and specially trained to help persons with learning differences who may be struggling in the different areas of their lives.

We have a good understanding of the curriculum and the demands that today's education systems place on a person and strive to bring out the best in every individual that we see.

### OUR VISION

Nurturing persons with learning differences to achieve success and impact society positively.

### OUR MISSION

Unlocking the potential of individuals with learning differences.

## Specialised Educational Services

UNLOCKING POTENTIAL

# CHINESE PROGRAMME

The aim of the programme is to help students with dyslexia become independent, inquisitive learners in the Chinese language.

There are many difficulties a child with dyslexia can face when learning Chinese such as being confused with characters that look similar like 犬 'dog' and 太 'more', characters that sound alike such as 身 'body' and 生 'grow' and characters that are related in meaning such as 校 with 学 where the two put together is the word school (学校).

## OUR APPROACH

The SES Chinese programme helps to foster a child's interest in the language through thematic-based teaching. In this way, vocabulary covered is relatable and can be used on a daily basis, allowing them to express themselves better in the language. Students are taught interactively with the use of stories, educational games and hands-on activities to make language learning a fun and memorable experience for them. This also helps to minimise the child's stigma towards the language and build up their confidence and motivation to learn the language. Lessons are also structured in a way to increase efficiency in learning the language through the instruction of character structure, radicals, stroke pattern, word recognition strategies and understanding how words are combined together.

Components covered in a typical lesson:

1. Word Recognition
2. Vocabulary Instruction
3. Teaching of Sentence Structures

Comprehension and writing activities are also carried out for students who have developed good oracy skills.

# Specialised Educational Services

## Chinese Programme

**Kong Yun Rui**

*Chinese Programme Manager*

*Dyslexia Association of Singapore*

### **BACKGROUND OF PROGRAMME**

Chinese is a pictorial and symbolic language with meanings and sounds represented by strokes and strokes patterns. As such, in carrying out remediation, it is vital that students are brought to greater awareness of the orthographical structures and position of radicals within the characters. It is also necessary to help them understand how each component relates to the meaning and pronunciation of the word.

In our pilot study conducted from 2010 to 2011, children with dyslexia were weaker on measures of literacy skills such as visual-orthographic, morphological awareness and visual-motor integration skills as compared to students who were not at risk of dyslexia.

Other aspects of Chinese language processing requiring visual memory were also found to be weaker. Visual-orthographic skills refers to the strategic attempt of breaking Chinese words into parts to help them read and write. It is required to allow students to recognise Chinese characters and read them as accurately as possible. It has been observed that dyslexics were found to make more errors that are visually similar, i.e. words that have the same radicals (也, 他, 地).

Another feature of the language that presents itself as a difficulty to language learning is the presence of the large number of homophones. In other words, there are many words that share the same pronunciation but have very different meaning. This makes it harder for tasks requiring word retrieval. Poorer visual-motor integration skills also results in difficulty in producing Chinese character with strokes in the correct direction, stroke sequence and proportion of the parts of the characters.

## **PROGRAMME DESCRIPTION**

The programme was started in January 2013 for primary school students who have been diagnosed with dyslexia. The programme has been shaped to address the identified areas of weaknesses in the pilot study by providing students with strategies to overcome them. The aim of the programme is to help students become independent and inquisitive learners in the Chinese language. This is achieved by building students' interest in the language, increasing their efficiency in learning the language and increasing their verbal expressiveness through oracy.

Each lesson covers common vocabulary, sentence structures and word recognition strategies. Students who have developed competency in their oral skills would then be introduced to writing and comprehension skills and strategies. The Orton-Gillingham approach and principles are adopted and applied in the delivery of lessons. Students are also taught interactively through hands-on activities, educational games and storytelling to help them relate what is taught in class to their daily lives. Other teaching resources are developed internally by the teachers and revised regularly. Reference is made to the MOE Chinese syllabus word list for the selection of words and radicals to teach.

The teachers are effectively bilingual to facilitate teaching. This allows for the teachers to be able to tap into their English vocabulary and help them to express themselves in Chinese.

## **EVALUATION OF PROGRAMME**

The programme is constantly being evaluated for its effectiveness in its remediation for learners with dyslexia. The effectiveness of the programme is evaluated on four measures:

### **A. PRE AND POST ASSESSMENT**

The assessment tool used is adapted from and created with reference from existing assessments from Hong Kong and Taiwan. The assessment tools from Hong Kong and Taiwan cannot be applied directly in Singapore as Chinese is a second language here while it is a first language in Hong Kong and Taiwan. In addition, the phonetic and script systems used in these countries are different from what is used in Singapore.

The use of the tool at pre-testing is to profile students for class placements. It allows for students with comparable language ability to be grouped in the same class. The purpose of doing so is for remediation to be better targeted and more effective.



There are a total of four main tests in the assessment tool and each assessment takes about one to one and a half hours. The components assessed in each test are found in the table below.

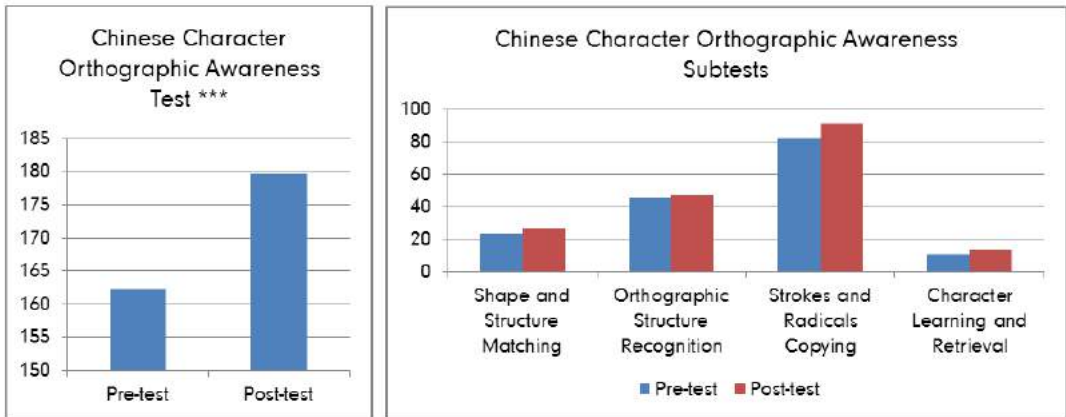
Table 1 - Components of Tests in Chinese Assessment Tool

<b>Tests</b>	<b>Components Assessed</b>
1. Chinese Character Orthographic Awareness	a. Shape and Structure Matching b. Orthographic Structure Recognition c. Strokes and Radicals Copying d. Character Learning and Retrieval
2. Chinese Character Reading Test	a. Reading of Characters b. Vocabulary Knowledge Test
3. Basic Chinese Character Reading and Writing	a. Multiple-choice Spelling b. Free Recall Spelling c. Short Passage Copying
4. Picture Sequencing and Verbal Expression	a. Picture Sequence and Description b. Freedom of Expression

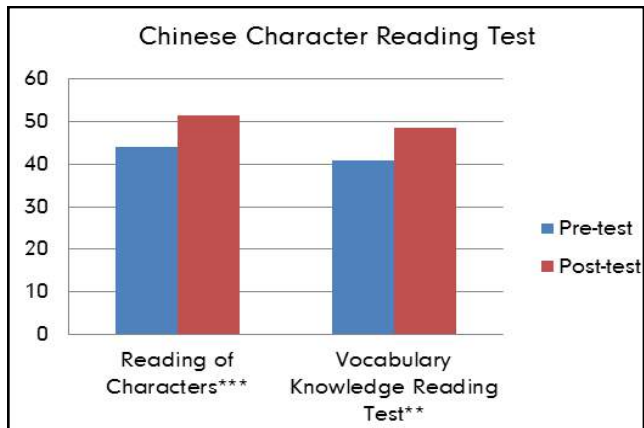
The same tool is used for post-testing after at least six months of intervention to provide reliable comparisons. The preliminary finding of the post-test result of 16 students showed a significance difference in overall Chinese literacy scores. This suggests that students' Chinese literacy skills improved significantly after intervention. (For full report, see Shen et al., 2014)

There is a significant improvement in Test 1 and Test 2. This suggests that students have gained better awareness of how characters are formed through strokes and stroke patterns, which may have helped them learn and remember an unfamiliar character better. In addition, students were also better able to form words with the characters they were required to read on the task.

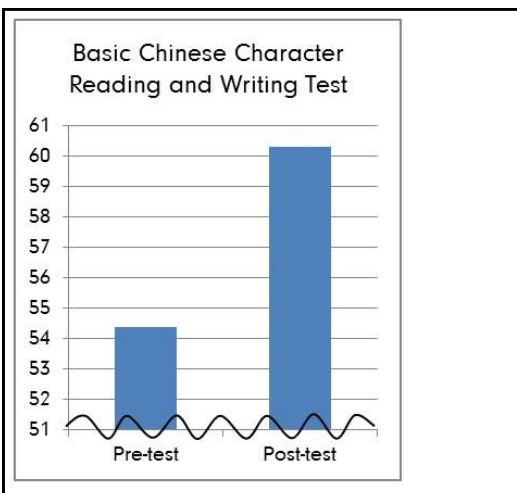
However, there are no significant results for writing and oral tests although Graph 3 and 4 show an increase in these scores for post-testing. This could be due to a small sample size, inability to apply what they have learnt or that these areas were not targeted at during remediation.



Graph 1 - Comparison of Pre-test and Post-test scores  
(Test 1 - Chinese Character Orthographic Awareness Test)



Graph 2 - Comparison of Pre-test and Post-test scores  
(Test 2 - Chinese Character Reading Test)



Graph 3 - Comparison of Pre-test and Post-test scores  
(Test 3 - Basic Chinese Character Reading and Writing Test)

On the whole, students were found to make fewer errors after intervention. In the error analysis, a significant difference was found between phonetic-semantic errors made in the pre-test and post-test. This means that students were less likely to be confused with semantically related characters and mispronounce them due to intervention.

Table 2 - Example of errors

Visually-similar error	similarly-shaped characters same-radical characters	永 → 水 漂 → 標
Phonetically-similar error	tonal error similar articulation sound omission sound insertion	永 → /yòng/ (yǒng) 乱 → /ruàn/ (luàn) 標 → /bāo/ (biāo) 包 → /biāo/ (bāo)
Semantic error		然 → 虽 (虽然)
Visual-phonetic confusion		淳 → 亨 → /héng/
Visual-semantic confusion		淳 → 享 → 受 (享受)
Phonetic-semantic confusion		享 → 受 (享受) → /shǒu/
Visual-phonetic-semantic confusion		揉 → 柔 → 软 (柔软) → /luǎn/
Unknown error	Wild guesses or skipped	

## B. SCHOOL RESULTS

- ◆ One student was awarded the Most Improvement Award in Chinese for his level.
- ◆ One student scored the second highest in his Chinese class.
- ◆ Majority of the students have shown improvement in their Chinese grades in school, especially in their oral scores.

## **C. PARENTS' FEEDBACK**

### **i. Parent-Therapist Conference**

- ◆ Parents have reported an increased interest in Chinese after starting classes at DAS
- ◆ Parents are generally happy with the improvement in their child has made in terms of verbal expressiveness and confidence in speaking Chinese
- ◆ Three parents have asked for longer duration of classes to 1.5 or 2 hours
- ◆ Some parents are requesting for more help beyond oracy with literacy components like comprehension and composition writing
- ◆ Parents have also asked for courses to prepare students to help them pass PSLE
- ◆ Two parents found the costs of classes too high

### **ii. Testimonial from Parents**

My child has grown to have a greater interest and motivation to learn the Chinese language after attending classes at DAS. He has shown tremendous improvement in his spelling from failing to getting close to full marks each time. He tells me that he is able to use the strategies such as the story method that Ms See has taught him to help him remember and recognise words.

#### **Mdm P\*, whose child has been in the programme for close to a year**

My son thoroughly enjoys his DAS Chinese lessons because they approach the learning of Chinese in an entirely different way from school. The small class size is key as the teacher is able to tailor his learning to his specific dyslexic learning style (poor visual discrimination). He is able to try new words, learn new phrases in-depth without rushing through to achieve some exam deadline. This helps him enjoy Chinese as a means of communication and building relationship rather than as a meaningless memory contest. I am very grateful to Teacher Rui for she diligently updates me after every lesson - I sometimes feel that I've taken the lesson too!

#### **Mrs L\*, whose child has been in the programme for a year**

*\*Names withheld for confidentiality*

## D. FEEDBACK FROM EDUCATIONAL THERAPISTS



**Sha Lan, Senior Educational Therapist**

"Most students develop a greater interest in learning the Chinese language after classes here. Progress is seen in students' oral expression and most show increasing confidence towards expressing themselves in Chinese. They are generally able to communicate their ideas using the vocabulary and sentence structures taught to them. It is also encouraging to see students actively apply the word recognition strategies they have learnt when they do not know how to write a character in their spelling tasks."



**See Lay Yen, Senior Educational Therapist, former MOE Chinese Teacher**

"As there is no syllabus to complete, we are able to teach according to the needs and pace of our students. The class size is also small and pupils of similar abilities are placed together, thus we are able to better attend to pupils' needs. We focus a lot on discussing word recognition strategies (their biggest weakness) with the students and getting them to apply. In school, it is sometimes difficult to bridge the gap on word recognition during curriculum time as there are many more skills to learn."

## LIMITATIONS AND FUTURE DIRECTIONS

Students' views on the Chinese language have not been reflected or captured. It is vital that we gather such information to evaluate if we have been successful in meeting the objective of building the child's interest in the language. It will also serve to inform the teacher of the position of the child towards the language.

With regard to the preliminary findings from the post-assessment, the small sample size has provided valuable insights on the effectiveness of intervention. Having a larger sample size may possibly yield stronger results to the study.

Next, remediation support should look into enhancing other literacy skills such as writing as writing is required to gain mastery of the language. Writing and comprehension components should also be looked at in remediating and assessing the kids.

Even though there are improvements in orthographical awareness, morphological skills and reading, these do not seem to be translated into areas of spelling and writing as well as verbal expressiveness. An investigation into the relationship between scores on the Chinese character orthographic awareness test with reading and spelling scores may yield some evidence. Our understanding of the sub-skills that are important in development of competence in spelling and writing in Chinese remain incomplete but the programme should provide useful insights to teachers on what matters in developing literacy skills in Chinese in dyslexic learners.

However, there are no significant results for writing and oral tests although Graph 3 and 4 shows an increase in these scores for post-testing. This could be due to a small sample size, inability to apply what they have learnt or that these areas were not targeted at during remediation.

Plans are currently under development to evaluate the Chinese language skills of children with difficulties who are in the normal range of ability and do not hold a diagnosis of dyslexia. This will allow us to profile their cognitive skills and evaluate our Chinese language intervention with a control group. We predict that the structured approach adopted here for the dyslexic children may well be beneficial to all children.

## ABOUT THE AUTHOR



**KONG YUN RUI**  
*Chinese Programme Manager*

*Kong Yun Rui is also a Senior Educational Therapist at DAS. She graduated with a BA (Hons) in Linguistics and Multilingual Studies from Nanyang Technological University. In addition, she has also completed her post-graduation certificate in Special Education Needs with University of South Wales and has an advanced diploma in Chinese Language teaching with KLC. Her area of research interest is in bilingualism and language acquisition in children, believing that language learning opens up the horizon of a child.*

*“My child has grown to have a greater interest and motivation to learn the Chinese language after attending classes at the DAS. He has shown tremendous improvement in his spelling from failing to getting close to full marks each time.”*

*Contributions: Priscillia Shen Peixin, Sha Lan and See Lay Yen*

# CHINESE PROGRAMME

## 小学华文辅助课程

The aim of the SES Chinese Programme is to help students with dyslexia become independent, inquisitive learners in the Chinese language.

Chinese as a language is more complex than English as many words can be read the same way though each word has a different meaning. The strokes in Chinese words must also be written in sequence. This complexity causes reading and writing Chinese to be very tedious for children with dyslexia.



### Our Approach

The programme helps to foster your child's interest in the language through thematic-based teaching. In this way, vocabulary that is covered is relatable and can be used on a daily basis, allowing them to express themselves better in the Chinese language. Students are taught interactively through the use of stories, educational games and hands-on activities to make language learning fun and memorable. Lessons are also structured in a way to increase efficiency in learning the language through the instruction of character structure, radicals, stroke pattern, word recognition strategies and understanding how words are combined together.



### Components covered in a typical lesson

1. Word Recognition
2. Vocabulary Instruction
3. Teaching of Sentence Structures

Comprehension and writing activities are also carried out for students who have good oracy skills in the language.

Application is open only to primary school students. Priority will be given to students who are not exempted from Chinese.



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# Specialised Educational Services

UNLOCKING POTENTIAL

## PRESCHOOL EARLY INTERVENTION

The aim of the programme is to help preschoolers who are potentially at risk of dyslexia, or has a developmental delay in early literacy, develop skills and strategies to become confident achievers when they enter primary school.

### Our Approach

The SES Preschool programme helps preschoolers acquire a good foundation in alphabet knowledge and phonograms, leading up to learning sight words essential for reading. These abilities gear them towards reading and spelling readiness. In class, your child will be taught rules, facts and generalisations about the English language, enabling them to read and spell more effectively. They will also be taught strategies to cope with letter reversals. The programme follows a prescribed scope and sequence for systematic, sequential and cumulative teaching.

### Components covered in a typical lesson

- ◆ Alphabet Knowledge
- ◆ Phonograms
- ◆ Learned Word Knowledge (e.g. said)
- ◆ Reading
- ◆ Spelling

Preschoolers will be advised to go for a Full Aged Psychological Assessment when they turn six. Children diagnosed with dyslexia has the option to continue with the MOE-aided DAS Literacy Programme.



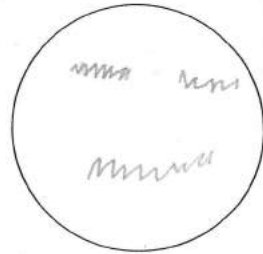
Name.

Date: 15 September 2019

Draw a face in the circle that shows the emotion.



Shock



Frighten

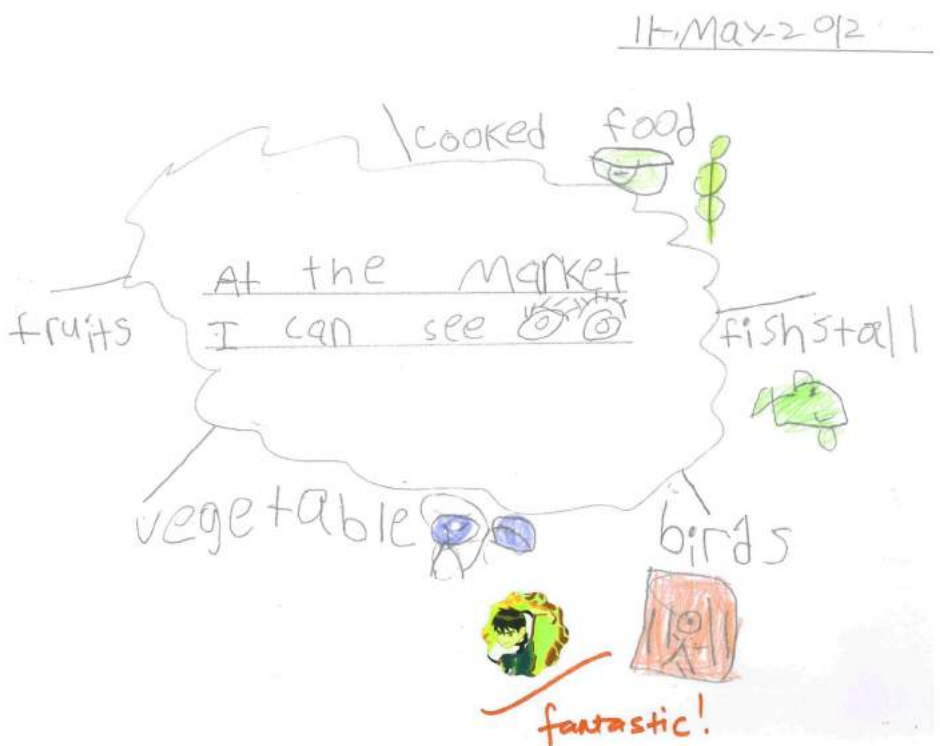


Upset



Happy







## The house on the hill.



*Finish the picture and colour it in.*

The house has a red door and a brown roof.  
The curtains are pink.  
There are two chimneys.  
A big, black bird is on the roof.  
In the garden there are yellow flowers.  
There is a tree next to the house.

*superb!!*

Photocopy Master 1989 LEARNING MATERIALS LTD., Dixon Street, Wolverhampton, WV2 2BX.

# Specialised Educational Services

## Preschool Early Intervention

Wong Kah Lai

*Preschool Programme Manager*

*Dyslexia Association of Singapore*

There is now considerable evidence from research world-wide, that early intervention is the most effective approach to help children with dyslexia and other learning difficulties. Torgesen, (2001, 2014) has shown that 8 year old children need 67.5 hours of individual intervention to bring them to the level of their peers once they have fallen behind. However, evidence from studies with young children aged 4 and 5 in the UK have shown lasting benefits for early support (Fawcett et al., 2014, Nicolson et al., 1999). Moreover studies from Singapore (See & Poay, 2014) have shown that it is possible to identify pre-school children at risk of failure.

Development is a continuum. In this developmental spectrum, young children achieve their cognitive, social, emotional and physical milestones at different rate and pace.

Although there is a general guideline, in the form of attainable developmental milestones, not all children progress at the same rate nor pace arising from nature / nurture factors and issues. 'Nature' factors and/or issues refers to in-born conditions that a child is born with, while 'nurture' refers to environmental factors that stimulate and help further shape the child's developmental growth. A key issue here is home background and stimulation of language.

Literacy delay is probably one of the most common developmental problems among pre-school children. This happens when a child's language is developing in the right sequence, but at a slower rate. It could be a case of not having the language environment or stimulus, and amongst many other probable causes, a result of dyslexia.

As such, early outreach and intervention is crucial. The pre-school service at DAS aims to identify and work with children identified as "at risk of dyslexia" so as to help them achieve in Primary One through our early literacy intervention

programme. In the article below we outline the development and evaluation of a pre-school literacy programme for early intervention in Singapore

## **ABOUT THE PROGRAMME**

This programme is recommended for children at risk of dyslexia and those with learning differences in reading and spelling in Kindergarten 1 and 2. The pre-school early literacy intervention programme framework comprises of literacy appreciation, letter knowledge, phonemic awareness, comprehension, sight words and fine motor skills acquisition within a suggested pre-school scope and sequence.

Pre-school education therapists formulate and devise an Individualised Intervention Plan (IIP) for students based on his/her specific learning needs obtained from the Pre-Informal Assessment at the beginning of the first remediation session with the therapist. No two learners are alike. In view of young learners with literacy delay, differentiated teaching is essential.

The lesson is delivered in an engaging and simultaneously multisensory manner based on the Orton-Gillingham (O-G) approach and principles. The O-G approach is a language-based approach where students are explicitly taught the rules, facts and generalisations about the English language.

## **SIX O-G PRINCIPLES GOVERN THE O-G APPROACH**

### **Language based**

It encompasses an awareness and appreciation of the features of the English language that includes reading, spelling, writing and learning strategies as appropriate to young learners' developmental needs.

### **Cognitive**

It was noted that 85% of the English language can be made predictable with explicit instruction in rules and generalisations that govern its use. This tool enables young learners to read/spell more effectively.

### **Structured, sequential and cumulative**

This is especially vital to a dyslexic learner. In order to achieve automaticity, content needs to be taught systematically in a sequential manner. Consistent review of previously taught/learned material fosters retention and enables the learning of new material to "spiral" upwards with each accumulation.

**Simultaneously multisensory**

Through visual, auditory, kinaesthetic and tactile activities, that builds a strong and intense memory connection, young learners are more likely to be able to "retrace" and "retrieve" the memory of what-was-taught in the previous lesson/session.

**Diagnostic-prescriptive**

No two learners are alike. In view of young learners with literacy delay, individualised teaching through IIP (Individualised Intervention Plan) is essential.

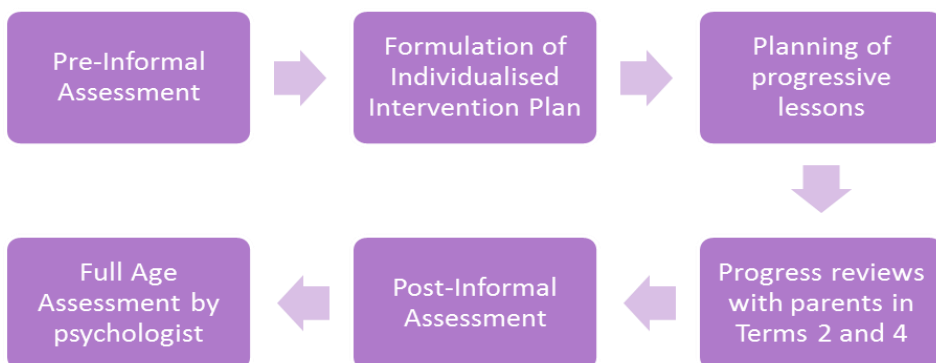
**Emotionally-sound**

Stress, anxiety and negative emotions can act as an affective filter that comes between learning and what-is-being-taught. Emotionally-sound delivery fosters and promotes learning and acquisition.

The programme was carried out in three tiers. Remediation by Educational Therapists and both the Preschool Screening Assessment (at point of admission into programme) and the Full Age Psychological Assessment (point of exit of the programme) by our qualified DAS psychologists. Children were grouped according to Assessment results/profiles. Each class consisted of 2 to 4 children, each having their own individualised educational plan. Children who completed the programme and were diagnosed as dyslexic may continue on with DAS in its main literacy programme at Primary One.

**MEASUREMENT OF STUDENT ATTAINMENT**

The process of measuring student attainment is summarised as follows: Student progress is carefully monitored through observations made during each intervention session as appropriate. Based on the diagnostic-prescriptive nature of



the O-G principle, the education therapist adjusts the lesson content for the next session by addressing the areas of uncertainty, weakness and strength. Thereby, shoring up against weaknesses in foundation concepts, addressing gaps in foundation knowledge and leveraging on student's achievement and strength, promoting further interest and progress in learning.

## **THE PROGRAMME AIM**

To help pre-schoolers potentially at risk of dyslexia achieve school readiness through our early intervention programme.

### **Outcomes of/Key takeaways from Pre-school Programme**

- ◆ Confidence to execute skills without fear, worry and anxiety
- ◆ Ability to self-regulate, self-motivate and self-discipline
- ◆ Ability to use literacy skills as an active tool in real time

## **STUDENT ACHIEVEMENT**

### **Overview**

This was based on the results of 40 bursary students whose learning progress was formally tracked since the beginning of the school year. According to research studies, if a dyslexic child is identified and given effective teaching before 7 years old, he/she may improve to a point where there is little disadvantage. After 7 years old, a sharp fall in the effectiveness of teaching interventions. After 9 years old, the effects of intervention seems to stabilise rather than remedy the relative deficit in reading skill. As such, the Preschool Programme views and celebrates the individual success of children "Assessed and no longer showing signs of dyslexia".

### **Success Indicators of student achievement**

Success indicators were based on a child's improvement in one of five categories:

- ◆ Alphabet knowledge - able to sequence the alphabet, write lower case letters and write upper case letters
- ◆ Phonogram knowledge - letter to sound correspondence
- ◆ Learnt word knowledge - able to read learned words
- ◆ Reading - cvc, ccvc, cvcc, th, ch, and wh
- ◆ Spelling - as above



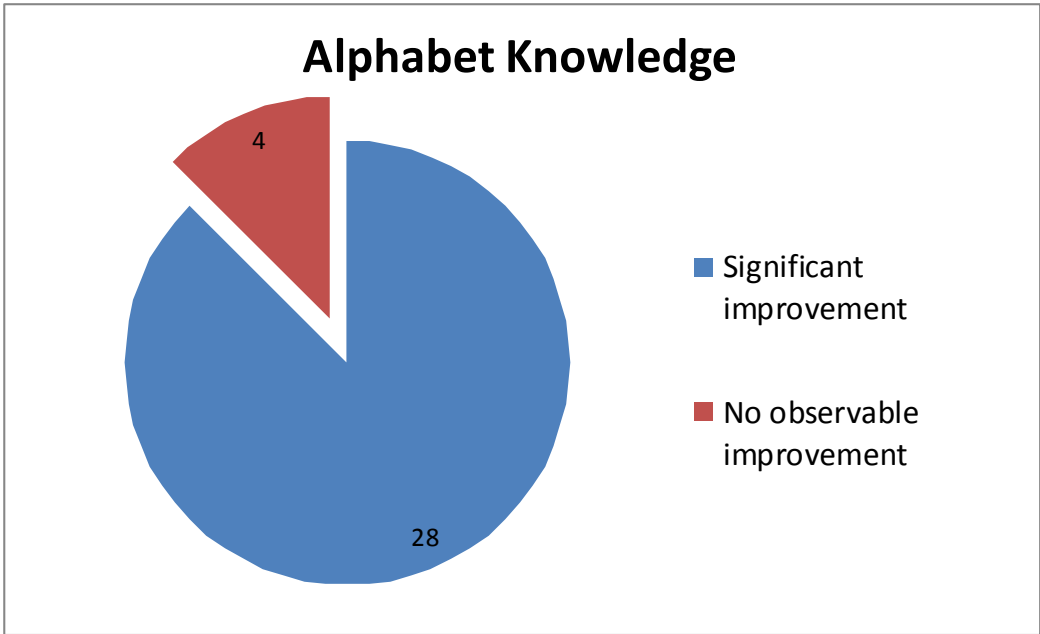


Figure 1.1 – Pie Chart of Student Improvement in Alphabet Knowledge

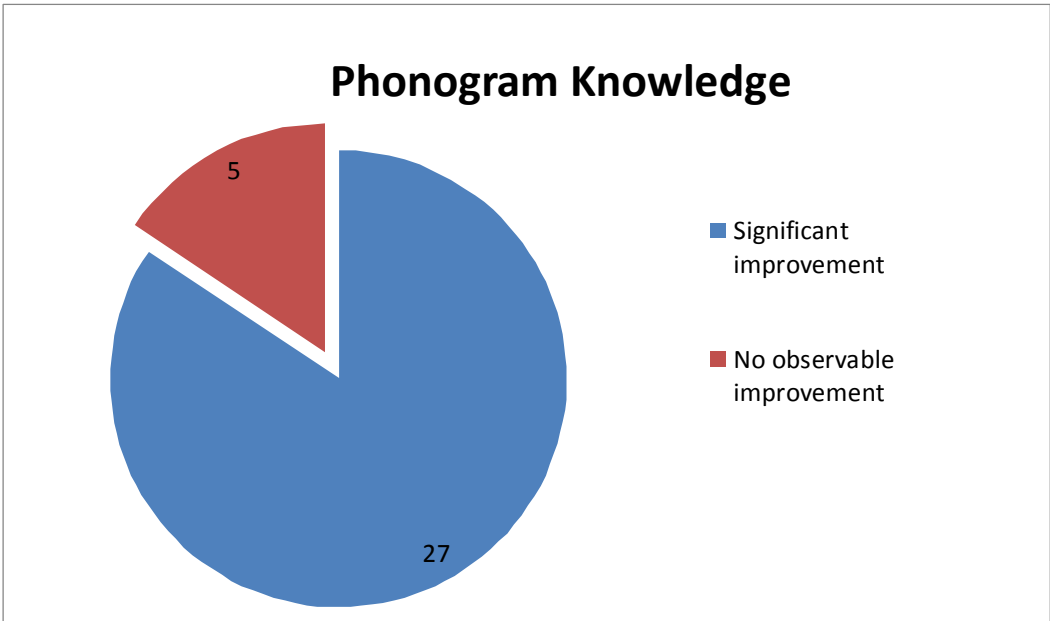


Figure 1.2 – Pie Chart of Student Improvement in Phonogram Knowledge

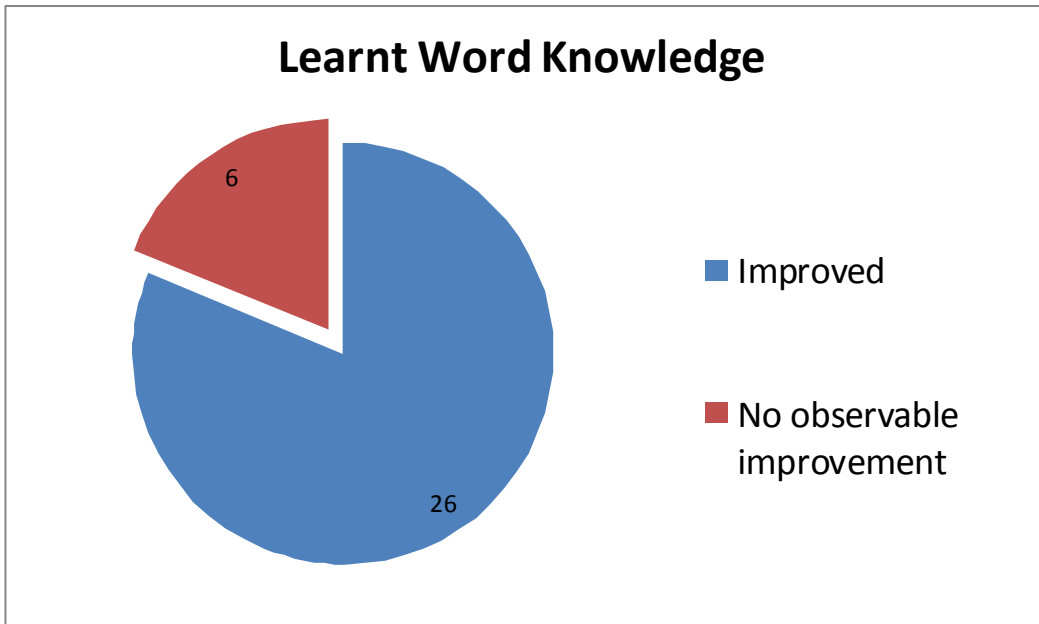


Figure 1.3 - Pie Chart of Student Improvement in Learnt Word Knowledge

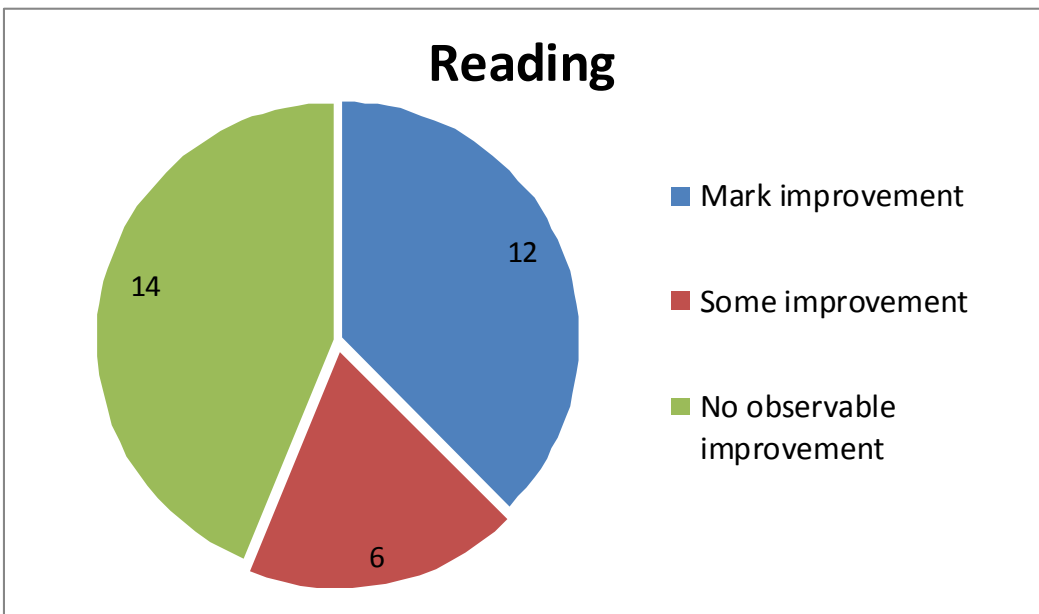


Figure 1.4 - Pie Chart of Student Improvement in Reading

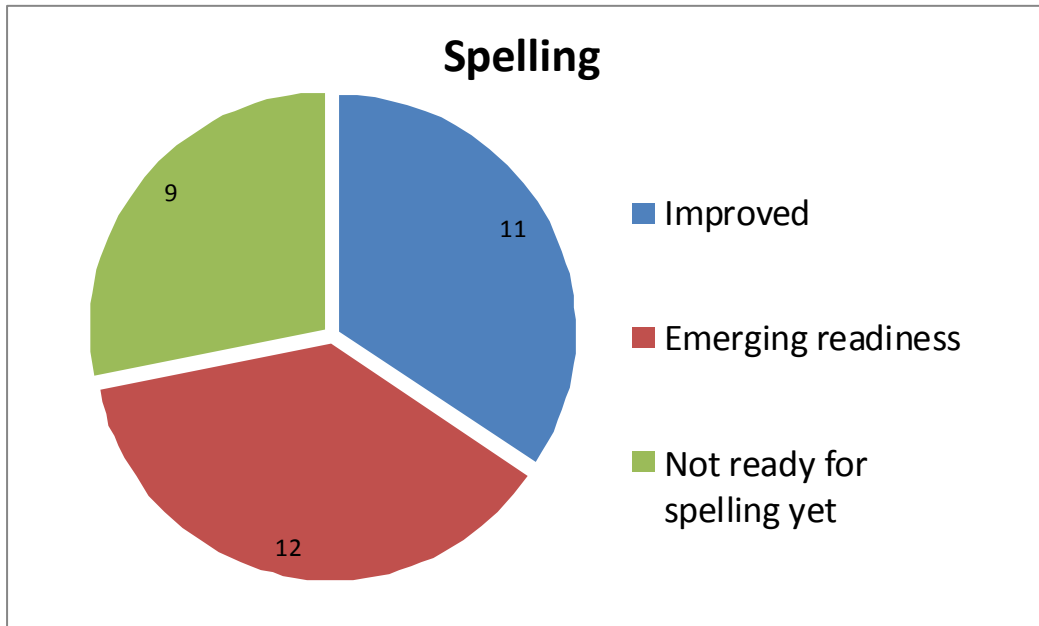


Figure 1.5 – Pie Chart of Student Improvement in Spelling

Results from the pre and post-assessment worksheets were used as the basis for comparison. A child was considered to have made an improvement if he/she achieves their Individualised Education Plan (IEP) or shows an improvement in their weak areas as listed above. Figures 1.1 to 1.5 above show the percentage of pupils showing an improvement in each aspect (statistics based only on students who have completed 20 hours or more of intervention):

Knowledge is progression based, with alphabet knowledge and phonograms being one of the cornerstones of early literacy, leading up to proficiency in reading and spelling. In early childhood education, development is viewed as a spectrum and the focus is always on **the process** and the gains along the journey of learning, not the product which is usually represented in a form of an assessment at the end. It is through **the process** that young children gain the tools and skills necessary to decipher printed text and craft writing at later stages.

As such, findings represented in Figures 1.1 to 1.5 suggested that most students had acquired a good foundation in alphabet knowledge and phonogram, leading up to learning sight words essential for reading, building a foundation towards reading and spelling readiness.

Although children may show improvement in their learning, those diagnosed as dyslexic will continue to remain on the DAS programme as they enter P1. One of the success indicators here is that we continue to enrol and diagnose dyslexic children correctly at their young age.

## **THE PRE-SCHOOL PROGRAMME: MOVING FORWARD INTO 2014**

In the course of programme evaluation, several challenges came to light. Pre-schoolers joining our intervention classes came with the following problems.

1. Very little or a poor grasp of spoken English to begin with. This has a direct impact on our lesson delivery as English is our medium of instruction. It also impact upon children's learning through the inability to comprehend the concept taught
2. Weak fine motor skills – not deliberately targeted nor addressed through explicit teaching
3. Weak executive functioning – somewhat lacking and in need of explicit teaching of specific strategies that promote memory, and activities that stimulate memory development
4. Noticeable disparity in developmental levels e.g. Global Developmental Delay
5. Social-emotional development lagging behind their peers

In response to the above concerns, we plan to:

1. Consider incorporating a deliberate oracy element/component into our existing programme. Perhaps developing some sort of oracy package, consisting of a teacher's resource guide book, complete with picture cards and suggested activities that busy educational therapists can simply grab-and-use with students. Language is a tool for communication (Vygotsky cited in Bodrova & Leong 1996). In a pragmatic sense, the content should be contextualised to our Singaporean setting, and its lesson delivery adapt some ESL/EFL (English as a second or foreign language) approaches to expedite learning
2. Consider having fine motor skills activity integrated more firmly into our programme, executed with deliberation and purpose. Students' poor handwriting should attain a level that is close to, if not better than, their peers in readiness for P1

3. Consider equipping teachers/therapists with teaching resources necessary to carry out activities that target and foster executive functioning issues. This may include INSETs on the creative use of teaching resources
4. Course leaders should be available (alongside the SPD team) to counsel and support teachers/therapists with children who may need short term, intensive, one-to-one remediation
5. Consider blending in elements of SEL (Social Emotional Learning) into the existing preschool curriculum so that children are better equipped to meet their challenges ahead, building resilience

Prime Minister Lee Hsien Loong recently emphasised, in the news, the importance of education and the need for our children to grow up and be capable of critical and creative thinking. Our students are capable of that and more. Let us level our students' playing field through the preschool's early intervention programme.

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## ACKNOWLEDGEMENT

Sincere appreciation to all preschool teachers for their contribution towards making this programme evaluation possible. Special thanks to Lynette Ong for collating all the pre-and-post test results.

## FEEDBACK ON THE PROGRAMME



### DYSLEXIA ASSOCIATION OF SINGAPORE PRESCHOOL PROGRAMME EVALUATION 2013

#### Student's Feedback

Name : \_\_\_\_\_

EdT Joanne

Question 1:.....How do you feel about coming to DAS Preschool Programme for classes?

Rating



I love it



Happy



"It's ok"  
(neutral)



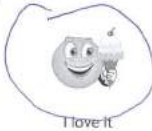
Angry



Sad

Question 2:.....How easy is it for you to sequence of the alphabet?

Rating



I love it



Happy



"It's ok"  
(neutral)



Angry



Sad

Question 3:.....How easy is it for you when you write (e.g. your name, copy writing)?

Rating



I love it



Happy



"It's ok"  
(neutral)



Angry



Sad

Question 4:.....How much do you enjoy doing "words-to-read"?

Rating



I love it



Happy



"It's ok"  
(neutral)



Angry



Sad

Pilot form

3



DYSLEXIA ASSOCIATION OF SINGAPORE  
PRESCHOOL PROGRAMME EVALUATION 2013

Question 5:..... How much do you enjoy doing "words-to-spell"?

Rating

Rating scale for Question 5 with five emoji options: "I love it" (circled), "Happy", "It's ok" (neutral), "Angry", and "Sad".

Question 6:..... How much do you enjoy doing "card drill" (letter-sound review)

Rating

Rating scale for Question 6 with five emoji options: "I love it" (circled), "Happy", "It's ok" (neutral), "Angry", and "Sad".

Question 7:..... How easy is learning in school now or is it a "struggle" (i.e. I-don't-know-what-teacher-teaches)

Rating

Rating scale for Question 7 with five emoji options: "I love it" (circled), "Happy", "It's ok" (neutral), "Angry", and "Sad".

Question 8:..... Other comments, suggestions, or feedback, if any. (e.g. What do you like most about coming DAS class? What do you like least? What is your favourite activity?)

*I get to play and learn*

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DYSLEXIA ASSOCIATION OF SINGAPORE  
PRESCHOOL PROGRAMME EVALUATION 2013

Parent Feedback Form

Name of Child: \_\_\_\_\_ Level :K1/K2 Date: \_\_\_\_\_

Indicate your response by shading the circle that which most corresponds to your evaluation.

Since/After attending the preschool intervention program:

1. My child appears more confident, happier.

—  —  —  —

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

2. My child's school teacher(s) tells me that my child is generally doing much better in class.

—  —  —  —

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

3. I can see and/or my child's school teacher(s) tells me that my child's most significant/observable improvement is in **alphabet knowledge**

—  —  —  —

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

4. I can see and/or my child's school teacher(s) tells me that my child's most significant/observable improvement is in **sight word recognition**

—  —  —  —

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

5. I can see and/or my child's school teacher(s) tells me that my child's most significant/observable improvement is in **reading phonetically**

—  —  —  —

Strongly Disagree      Disagree      Neutral      Agree      Strongly Agree

Pilot form

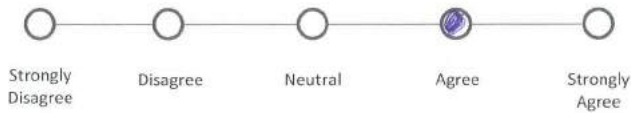
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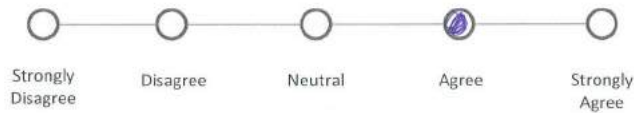


DYSLEXIA ASSOCIATION OF SINGAPORE  
PRESCHOOL PROGRAMME EVALUATION 2013

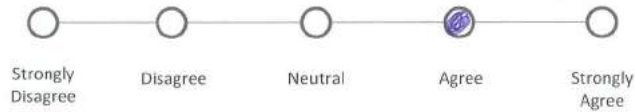
6. I can see and/or my child's school teacher(s) tells me that my child's most significant/observable improvement is in **writing** – less laboriously as compared to before



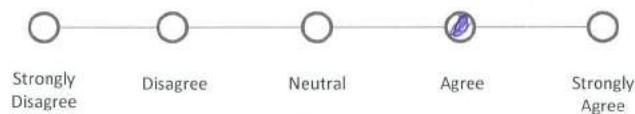
7. My child is able to apply what he has learned.



8. My child has benefitted from the preschool programme.



9. I am happy with the Preschool intervention programme.



10. Other comments, suggestions, or feedback, if any.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



DYSLEXIA ASSOCIATION OF SINGAPORE  
PRESCHOOL PROGRAMME EVALUATION 2013

Teacher Feedback Form

Name of Child: \_\_\_\_\_ Level: <sup>in 2013</sup> K1/K2 Date: \_\_\_\_\_

Using the zero-to-ten rating scale, indicate your response by shading the circle that which most corresponds to your evaluation.

Question 1:.....How would you rate your student's general confidence level now?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 2:.....How would you rate the progress made by your student in terms of **alphabet knowledge**?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 3:.....How would you rate the progress made by your student in terms of **writing**?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 4:.....How would you rate the progress made by your student in terms of **sight word knowledge**?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 5:.....How would you rate the progress made by your student in terms of **reading**?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 6:.....How would you rate your student's overall achievement?

Rating      0    1    2    3    4    5    6    7    8    9    10

Question 7:    Other comments, suggestions, or feedback, if any.

\_\_\_\_\_  
\_\_\_\_\_

## ABOUT THE AUTHOR



### WONG KAH LAI

*Preschool Programme Manager*

*Wong Kah Lai is the Preschool Programme Manager at DAS. An enthusiastic and passionate educator with more than twenty years' experience in the field of early childhood education, Kah Lai taught young children, mentored teachers, supported parents and caregivers in a wide range of setting, from within the classroom to community outreach, while juggling her Diploma in Early Childhood Education from Wheelock College, and subsequent Bachelor of Education in ECCE from the University of South Australia. She completed her Masters in Teaching English to Young Learners from the University of York through distance learning whilst working full time as head teacher of a bilingual kindergarten in China.*

## NTUC INCOME ORANGEAID FUND

*Supporter of SES Preschool Programme*

*Through the support of NTUC Income OrangeAid Fund, DAS has been providing preschool bursaries to families in need of financial assistance since 2011. Unlike bursaries for other programmes, the OrangeAid bursary ensures that your child receives all of the necessary support at the preschool level in preparation for Primary One.*



**Give Equal Opportunities**

NTUC Income continues to stay true to its social purpose of helping the less privileged live better lives. OrangeAid hopes to level the playing field for children and youth from disadvantaged circumstances.

We give 1% of our profits to children in need through OrangeAid.

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**Income**  
**orangeaid**

## Specialised Educational Services

UNLOCKING POTENTIAL

# ESSENTIAL MATHS PROGRAMME

## OUR APPROACH

SES Essential Maths Programme helps to bridge the gap between your child's ability and the mainstream syllabus by addressing areas they are weaker in. This is done through a C-R-A (Concrete-Representational-Abstract) approach. Every stage of learning ensures that the child links mathematical ideas in a progressive and cumulative way. The methodology applied constantly keeps in touch with the mainstream school math syllabus, with the aim of bridging the gap between the student's ability and mainstream syllabus.

## RECOMMENDED FOR

Students with dyslexia have specific areas of difficulty that can affect their mathematical performance such as poor short term and working memory, reversals in words and numbers, problem with sequencing and difficulty with reading word problems. These difficulties can impede a child's ability to understand concepts, do calculations and apply to what they have learnt to word problems. Some of the more common difficulties include counting forward and backward, understanding of number relationships, place value, timetable facts and following multi-step calculations.

# Specialised Educational Services

## Essential Maths Programme

Dr Tim Bunn<sup>1</sup>, Yeo Rebecca<sup>2</sup>, Siti Aishah Bte Shukri<sup>2</sup> and Aishah Abdullah<sup>2</sup>

1. *Chartered Educational Psychologist*

2. *Senior Educational Therapists*

*Dyslexia Association of Singapore*

### INTRODUCTION

The Dyslexia Association of Singapore (DAS) teaches over 3000 students in its 13 Learning Centres. All students have been identified as dyslexic. About 5 years ago, DAS decided to offer a teaching programme specially for our dyslexic students who also experienced difficulties with maths.

Students with dyslexia have specific areas of difficulty that can affect their maths performance: poor short term memory, poor working memory, poor sequencing, reversals, difficulty with reading word problems and poor comprehension and vocabulary stemming from low language ability. In mathematics, these difficulties can impede their ability to understand concepts, compute and apply what they have learned to word problems.

The Maths Programme aims to effectively support students with dyslexia who have persistent difficulties in maths, particularly in word problems, by providing dyslexia-friendly lessons while keeping in touch with the mainstream school maths syllabus. As students with dyslexia often have poor vocabulary and comprehension skills due to a late start in reading, word problems are often their biggest area of deficit. As such, the programme works on building a student's maths vocabulary, tying it to concrete manipulatives and pictorial representations. This, coupled with teaching students how to break down word problems, enables students to identify which operation to use in order to solve such questions.

### PHILOSOPHY

The teaching methodology is based on the needs of the child, with a strong emphasis on concept-building, addressing areas of skill deficit.

The teaching methodology incorporates the following principles: language based, cognitive, structured, sequential and cumulative, simultaneously multisensory, diagnostic-prescriptive and emotionally sound. These principles have been shown to be effective in helping students with dyslexia understand maths concepts.

Teaching progresses in developmental stages:

1. Concrete Stage - use of tangible manipulatives
2. Representation Stage - use of pictures and 2D drawings
3. Abstract Reasoning Stage - use of symbols and word problems.

Every stage of learning ensures that the student links mathematical ideas in a progressive and cumulative way. The teaching methodology is multisensory in its delivery and allows students to gain hands on experience with maths concepts. It is imperative that a student is equipped with all the necessary prerequisite skills that he needs but may not necessarily have, in developing his mathematical skills. This would strengthen their foundations for confidence in higher-level maths, building the path towards curriculum based interventions such that the teaching methodology helps to bridge the gap between the student's maths abilities and the school mathematics syllabus.

## **ENTRY CRITERIA**

During the first years of the programme, entry was restricted to those students who had been on the literacy programme for a year, with reading age no more than a year below chronological age, and scoring on school exam at P1-3 below 50%, at P4-6 Standard level below 35% and at Foundation level below 50%. Some students were placed on the programme from a review of their performance on schools exams, and some did an informal maths assessment.

These criteria have now been changed to be more inclusive: there is no reading age limit, and students need to have been on the DAS literacy programme. If students are passing in school exams, however, they may still not be appropriate for our programme, which is intended for students who experience significant difficulties in learning maths.

## **EXIT CRITERIA**

Students should be expected to (1) score at least 80% on the programme's annual performance test. This figure will need to be monitored.

The student must also be able to (2) consistently achieve at least 60% in school exams for at least 3 consecutive terms.

Currently, the exit criteria has not been put in place. Students would leave the program when they have reached the end of P6.

For students who have made good progress in their Maths performance, we may need to consider graduating them using the two exit criteria.

### **MEASUREMENT OF PROGRESS:**

A student's progress is measured in the following ways:

1. Diagnostic informal assessments to determine students' areas of strengths and weaknesses in a particular topic before teaching it.
2. Annually administered summative assessments to determine overall progress.
3. Collection of students' mathematics examinations papers and scores to determine whether progress is being transferred from classes into school.

In addition, teachers monitor students' learning through their responses to exercises and the explanations they give in class. This kind of assessment is "formative". At the end of each topic, teachers would also administer the same topical informal assessments to measure students' application of the concepts taught in the topic. Near the end of each year, a comprehensive set of topical tests is used to evaluate progress. These tests have been developed by the maths team, with some guidance from Professor Angela Fawcett and Dr Tim Bunn. One form of the test (Form B) is now complete and has been used to measure progress in October-November 2013 on all students in the programme over 6 months at that point.

It was decided that we should develop our own test because published maths tests do not cover the Singapore maths syllabus fully, and do not reflect the balance of calculation and word problems that Singaporean students face. We also wanted to be able to identify topic by topic what concepts students had learned and still needed to work on. Test B assesses 10 topics: addition, subtraction, multiplication, division, time, fractions, geometry, decimals, percentage, ratio; and covers calculations and word problems separately within each area. The test provides measures of learning on each concept. It also guides teaching as it enables therapists to show which grade level their students are working on within each topic and whether there is more to do at that level.

The nearest equivalent score on form B is a reflection of students' performance on items/concepts that are common in both form A and form B. This measure helps to check the test-retest reliability of the intervention.

The majority of these students were at grades 4 to 6 (11).

	<b>Initial Assessment Form A</b>	<b>Nearest equivalent Form B</b>
Overall Average	66.5	82.2
Primary 1-3	60.75	84.53
Primary 4-6	69.62	80.94

The comparison between scores on Form A and the nearest equivalent scores on Form B (ie covering only the topics tackled at first assessment) shows progress within those topics. Progress for younger and older students over the nearest equivalent topics was about the same, with the younger ones making slightly more progress.

### SIZE OF THE PROGRAMME

<b>Size of the Programme</b>	<b>November 2013</b>	<b>May 2014</b>
Number of students	94	141
Number of trained therapists	14	25
Number of currently practising therapists	7	18
Number of centres with maths resource provision	5	12



## **DAS ESSENTIAL MATHS RESOURCE PACK**

To ensure quality in our teaching and to guide new dual specialists in understanding how to apply the concrete-representational-abstract (CRA) approach in teaching, the math core team, together with some contributing members have put together a comprehensive resource pack. This initiative saw our combined creativity and strengths as a team in action as we tried to make our curriculum relevant to the students by grouping the concepts in the MOE syllabus according to level, topic and difficulty; and to come up with original teaching approaches for each of the concepts within the topics using the CRA approach.

Due to the team's small size at that moment, this project took us a total of two years to complete. The DAS Essential Maths Resource Pack, which now contains a Curriculum Progression, Scope and Sequence and Teaching Approaches for each topic, has undergone testing and evaluation, and is ready to be printed as an internal publication.

## **SUCCESS STORIES**

### **EDUCATIONAL THERAPIST REFLECTIONS**



**Rebecca Yeo,  
Educational Therapist**

#### **Jermaine\***

"Jermaine\* (P6F) has been a student on the DAS maths programme since 2012. Before joining the programme, she was struggling with the language of maths (e.g. more than/less than) and with understanding maths concepts such as telling time. Throughout this 1 year of intervention, Jermaine has made tremendous progress in her mathematics in school. Her attitude towards Mathematics has also changed and she has developed a deep interest and enthusiasm for the subject. In her recent preliminary examination, she scored the highest in her school, with a score of 91/100. Previously, she used to score an average 15/100 for her maths examinations. As her Mathematics Educational Therapist at the DAS, I am very proud of Jermaine's achievements and I hope that she will continue to love the subject and do her best in it." (December 2013)



**Siti Aishah Bte Shukri,  
Senior Educational Therapist**

**Jake\***

"Jake\* (P6F) joined the Math programme in 2014 after he failed his PSLE Math and had to repeat Primary 6 level. He was barely coping with Math in school and has been getting U-grade scores all the while. After 3 months in the math remediation, Jake's mom and teachers were able to see a difference in his Math understanding and confidence. He even scored 35/50 for his recent test. His mom believes that the concrete to representational to abstract approach has worked for her son. This is a great start and I really hope Jake will continue to experience success in Math."

(April 2014)



**Aishah Abdullah (Albel),  
Senior Educational Therapist**

**Harry\***

"Harry started DAS Maths intervention with me in Term 3 at Bishan Learning Centre in 2012 after he failed his Mathematics in the Primary 4 mid-year examinations at school. As he began to immerse himself in the Concrete, Representational and Abstract strategies that are used in DAS Maths lessons, he became more alert to applying these strategies when working out the complex sums that he faced in school workbooks, worksheets and assessment papers.

Harry now enjoys solving maths problems and said, "I am better able to picture and connect the information in word problems; then write out the right strategy, e.g., draw a model, branch out, make a list or work backwards to correctly arrive at the answer. When a method does not work, I will quickly change to another plan. I find solving Maths problems so interesting and fun now."

Through sheer determination and willpower he has confidently handled his math problems and has improved tremendously. Like a captain at the steering wheel he powered himself to his goal – to obtain an 'A' at PSLE Standard Maths. Sweet success awaited him. On 23 November 2013, Harry humbly walked into

my maths class with his PSLE result sheet. "Ms Albel, I scored an 'A' for Maths," he said gently. I couldn't have been more proud of my student for achieving his goal.

Harry is now attending a Secondary 1 Express class at Naval Base Secondary School. Well done Harry!" (April, 2014)

**Geraldine\***

"Geraldine (P6F) worked hand in hand with me in all the Mathematics concepts taught, applying meaningful strategies to correctly work out the sums. She found learning Maths enjoyable and a fun experience. I often told Georgina that she was capable of obtaining a Grade 1 at PSLE Maths. Her confidence rose and she worked conscientiously, determined to achieve the 'unattainable'. When the PSLE results were released, she screamed out with whoops of joy, "Ms Albel, I've got Grade 1 for Maths!"

Geraldine was eligible for the NA stream at secondary school. However she decided that she could perform better being in the NT stream and is now attending a Sec 1 NT class at Greendale Secondary School. Keep working hard at Maths, Geraldine" (April 2014)

*\* Students' names have been changed to ensure confidentiality.*

**STUDENT AND PARENT TESTIMONIALS**

"At DAS Bishan, Ms Albel teaches me Maths differently from the way the teachers in school teach me Maths, especially the problem sums. I read the sum step by step. Then I connect and arrange the colourful and fun Maths materials according to the sentences in the sum. This way I can understand and work out the sum easier. Last year, I failed in Maths but this year I scored 60% at SA2. I find learning Maths fun and interesting at DAS Bishan."

**Primary 4, Bishan Learning Centre  
Student of Aishah Abdullah (Albel),  
December 2013**

"Thanks for teaching Kenny\* for the past 1 year. He has shown great improvement. His most happiest moment is that he managed to get a pass in his SA2 paper this year. He is happy in DAS group and has learnt a lot from DAS teachers."

**Parent of Bishan Learning Centre, December 2013**

"My name is John\*. I like my Maths class because it is fun and my teacher uses Maths manipulatives to make Maths easy to learn. Before I attended DAS Math

class, I was failing my Math exams. I scored about 35 marks and I felt that Maths was hard. After attending DAS math classes, I have now improved in my Maths. I am now scoring 64 marks and I now feel that Maths is easy!"

**John\*, Primary 3, Queenstown Learning Centre  
Student of Rebecca Yeo, December 2013**

"The Maths programme in DAS helped me a lot to learn different methods to handle difficult questions. The programme made my basic foundation in Maths strong and firm before moving to the next level. The teacher is very understanding and had lots of patience."

**Angela\*, ex-student  
Student of Siti Aishah Bte Skuri, December 2013**

"I was relieved when my daughter got help from DAS maths programme as she was failing her Maths subject in school. I saw her basic foundation in Maths improved a lot and the teachers guided her on how to apply them in word problem. I saw her results improving fast and her understanding better. In due time the programme helped her to like Maths and she was able to cope with Maths in school. Her achievement was passing Maths in PSLE. What she learned is still helping her in her Sec School and she is continuously passing her Maths subject. I hope DAS will consider enhancing the programme and helping the students in Sec Sch. Thank you DAS Maths!"

**Mother of Mary,\* Bishan Learning Centre, December 2013.**

"Before Andy\* started the math programme with DAS this year, his results were around 50-60, his weakness was with certain math concepts like fraction, area & perimeter, time and especially problem sums, which could be because of his dyslexia. He was often reluctant to do his math homework and showed resistance to the subject. He didn't enjoy math class and even with supplementary class in school, he didn't understand his work.

Upon attending the Math classes at DAS, he has shown improvement in his work, which also helped with his self-confidence. He is showing more interest in the subject as he now can understand the math concepts better with help from Miss Rebecca Yeo, his Literacy and Math teacher, or Miss Becky, as she is fondly called.

Now with the class, he has learnt to decipher how to approach word sums, fractions etc. and knowing that he can turn to Miss Becky for help, he has shown significant improvement in his grades and we are thankful for this opportunity to be part of this program. Under the care and guidance of Miss Becky from DAS Queenstown, I

hope my son will continue to find the joy in learning.

**Mother of Andy\* Queenstown Learning Centre Parent  
December 2013**

*\*Students' names have been changed to ensure confidentiality.*

**FUTURE DEVELOPMENTS IN THE PROGRAMME**

1. The team hope to do a retest using the slightly improved Form B in mid-year.
2. The team would also like to look into incorporating an attitudes test to track changes in students' attitudes towards Mathematics as a subject, math computations and word problems before the start of the program and after every year of being on the programme. This attitudes test would be administered together with Form B.
3. The current Form A only assesses 8 topics: addition, subtraction, multiplication, division, time, fractions, geometry, and decimals; and does not word problems at all. Therefore, to increase the content validity of the tests, Form A would need to be updated to include all topics and word problems separately within each area.
4. To help very weak students who are struggling with basic math concepts, a foundation level math program will be initiated to aid these children in developing their number sense, which is a pre-requisite for later math skills. This is a very specific program for children who cannot cope in the essential math program and needs a bridging program to master the foundation skills first before moving them into the essential maths programme.
5. The team will also be working towards a targeted student population of 255 students by March 2015. We aim to do this by recruiting and training more new teachers and by promoting the program actively through awareness efforts to attract new students. As certain learning centres have a greater need for Math dual specialists than other learning centres, we would
6. We will continue to uphold the high standards in teaching quality as well as the professional development of our dual specialists through in-house training (insets) and workshops. Teaching quality for existing dual specialists will also be monitored by a peer dual specialist and one of the core team members using video recordings of a lesson, once every year.

## ACKNOWLEDGEMENTS

We would like to extend our appreciation to past DAS Math team members Clair Marie Yeo, Jasmine Kang and Ng Ru Min for their insightful and valuable contributions to the development of the Essential Math resource pack during their time with the team. We would also like to thank the DAS Math Dual Educational Therapists/Specialists for their comments, feedback and suggestion during the trials, without which this pack would not have been possible.

In addition, we would like to thank Tam Shu Yi, who helped us look through the Essential Maths resource pack and provided us with interesting ideas to enhance our teaching approaches.

## STARHUB

### SUPPORTER OF SES ESSENTIAL MATHS

*StarHub is Singapore's fully-integrated info-communications company, offering a full range of information, communications and entertainment services for both consumer and corporate markets. StarHub is a firm believer in giving back to the community. That is why we commit 1% of our IDD revenue to our main corporate philanthropy vehicle, the StarHub Sparks Fund. Since 200 to date, over \$10.9 million has been disbursed to help the less fortunate. The StarHub Sparks Fund aims to benefit the less fortunate, widening their visions and opportunities in life through education, skills enhancement and by fulfilling basic needs.*



## ABOUT THE AUTHORS



### DR TIM BUNN

#### *Consulting Educational Psychologist*

*Tim has a BA in Psychology & Philosophy from Oxford University, a PGCE from Redland College, and an MSc in Educational Psychology from University College, London. He worked as a teacher in primary, secondary and special settings for 9 years, and as an educational psychologist mainly for English Local authorities for more than 20 years. He also served as SEN Officer for Northampton for 8 years, administering the area's statutory SEN procedures. He worked for 3 years in a private dyslexia specialist school (Egerton-Rothesay) as its in-house psychologist, and for a while he led the DAS research team in Singapore. His own doctoral research was on literacy interventions in the middle primary years, and was particularly interested in the roles of teachers and teaching assistants in helping children with literacy difficulties. He is now a Consultant Educational Psychologist for the Specialised Educational Services division of DAS.*



**YEO REBECCA**

*Senior Educational Therapist*

*Ms Rebecca Yeo is a Senior Educational Therapist and a member of the Maths core team at the DAS. She has helped with the development of the Essential Maths programme as well as the training of new Math dual specialists at the DAS. In addition, she has conducted talks with parents to provide them with strategies to help their children with Mathematics at home. Rebecca holds a Bachelor of Psychology from James Cook University, a Postgraduate certificate in Specific Learning Differences from the London Metropolitan University and has recently received her WSQ ACTA certification in Training and Assessment. She will be pursuing her Masters of Education (Mathematics) at the National Institute of Education in January 2015.*



**SITI AISHAH BTE SHUKRI**

*Senior Educational Therapist*

*Siti Aishah Shukri is a Senior Educational Therapist who has been teaching in DAS for 5 years. She has a dual specialisation in the remediation of Literacy (Primary 1 to Secondary 4) and Math (Primary). Siti is a core member of the DAS Math team and is trained in the Advanced Certificate in Training and Assessment, she is also involved in the development of the curriculum for the DAS Math programme. Siti holds a BSc (Psychology) and a Post-Graduate Certificate in Specific Learning Differences, she is passionate about working with children with learning differences. She is presently teaching at DAS Bishan Junction 8 Learning Centre.*



**AISHAH ABDULLAH**

*Senior Educational Therapist*

*Ms Aishah Binte Abdullah (Albel), Senior Educational Therapist is a Dual Specialist with DAS, Singapore, has 42 years of experience in teaching Maths to primary students, a number of whom have excelled in Maths in school examinations. She holds a Certificate in Education and a Diploma in Dyslexia Studies. Albel is an active pioneer member of the DAS Maths Core Team and she teaches Maths at DAS Bishan Junction 8 Learning Centre and also at DAS Yishun Learning Centre.*

*Motto: Students learn Maths readily when MATHS is fun for them.*



## SPECIALIST TUTORING

### OUR APPROACH

Specialised Educational Services (SES) has a team of specialist tutors who have extensive experience in supporting students with specific learning differences and other learning needs.

Specialist Tutoring is tailored based on the profile of the child obtained from our multi-disciplinary team of educational psychologists, speech and language therapists, occupational therapist, and in consultation with parents and educators. Tutoring has an individualised problem solving approach where skills focused include:

- Literacy, Numeracy, Oracy, & Writing Skills
- Individual Curriculum support
- Study skills and Exam preparation
- Behaviour and Social support

Our tutors are experienced in the international, private and public school systems; they have an understanding of the curriculum and the demands that today's education systems place on your child. They listen with sensitivity to the concerns that parents have and provide a total solution with an Individualised Education Plan to support their child's needs. Regular verbal feedback is provided at the end of each tuition session. Informal assessments on progress is made to monitor and track your child's progress. We strive to empower successful learning and nurture each individual child to achieve their full potential.



# Specialised Educational Services

## Specialist Tutoring

**Anaberta Oehlers-Jaen**

*Programme Director of SES Specialist Tutoring*

*Dyslexia Association of Singapore*

### **INTRODUCTION**

This paper aims to provide an overview of the Evaluation of the Specialist Tutoring Programme offered by DAS International under the one to one programme for the period 2013. Upon the recommendation of our CEO Mr Robin Moseley, DAS International wanted to seek the views from Students, Specialists teachers and parents on the effectiveness and satisfaction of the program. As a brief explanation to the current status of DAS International Specialist Tutoring, in April 2014, due to the reorganisation within DAS and DAS International, the Specialised Educational Services Programme (SES) was set up. Specialist Tutoring has now come under the purview of the SES Programmes. However, background information on the set-up and demographics of the service (DAS International Services Ltd) is important in to the understanding of the survey.

### **ABOUT DAS INTERNATIONAL SERVICES LTD**

DAS International Services Ltd is a wholly-owned subsidiary of the Dyslexia Association of Singapore (DAS) and is part of the DAS group of companies which was incorporated in 2011. Building upon the recognised experience, competence and expertise of the DAS in providing high quality specialist services over the last 22 years. DAS International offered the full range of Multi-Professional Services comprising Psychological Assessments, Speech and Language Assessments and therapy, Occupational therapy and Assessments and including Specialist Tutoring both in Singapore and Overseas.

Since April 2014 DAS International continues to service the overseas market through providing Assessments and Consultation. The Specialised Educational Services a division of the Dyslexia Association of Singapore, since April 2014 now provides all

services formerly provided by DAS International in Singapore that includes Specialist Tutoring. The results of a survey conducted for Specialist Tutoring in October 2013 is discussed in this paper.

## **RATIONAL FOR THE SURVEY ON SPECIALIST TUTORING**

Mr Robin Moseley Chief Executive Officer suggested that the key element for a service such as DAS International was to measure “customer satisfaction”. He suggested questions such as, “have you been listened to?” as part of a questionnaire for parents. He also felt that DAS International should ensure that parents’ views about what any interventions would achieve were crucial in initial documentation, and review of the services provided.

### **Specialist Tutoring Student Profile:**

The range of students that attended Specialist tutoring in 2013 included the following: 60% Singaporean (MOE) Students and 41% International School Students. There were 44 students enrolled for Specialist Tutoring in January 2013 and at the end of October 2013 there were 66.

## **SPECIALIST TUTORING**

### **Reasons for Students to attend Specialist Tutoring**

- It is a challenge for some students to find a place, particularly in the International schools
- Specialist Tutoring provides an interim as well as continued support for students.
- Some schools have no provision for students with learning differences.
- Students are unable to keep up with the curriculum.
- Students require additional support for Literacy, Maths, and Exam Skills.

### **Programme Description: Specialist Tutoring**

Ages taught:	4 to 18 years
Instruction in:	English
Subjects taught:	Literacy, Numeracy, Oracy, & Writing Skills Individual Curriculum support Study skills and Exam preparation

## Referrals for Specialist Tutoring

Referrals for Specialist Tutoring for the period of 2013 were:

Source of Referrals	% of No's Referred
Media / Internet	21%
Teachers	49%
Friends / Relatives	13%
Awareness Talk	3%
Private Clinics	11%
Internal Referral from DAS	3%
<b>Total Referrals</b>	<b>100%</b>

## Profile of Specialist Teachers

The Specialist tutors are experienced in the international, private and public school systems. At the same time the team of specialist tutors who have extensive experience in supporting students with specific learning difficulties make up the Specialist Teachers. All Specialists Teachers are highly trained in their area of expertise with a formal degree and professional qualifications. At the time of the survey there were a total of 15 Specialist Teachers supporting 84 students.

## Headcount of Specialist Teachers as at October 2013

- 3 Full-time Specialist Teachers.
- 4 Sessional Teachers : (Teaching and paid per hour)
- 3 DAS Senior Educational Therapists & Lecturers
- 6 DAS Senior Educational Specialists with the Dyslexia Association.

They have an understanding of the curriculum and the demands that today's education systems place on the child. They aim to provide a total solution with an Individualised Education Plan to support each child's needs.

Their job scope within Specialist Tutoring requires:

1. Regular verbal feedback is provided at the end of each tuition session.
2. Conducting informal assessments on progress

3. Monitoring and tracking of child's progress.
4. The tuition is skills focused.
5. Developing an Individual Education Plan (IEP)
6. Teachers are required to adopt a problem solving approach.
7. Initial consultations and ongoing verbal or via email / telephone feedback
8. Progress reports are provided for parents.

### **Description**

Specialist tutoring adopts a problem solving approach through the development of an individualised programme that aims to bridge the gaps in the child's learning. At the same time, Specialist Tutoring believes in working closely with schools and parents thereby creating a loop and an open channel for communication, whereby the schools and parents know there is support for their child in the area of Specialist Tutoring and intervention.

Specialist Tutoring also provides educational programmes and other individual support services for individuals with specific learning differences. The aim of Specialist Tutoring is to effectively support the development of each child. Each child is seen as an active, competent learner, especially children who have Specific learning differences (SpLD), wanting and in need of a value added programme / specialist support .

Individualised tuition is tailored based on the profile of the child obtained from our multi disciplinary team of educational psychologists, speech and language therapists, occupational therapist, and in consultation with parents and educators.

### **MEASUREMENT OF PROGRESS:**

A student's progress for Specialist Tutoring is measured in the following ways:

1. Formative and Summative informal assessments to determine progress from topic to topic.
2. An Individual Education Plan based on a 10 week cycle is developed and results from the Formative Assessment form the basis for the IEP.
3. An informal Summative Assessment at the end of the 10 week cycle is again carried out.
4. This would then form the basis of the Summative Assessment and the next set of IEP's
5. Standardised assessments, such as the YARC, TOWRE and the WRAT are administered every 6 months to determine overall progress.

## **APPROACH TO TEACHING**

The teaching approaches in the Specialist Tutoring Programme are influenced by the Essential Literacy Approach (ELA). The knowledge and skills learnt in ELA will help and guide students to meet the needs of Singaporean and International mainstream schools. The following is a brief description of the Orton-Gillingham (OG) principles that influenced our programme's curriculum development and teaching practice:

### **Language based**

Based on the OG approach of learning and teaching language, the involvement of awareness and appreciation of the features of language is crucial. Students are exposed to different knowledge and related strategies which are determined by their needs, along with grammar, comprehension and writing.

### **Cognitive**

The components and lessons are designed to encourage students to activate their cognition to apply the knowledge and skills taught.

### **Structured, sequential and cumulative**

The skills covered in one lesson are reinforced in subsequent lessons. This helps to ensure that students consolidate their learning of particular grammar items and comprehension skills.

### **Simultaneously multisensory**

It is believed that different students have different learning styles. These are namely the auditory, visual, kinesthetic and tactile learning styles. The method used in the ELA approach is one that is simultaneously multisensory to cater to the learning needs of as many students as possible.

### **Diagnostic Prescriptive**

The pre-tests conducted would allow the Specialist Teachers, to determine the areas where an emphasis is required. For example, if the student's weakness lies in decoding, the emphasis would be on strengthening the students decoding strategies and part of the child's IEP would be guided to achieve that target.

### **Emotionally Sound**

Specialist Teachers adopt the Vygotsky's zone of proximal development approach to teaching. Starting the students where they are at and building them up, allowing each child to gain more confidence through achievable tasks.

## KEY SPECIALIST TEACHING PROGRAMMES

### Literacy

The Specialist Teaching programme by its very nature of one to one teaching allows for the Specialist teacher to work closely with the level and individual needs of the students. Specialist Teachers have adopted the Essential Literacy Approach (ELA) as a guide in supporting students particularly those with dyslexia who struggle with reading, spelling, and/or writing.

ELA is a multisensory structured language approach that teaches the structure of the English language at the level of sounds, syllables, meaningful word parts, sentences and paragraph organisation. It contains the critical building blocks of literacy that have been identified by the National Institute of Child Health and Human Development.

They are:

- Phonemic awareness
- Phonics Instruction
- Reading Comprehension
- Reading Fluency
- Vocabulary

Originally based on the Orton-Gillingham approach, ELA has evolved to meet the unique language needs of dyslexic children in a multi-lingual Singapore and within the International School community.

### Maths:

Specialist Tutoring has adopted the Essential Maths Programme from the DAS Maths Programme which uses the Concrete / Representational / Abstract (CRA) Approach to learning Maths.

- Concrete Stage – Use of tangible manipulatives
- Representation Stage – Use of picture / 2D drawings
- Abstract Reasoning Stage: Use of symbols and word problems

At every Stage student links mathematical ideas in a progressive and cumulative way. The Maths Programme aims to effectively support students with Specific Learning Differences who have persistent difficulties in understanding maths concepts. This is achieved by providing “dyslexia-friendly” lessons while keeping in touch with the mainstream school mathematics syllabus. The students attending

Maths Specialist Tutoring are usually weak in their Maths foundation and need help with understanding mathematical concepts and computations and applying what they have learned to word problems.

**Specialist tutoring in the area of Maths support:**

- The individual needs of the child
- Concept building
- Addressing the areas of skills deficit
- Bridging the gap between the student's maths abilities and the mainstream mathematics syllabus.

**Topics taught:**

- Addition/Subtraction of Whole Numbers
- Multiplication/Division of Whole Numbers
- Time
- Fractions
- Decimals
- Geometry
- Ratio
- Percentage

**ANALYSIS OF THE SURVEY ON SPECIALIST TUTORING 2013**

**Parents' Views:**

17/66 parents responded to the survey (26%). Of those, 70% were either pleased or very pleased about their child's progress at DAS. Only one person was not satisfied. 82% did feel their child was understood and they were listened to. All the parents received feedback from their child's specialist tutor, 88% well or very well. A resounding 100% of parents said their children enjoyed attending lessons at DAS International, and 80% said they were happy with their child's IEP. Although the response rate to the survey seems low, this is characteristic of surveys of this type, where response is deemed to be good if it reaches 33%. Typically, non-responders are content with the service they are receiving.

**Students' Views**

30 students responded to the survey, which was given in a short discussion using a Zeroten number line, where 10 was very positive and 0 very negative.

The students were asked 5 standard questions and further individual questions at their tutor's discretion. The students' average rating of their learning at DAS International was 8.9, compared with 7.0 for learning at their schools.

We wanted to know whether they found reading or writing easier. The average for reading was 7.4, and for writing 7.0, very similar. We were encouraged that they were a little more positive about writing than the usual responses to the same question by Singaporean DAS students. Responses of individuals were interesting and relevant to the tutors.

We also asked them what their parents rating of their progress would be, in their opinion. Their average rating was 8.6, which was very close to their own average rating of 8.9.

### **Tutor's Views**

The 19 tutors were more cautious than the parents about student's progress. They felt the students had made progress (74%) but only 21% were "very pleased" with progress. They were nearly all happy with the information they had received about students (82%). 95% of tutors were positive about their student's progress.

About 90% felt that parents mostly or always listened to their feedback. About 74% felt that the child's IEP met all needs.

The tutors were also asked about homework. Only 37% gave the children homework regularly (53% did not, and so were not able to comment on its completion). Those who did give homework found they nearly always got it back.

### **STUDENT TESTIMONIALS**

**Name:** John Henry (*Anonymous*)

**Age/grade:** 9 years old / Grade 3

Going to DAS classes with Sue-Lynn helped me a lot. We did card drill where she shows me word cards and then I have to collect the right ones. We played games to help me with my sight words and spelling. I enjoy my classes at DAS because it is fun and help me with my reading and writing. Sue-Lynn makes it interesting and it is easier for me than class at school. DAS helps me by improving my brain and helps me to better participate in class at school.



## **PARENT TESTIMONIALS**

### **Parent: Catherine Henry** *(Anonymous)*

From the onset, John Henry loved going to his sessions with Sue Lynn, his Educational Therapist at DAS International. He enjoyed the multi-sensory educational based activities and formed a very special bond with her. He referred to them as “fun” learning and that it was nothing like class at school. His excitement was evident when it was time for tutoring class at DAS International. John Henry acquired practical tips and techniques during these sessions which he was then able to apply in class at school and at home because he knew they worked! A written appraisal after every 10 sessions of tutoring provided me with a measurable target in relation to his performance based on the objectives listed in his IEP. Sue Lynn also kept me updated and informed about the latest developments and advancements in educational tools, applications and websites to assist and support children diagnosed with dyslexia.

### **Parent : Mrs Collins** *(Anonymous)*

Malini has worked with Cheryl for the past two years on a one-to-one basis. Cheryl has not only improved academically she has also received tremendous support emotionally. Malini has set Cheryl tough but achievable I.E.P’s and this has broadened Cheryl's thinking. Malini has a very nurturing way of teaching and this has been a great asset as Cheryl never thought of her lesson as a chore. She was first in class in her recent English exam, which we are delighted with and we are sure that Cheryl will succeed in her PSLE. I can’t thank you enough for getting Cheryl to where she is today.

### **Parent: Catherine Isaac** *(Anonymous)*

My daughter took one-on-one educational therapy sessions with Anaberta Oehlers-Jaen. The sessions were designed to close the gap between Chloe's learning and that of her classmates. Chloe is now a reader and is enthusiastic about school. This is a huge change from before the sessions at DAS. Also she and her tutor (Anaberta Oehlers-Jaen) developed a great relationship where Chloe looked forward to her weekly sessions with her. Chloe was sad that her sessions with Anaberta were coming to an end.

### **Parent: Mrs Tan** *(Anonymous)*

Dear Michelle and Kamisah and all at DAS, I wanted to show my appreciation for the service you are giving. Since starting this program, Donald has improved so much that both his specialist reading teacher and home base teacher from ABC

International, have noticed and want Donald to continue with his DAS classes. This year, Donald has had his confidence restored in class, something his classroom teacher has commented on, which was our main worry last year.

I have also been impressed that as a whole you seem to work well together. My first impression, meeting the assessment team that assessed Donald was very professional, accurate and comfortable. You all have a range of talents and work really well together. I have also been impressed in the way you are not like so many other organisations that seem to be just after the money, which may or may not be true. DAS seems to always do what is best for the child. Furthermore, you seem to be wanting to do what is best for many children not just in Singapore. That is commendable. Keep up the good work. Thank you for your service! And as Christmas is approaching I pray that DAS will enjoy many years favoured by God!

**Parents: Mr and Mrs Leng** (*Anonymous*)

Our 2nd son, Michael, was struggling with Mathematics since early primary school days. We sent Michael for dyslexic evaluation and examination and he was diagnosed for dyslexia symptoms. We enrolled Michael, in DAS Education Therapy, under the tutelage of Ms. Aishah Albel. Under her tutelage, my son Michael, has been improving tremendously. He did very well in both the primary 6 preliminary examination as well as the PSLE.

Ms. Aishah Albel, advised and recommended Michael, to continue with the programme. Michael, is now scoring 'Bs' in Mathematics. Not only does Michael like Mathematics but is also a very confident young man now.

Thank you, Ms Aishah Albel.

**Parent: Mitchell Knight** (*As featured in Expat Living*)

I have three children, aged 14, 10 and two. My 10-year-old, Carter, is currently attending DAS International.

When we were looking for a school for Carter, we had two main priorities: a school that would support his learning differences, which are dyslexia, dyscalculia and dyspraxia; and one that would provide him with mainstream and one-to-one learning support while still meeting all the core competencies found in the US curriculum.

I discovered DAS on our exploratory trip to Singapore. Everyone we talked to there was extremely knowledgeable and passionate about helping children with learning differences and it was clear that they put the children's needs above all else.

They designed a programme specific to my son's needs that continually promotes self-confidence and awareness in an effort to bridge the gap between his level and that of a typical 10-year-old. The holistic approach in the curriculum provides him with real life skills in addition to the core competencies he would receive at a mainstream school.

We meet with the teachers, specialists and management at DAS every 10 weeks to review his goals and progress, and to discuss the curriculum and their approach. Carter really likes that all of his teachers and specialists are easy to approach and each one treats him like a regular students and not just someone with learning differences."

## **CONCLUSION**

The response rates from these surveys are not high, but there were very few negative responses or comments.

The high positive rates from students are encouraging. The tutors were also positive about communications and about their students. These surveys also helped to demonstrate to parents and students the value that DAS International placed on their views.

## **FUTURE DEVELOPMENTS IN THE PROGRAMME**

As the service adapts and changes, it is imperative that programme evaluation and quality control, as part of the programme management is included as a means of improving customer services both to our students, parents and Specialist Teachers. Even one dissatisfied parent is one too many and Specialist Tutoring needs to be more aware of such problems and react to them quickly. Our tutors also need to be prepared to be open about any concerns as well as giving positive feedback that can improve the overall Specialist Tutoring experience for our parents and students. We plan to follow up on the information provided from this survey.

The age range and skills offered by the Specialist Teachers needs to be continually increased to cater for the demands of the expanding age group. Further refinement in monitoring students' progress should be considered. This could also be timely in ongoing research into one to one Specialist Tutoring.

## ACKNOWLEDGEMENTS

I would to acknowledge the following colleagues who have contributed to the Specialist Tutoring Survey:

- ◆ Dr. Tim Bunn: Consulting Educational Psychologist and Senior Research Officer – Providing the initial discussion and subsequently in joint consultation, the Zero to 10 Survey Questions for Parents / Teachers / Students and helping with the data analysis
- ◆ Tam Shuyi: Specialist Teacher – Helping to collate the data and subsequent data analysis
- ◆ Specialist Teachers and Senior Educational Therapists: Brenda Horner, Malini, Shilpa, Raji, Sailatha, Samunn, Albel, Sue Lynn, Albert, Priscilla, Michelle, Anaberta, Geetha, Puva Kurusamy, Gladys Wee – Involving the students and parents and providing feedback.
- ◆ Head of Publicity and Publications: Deborah Hewes – Editing and creating the survey paper together into publishing the corporate Specialist Educational Programme image.
- ◆ Parents and Students of Specialist Tutoring whom we work for in supporting their families.

## ABOUT THE AUTHOR



### **ANABERTA OEHLERS-JAEN**

*Programme Director of SES Maths, Assessments and Specialist Tutoring and Head of DAS International*

*Ms Anaberta Oehlers-Jaen made a career switch from the Robinson's group of companies as Group Merchandise Controller to join the DAS in 2005 as an Educational Therapist. She holds a Masters Degree in Special Needs from NTU, BA (English Language and Literature) from SIM, a Postgraduate Certificate in Teaching and Learning in Higher Education from the London Metropolitan University as well as a Cambridge International Diploma for Teachers and Trainers (Dyslexia), along with Early Childhood Diplomas. She has Fellow status at RETA Registrar of Educational Therapists (Asia) and is also a Senior Educational Therapist.*

*For 4 years, she was the Preschool Manager of the DAS Preschool Service actively involved with children at risk of literacy delay. Anaberta who is also actively involved in research has also delivered at conferences in Singapore and Hong Kong. Her recent paper in 2014 was on the Program Evaluation for Specialist tutoring as well as actively, overseeing the development of the Maths Programme.*

*Her background of more than 15 years in the retail service line, has translated her into adopting a high level of professional service for both the students and parents through Specialist support and Assessments. She hopes to share the same philosophy which she has embraced at the DAS as her personal ethos in helping all children achieve in her current portfolio both in Singapore and the region.*

# SPECIALIST TUTORING

SES has a team of specialist tutors who have extensive experience in supporting students with specific learning differences and other learning needs.



Individualised tutoring is tailored based on the profile of the child, which is obtained from our multi-disciplinary team of educational psychologists, speech and language therapists, occupational therapist, and in consultation with parents and educators. Tutoring has an individualised problem solving approach where skills focused include:

- Literacy, Numeracy, Oracy, & Writing Skills
- Individual Curriculum support
- Study skills and Exam preparation
- Behaviour and Social support



**DYSLEXIA ASSOCIATION  
OF SINGAPORE**  
HELPING DYSLEXIC PEOPLE ACHIEVE

**Find out more at our website:  
[www.ses.org.sg](http://www.ses.org.sg)**

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# Specialised Educational Services

UNLOCKING POTENTIAL

## ENGLISH EXAM SKILLS PROGRAMME

The aim of the programme is to provide students with direct support to better equip them with the knowledge, skills, strategies and attitudes to cope with the demands of the English language syllabus in school.

### OUR APPROACH

The SES English Exam Skills Programme (EESP) provides an extension to what students have been taught in the MOE-aided Literacy Programme (MAP) and helps to put the skills learnt into practical use in their examinations. In class, students will be exposed to various language related knowledge and strategies to determine their needs in learning the language. Skills covered in a lesson will be reinforced in subsequent lessons to ensure reinforcement of concepts taught.

Components covered in the programme include:

1. Grammar
2. Comprehension
3. Editing
4. Synthesis & Transformation

# Specialised Educational Services

## English Exam Skills Programme

Shifa Binte Shekh Nahji<sup>1</sup> and Edmen Leong<sup>2</sup>

1. *English Exam Skills Programme Manager*

2. *Senior Educational Therapist*

*Dyslexia Association of Singapore*

### THE PSLE IN SINGAPORE

The Primary School Leaving Examination (PSLE) can be considered a rite of passage Singaporean children have to face when they approach the end of their primary school education. Singaporean children begin their formative education at the primary level when they enter the school and receive six years of compulsory education (Ministry of Education (MOE), 2014). The first 4 years of primary education focus on building a strong foundation in core subjects, namely English, Mathematics and Mother Tongue Language. After which, the students undergo *subject-based banding* (MOE 2014, p. 7) where students are offered a combination of Standard or Foundation subjects according to their performances and abilities. During the final 2 years of primary education, teachers would start preparing students for their PSLE - a national examination conducted at the end of primary education. Based on the two separate streams, teachers will be preparing students for the Standard or Foundation examination papers respectively.

There are several differences between the Standard and Foundation PSLE examination. The Standard paper being more challenging than the Foundation paper. While the purpose of this streaming exercise is to allow students to be placed in classes, and sit for examinations that are closer to their abilities, these streams also play a role in their entry to secondary schools.

“Considering how the PSLE results can play such a major role in determining a child’s educational pathway following his primary education, most parents have high expectations of their child’s performance in the national exam.”

There is a strong emphasis on doing well for the PSLE as the results obtained from the PSLE will be used for placement of students in various secondary schools and streams. Considering how the PSLE results can play such a major role in determining a child's educational pathway following his primary education, most parents have high expectations of their child's performance in the national exam.

Since the PSLE impacts the secondary school placement of Singaporean students nationally, it is recognised by teachers, parents, and students as an important high-stake examination.

### **ENGLISH EXAM SKILLS PROGRAMME**

A vast majority of students receiving phonics-based remediation at the Dyslexia Association of Singapore (DAS) are studying in Ministry of Education (MOE) schools. While it is very important that our students get continuous help with their development of literacy skills through the phonics-based instruction known as MOE-aided DAS Literacy Programme (MAP), there is a need to address the examination demands of our students. Bearing in mind the reading difficulties our students encounter, as well as the syllabus these students are required to grasp in their primary school, we have decided to develop the English Exam Skills Programme (EESP) to support primary students with dyslexia in their English Language examinations.

The EESP started in July 2013 as a pilot project, targeting both the Standard and Foundation syllabus for Primary 5 and 6 students. Today, the EESP is able to provide for students from Primary 3 to Primary 6. Students who are currently in MAP are eligible to enrol for the EESP.

The topics covered in our programme were carefully selected, taking into account the components of the PSLE English paper, that consists of 4 separate papers (Writing, Language Use and Comprehension, Listening Comprehension and Oral Communication). The project team has worked carefully on identifying the common areas of difficulties and sets of challenges usually faced by students with dyslexia in their PSLE English paper, and understand that our students show weaknesses especially in the writing, language use and comprehension components. While our main literacy programme, MAP, addresses the writing needs of our students, the EESP aims to work on the language use and comprehension component of the PSLE. As such, a carefully designed programme that references the established Orton-Gillingham (OG) principles (Gillingham & Stillman, 1997), was implemented to address the language use and comprehension needs (Paper 2 of the PSLE) of our students.



Within Paper 2 of the PSLE English examination, students are tested on several language skills ranging from the knowledge of grammar, vocabulary, comprehension, to the synthesis and transformation of written sentences.

Based on the analyses of the students' work and test papers collected, we noticed that students struggle with applying several language skills in various components in the PSLE paper. For example, while they have been explicitly taught spelling rules in the MAP, they are not able to relate these rules to the 'Editing' component in their exam papers. It is also noticeable how our students struggle particularly in the 'Synthesis and Transformation', and 'Comprehension' components in their exam paper. They were failing or scored close to zero for these components in their examinations. As such, we are committed to address these weaknesses by implementing the EESP as a third hour programme to strengthen our students' skills especially for the practical use in their English Language paper.

*“Based on the analyses of the students' work and test papers collected, we noticed that students struggle with applying several language skills in various components in the PSLE paper.”*

## ENTRY CRITERIA

The EESP is now open for DAS students from Primary 3 to Primary 6. Primary 3s and 4s will be placed into differentiated EESP classes based on their MAP banding since they have not been streamed in their primary schools. Primary 5 and 6 students however, will be placed into EESP classes based on how they are streamed in schools (Standard or Foundation). In order to fully benefit from the EESP, students are required to have some fluency in reading short passages. This is to ensure that the learning processes of skills taught will not be hindered by the students' difficulties in decoding.

## CURRICULUM DEVELOPMENT

Samples of the curriculum in the form of scopes and sequences developed by the project team are presented below. The improvements made to the programme are also continuously recorded as our team progresses through our pilot stage, and through the terms of teaching and planning. The first three terms (Term 3, 2013; Term 4, 2013; Term 1, 2014) of the development of our curriculum are presented below to account for the improvements in our curriculum over the terms.

### **SCOPE AND SEQUENCE FOR TERM 3 2013 (OUR FIRST TERM)**

In Term 3, 2013, the scope and sequence was executed over 10 weeks (a total of 10 hours). Based on feedback from Educational Therapists, the topics we intended to cover per lesson were over-planned. It was also observed that different classes have students with differing abilities despite being grouped in the same Standard or Foundation stream. The feedback received in Term 3 suggests that there was a need for a more narrowed and achievable yet effective scope and sequence in the following terms.

### **SCOPE AND SEQUENCE FOR TERM 4 2013 (AFTER REVISION)**

After considering the feedback received in Term 3, together with the progress of our students, the revised scope and sequence was designed in Term 4, 2013 to cater to the different abilities of students in our classes. As such, additional activities were planned as filler activities for students who are faster at completing tasks. The Educational Therapists who carried out the lessons found that the revised scope and sequence was more effective for the students in receiving and retaining the knowledge and skills taught. However, it was also observed that there were too many components were taught per session. The vast amount of concepts for students to grasp were not achievable.

\* There were no Foundation students during this semester

### **SCOPE AND SEQUENCE FOR TERM 1 2014 (AFTER REVISION)**

With more considerations brought out in Term 4, 2013, the project team modified the scope and sequence such that components are more spread out. The scope and sequence moved towards ensuring the quality of concepts students can grasp compared to the quantity of concepts taught.

### **EVALUATION OF STUDENTS' PROGRESS AND EFFECTIVENESS OF PROGRAMME**

To ensure quality of our programme, some information was gathered before and after the programme each term in the form of:

1. Pre-tests and Post-tests
2. Feedback from students, Educational Therapists, and parents.

<b>TERM 3 2013 STANDARD SCOPE AND SEQUENCE</b>			
<b>Lesson 1</b>	<b>PRE-TEST</b>		
<b>Lesson 2</b>	<b>Grammar</b> Subject-Verb Agreement	<b>Editing</b> -es/-s	<b>Comprehension 1</b> Basics and question analysis
<b>Lesson 3</b>	<b>Grammar</b> Tenses –Present perfect & Present Perfect continuous	<b>Editing</b> Review of Suffixing rules, Drop e, Doubling Rule, y to i	<b>Comprehension 2</b> Timed reading and main ideas
<b>Lesson 4</b>	<b>Grammar</b> Tenses – Past perfect & Past Perfect continuous	<b>Grammar</b> Pronouns 1	<b>Comprehension 3</b> Timed reading and main ideas
<b>Lesson 5</b>	<b>Synthesis</b> Direct & Indirect Speech: Changes to Punctuation, Changes to Verb Tenses	<b>Grammar</b> Pronouns 2  <b>Editing</b> Which, where etc.	<b>Comprehension 4</b> Short passage and main ideas <b>OR</b> Short passage and main ideas
<b>Lesson 6</b>	<b>Synthesis</b> Direct & Indirect Speech: Changes to Pronouns & determiners, Changes to Time	<b>Editing</b> Missing syllables / r-controlled vowels	<b>Comprehension 5</b> Short passage and inferential questions
<b>Lesson 7</b>	<b>Synthesis</b> Direct & Indirect Speech: Changes to time references, Position References	<b>Editing</b> /j/	<b>Comprehension 6</b> Short passage and inferential questions
<b>Lesson 8</b>	<b>Synthesis</b> Condition: unless	<b>Grammar/Editing</b> Irregular past tense	<b>Comprehension 7</b> Short passage and inferential answers
<b>Lesson 9</b>	<b>Synthesis</b> Direct & Indirect Speech: Review of Weeks 7- 9 work	<b>Editing</b> homonyms	<b>Comprehension 8</b> Timed reading and independent application of skills
<b>Lesson 10</b>	<b>POST-TEST</b>		

<b>TERM 3 2013 FOUNDATION SCOPE AND SEQUENCE</b>			
<b>Lesson 1</b>	<b>PRE-TEST</b>		
<b>Lesson 2</b>	<b>Grammar</b> Prepositions	<b>Editing</b> -es/-s	<b>Comprehension 1</b> Basics and question analysis
<b>Lesson 3</b>	<b>Grammar</b> Pronouns 1	<b>Editing</b> Missing syllables / r-controlled vowels	<b>Comprehension 2</b> Timed reading and main ideas
<b>Lesson 4</b>	<b>Grammar</b> Pronouns 2	<b>Synthesis</b> Number: and, both...and	<b>Comprehension 3</b> Timed reading and main ideas
<b>Lesson 5</b>	<b>Synthesis</b> Condition: if	<b>Editing</b> Review of Suffixing rules	<b>Comprehensions 4</b> Short passage and main ideas
<b>Lesson 6</b>	<b>Synthesis</b> Places and Things: where, which, that	<b>Editing</b> Which, where, etc.	<b>Comprehension 5</b> Short passage and inferential questions
<b>Lesson 7</b>	<b>Grammar</b> Tenses – Present & Present continuous	<b>Synthesis</b> Reason : since	<b>Comprehension 6</b> Short passage and inferential questions
<b>Lesson 8</b>	<b>Grammar</b> Tenses –Past & Past continuous <b>Editing</b> Irregular past tense	<b>Editing</b> /j/	<b>Comprehension 7</b> Short passage and inferential questions
<b>Lesson 9</b>	<b>Grammar</b> Tenses –Present perfect & Present Perfect continuous	<b>Synthesis</b> People: who, whom	<b>Comprehension 8</b> Timed reading and independent application of skills
<b>Lesson 10</b>	<b>POST-TEST</b>		

<b>TERM 4 2013 STANDARD SCOPE AND SEQUENCE</b>		
<b>Week 1</b>	<b>PRE-TEST</b>	<b>Grammar:</b> Tenses 1 Simple present/past
<b>Week 2</b>	<b>Comprehension:</b> 5W+1H, keywords and annotations	
<b>Week 3</b>	<b>Editing:</b> Syllable types	<b>Grammar:</b> Tenses 2 Present/past continuous
<b>Week 4</b>	<b>Comprehension:</b> Sharing of annotated paragraphs 1 (Pair)	<b>Grammar:</b> Tenses 3 Present/past perfect
<b>Week 5</b>	<b>Synthesis &amp; Transformation:</b> Changes to punctuation and verb tenses (*Pre req: grammar tenses 1 – 3)	
<b>Week 6</b>	<b>Synthesis &amp; Transformation:</b> Changes to pronouns and determiners	<b>Editing:</b> Words with y as a vowel
<b>Week 7</b>	<b>Synthesis &amp; Transformation:</b> Time	<b>Comprehension:</b> Sharing of annotated paragraphs 2 (Pair)
<b>Week 8</b>	<b>Synthesis &amp; Transformation:</b> Changes to references, positions references	<b>Editing:</b> Words with c, s, ck, k
<b>Week 9</b>	<b>Comprehension:</b> Sharing of annotated paragraphs (Individual) (*Pre req: Completed all other comprehension components) <b>OR</b> <b>Synthesis &amp; Transformation:</b> Summary / Review (*Pre req: Completed all other S & T components)	
<b>Week 10</b>	<b>POST-TEST</b>	<b>Review of Term 4 lessons conducted</b>
<b>Additional Activities</b>	<b>Grammar:</b> Countable & uncountable nouns Subject verb agreement	<b>Editing:</b> Homonyms / Homophones Grammar (*Pre req: grammar tenses 1 – 3)

<b>TERM 1 2014 STANDARD SCOPE AND SEQUENCE</b>		
<b>Week 1</b>	<b>PRE-TEST</b>	<b>Study Skills:</b> Overview of Term 1 topics + Goal setting
<b>Week 2</b>	<b>Editing 1:</b> di and de	<b>Synthesis &amp; Transformation 1:</b> Sentence Order
<b>Week 3</b>	<b>Comprehension 1:</b> Text annotation and Referring Words	
<b>Week 4</b>	<b>Synthesis &amp; Transformation 2:</b> Introducing active and passive voice	<b>Grammar 1:</b> Past Participle
<b>Week 5</b>	<b>Comprehension 2:</b> Text Annotation and review referring words	<b>Editing 2:</b> Vowel team /e/ and /i/
<b>Week 6</b>	<b>Grammar 2:</b> Singular and Plural Possessives	<b>Synthesis &amp; Transformation 3 :</b> Transforming active to passive voice
<b>Week 7</b>	<b>Comprehension 3:</b> Review referring words and analysing question types	
<b>Week 8</b>	<b>Grammar 3:</b> Possessive Adjectives vs Contractions	<b>Synthesis &amp; Transformation 4:</b> Transforming passive to active voice
<b>Week 9</b>	<b>Comprehension 4:</b> Review analysing question types	<b>Editing 3:</b> Revision of /e/ and /i/ sounds <i>(optional)</i>
<b>Week 10</b>	<b>POST-TEST</b>	<b>Review of Term 4 lessons conducted</b>
<b>Additional Activities</b>	<b>Synthesis &amp; Transformation:</b> Review 1	<b>Grammar:</b> Possessive Adjectives vs Possessive Pronouns & Review

<b>TERM 1 2014 FOUNDATION SCOPE AND SEQUENCE</b>		
<b>Week 1</b>	<b>PRE-TEST</b>	<b>Study Skills:</b> Overview of Term 1 topics + Goal setting
<b>Week 2</b>	<b>Grammar 1:</b> Singular and Plural Possessives	<b>Synthesis &amp; Transformation 1:</b> Contrast 1 (although, even though)
<b>Week 3</b>	<b>Comprehension 1:</b> Text annotation and Referring Words	
<b>Week 4</b>	<b>Synthesis &amp; Transformation 2:</b> Contrast 2 (despite)	<b>Editing 1:</b> di and de
<b>Week 5</b>	<b>Comprehension 2:</b> Text Types - Narrative & Informational - Identify key ideas, supporting details and represent them using graphic organisers	
<b>Week 6</b>	<b>Grammar 2:</b> Possessive Adjectives vs Contractions	<b>Synthesis &amp; Transformation 3:</b> Contrast 3 (while)
<b>Week 7</b>	<b>Comprehension 3:</b> Question Words - 5W1H (Who, When, Where, What, Why, How) Identify 'Thin' & 'Thick' Questions	<b>Editing 2:</b> Vowel team /e/ and /i/
<b>Week 8</b>	<b>Grammar 3:</b> Possessive Adjectives vs Possessive Pronouns & Review	<b>Synthesis &amp; Transformation 4:</b> Review 2 (Contrast 1-3)
<b>Week 9</b>	<b>Comprehension 4:</b> Review	<b>Editing 3:</b> Revision of /e/ and /i/ sounds <i>(optional)</i>
<b>Week 10</b>	<b>POST-TEST</b>	<b>Review of Term 4 lessons conducted</b>
<b>Additional Activities</b>	<b>Synthesis &amp; Transformation:</b> Review 1	<b>Grammar:</b> Past Participle

## PROGRAMME EVALUATION (PRE-TESTS AND POST-TESTS)

The pre-tests and post-tests had been carefully designed to inform Educational Therapists of their students' progress for the term. These testing items were aligned to the knowledge and skills that were covered during the term. These tests were conducted in Week 1 and Week 10 of each term. We were very encouraged upon tabulation of results of our pre and post-tests. During our first term (Term 3, 2013), more than 70% of our students had an overall improvement of all components taught. These scores have been improving over the terms as reflected in the table below. By term 1, 2014, **ALL** of our students scored an equal or better score in their post-tests as compared to their pre tests. These consistent improvements in test scores are clear indications of the progress of our students after attending our programme every term.

### EESP OVERALL PROGRESS

	Term 3, 2013	Term 4, 2013	Term 1, 2014
Standard	<b>78%</b> overall improvement	<b>85%</b> overall improvement	<b>89.5%</b> overall improvement
Foundation	<b>71%</b> overall improvement	(No foundation enrolment)	<b>78%</b> overall improvement

## PROGRAMME EVALUATION (FEEDBACK)

The EESP team believes in tracking the progress of our students' needs because it points us in the direction of our future curriculum development. We aim to continually assess, provide specific updates of learning needs identified and enhance the resources and materials for the students accordingly. Some positive examples of feedback from various Educational Therapists can be reflected in the success stories below.



## SUCCESS STORIES FROM EDUCATIONAL THERAPISTS



**Siti Halimah Binte Mohamed Yahaya**  
**Senior Educational Therapist**

"My Primary 6 student who attended the EESP in term 3 has improved tremendously in the 'Synthesis and Transformation' component. He used to score zero marks for that component but has since scored a three out of five for his prelims. I would strongly recommend this programme to other students as well!"



**Shifa Binte Shekh Nahji, Senior Educational Therapist**

"When Danny\* first joined the programme, he will avoid Comprehension tasks. He refuses to attempt any questions let alone reading the passage. For his pre-test, he left blanks for the 'Comprehension' section. Danny was taught some techniques in tackling the 'Comprehension' section during the 10 weeks lesson. For his post-test, Danny is more motivated and attempted all of the comprehension questions. This was indeed an achievement."



**Rachel Tan, Senior Educational Therapist**

"My Primary 6 student, Sally\*, has shown a marked improvement in terms of her scores in her examinations. She previously failed her English examination and had a score of 44 marks. For her preliminary examinations, she finally managed to pass with a score of 53 marks after a term of Exams Skills classes."



**Siti Asjamiah, Educational Therapist**

"One of my MAP students, Salina\*, made huge improvements in her sentence structure. She demonstrates greater awareness of tense consistency and is able to apply the use of connecting words more accurately in her sentences. She is also able to tackle open-ended comprehension questions more accurately and confidently."



**Edmen Leong, Senior Educational Therapist**

“One of my students understood basic grammar concepts however he still got most of his grammar Multiple Choice Questions (MCQ) questions wrong. After completing our grammar components he was able to identify and highlight key words in the questions that gave him clues to answer questions accurately. He subsequently got most of his grammar activities right. When revisiting work he has done in the past, he got really excited when he was able to tell where and why he got his questions wrong.”



**Tuty Elfira, Senior Educational Therapist**

“I have observed that most of my students on the programme have shown marked improvement in terms of their ability to identify keywords when tackling ‘Synthesis and Transformation’ and ‘Comprehension’ questions. They are more aware of the need to change tenses and proofread their own work. I believe the explicit instructions given especially for ‘Synthesis’ have helped them to structure and phrase their sentences more

accurately.”

**SUCCESS STORIES FROM STUDENTS**

“I am more confident to do ‘Direct and Indirect speech’ and also ‘Comprehension’. I wish we can have Exam Skills class everyday!” – A Primary 5 student.

“I finally improve my ‘Editing’ section of my prelims paper! I want to learn more.” – A Primary 6 Student.

**SUCCESS STORIES FROM PARENTS**

“I am impressed that Jack's\* English Exam has improved from a low grade C during prelims to achieving a B in PSLE. His comprehension has shown great improvement. I hope he will continue to apply the skills throughout his learning journey. Thank you DAS! ”

“I am very happy that Ken\* has passed his English for PSLE. He has never passed his English before.”

"Thank you for your coaching. John\* has shown significant improvement that he will be receiving his Edusave Good Progress award. We are very glad that he has applied his skills on his exam, especially English."

*\*Names changed to protect the confidentiality of students.*

## **CONCLUSION**

It has been a meaningful and enriching learning experience for the EESP team both in developing, executing and evaluating the resources and students' progress during these three terms. The team will continue to adopt the following practices as we continue to develop the programme:

1. Weekly feedback to be given and discussed with regards to resources developed.
2. Conduct pre-tests and post-tests, gather feedback from Educational Therapists, students and parents to maintain the quality of our programme.
3. Continue developing relevant topics in line with the new mainstream syllabus for English Language.

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Rachel Tan, Tuty Elfira, Siti Asjamiah, Siti Halimah, Andy Wang, Nur Aisyah Hashim, Emilyn See.

## ABOUT THE AUTHORS



### **SHIFA BINTE SHEKH NAHJI**

*English Exam Skills Programme Manager and Senior Educational Therapist*

*Shifa's passion lies strongly in the special needs field. She has over 9 years of experience working and interacting with students with special needs - in MOE mainstream schools, Special Schools as well as the Dyslexia Association of Singapore (DAS). In addition to a Bachelor of Arts (Hons) in English and Psychology, her other professional qualifications include a Diploma in Special Education from the National Institute of Education (Singapore), a Diploma in Dyslexia Studies from Dyslexia Association of Singapore (DAS) and a Post-Graduate Certificate (Merit) in Specific Learning Differences from London Metropolitan University. She is also trained in the Orton-Gillingham approach at DAS. As a DAS Senior Educational Therapist, she is currently developing the DAS English Exam Skills Programme in her capacity as Programme Manager since 2012.*



### **EDMEN LEONG**

*Senior Educational Therapist*

*Edmen joined DAS as an Educational Therapist in 2010 after completing his degree in Psychology and Linguistics in the University of Western Australia. He has since completed his Post-Graduate Certificate in Specific Learning Differences with London Metropolitan University. He is currently pursuing his Masters of Arts in Applied Linguistics with the National Institute of Education Singapore. He is also an Associate Fellow with the Register of Educational Therapists (Asia).*

*In addition to his role in teaching students in the MOE-aided Literacy Programme and the English Exam Skills Programme in DAS, Edmen actively contributes to the Exam Skills team as a core member by developing the curriculum and resources used in the programme. His interest in research also benefited the team especially in their programme evaluation and adaptation. Edmen's strong interest for languages and research, and love for children fuels his passion in contributing in the DAS, as well as in the field of language and special education.*

# ENGLISH EXAM SKILLS PROGRAMME

The aim of the SES English Exam Skills Programme (EESP) is to provide students with direct support to better equip them with the knowledge, skills, strategies and attitudes to cope with the demands of the English language syllabus in school.



## Our Approach

The English Exam Skills Programme (EESP) provides an extension to the MOE-aided DAS Literacy Programme (MAP). Students will be exposed to various language components and will be equipped with strategies to cope with their English examinations.

The components covered in our programme include:

- Grammar
- Editing
- Synthesis & Transformation
- Comprehension

Recommended for students with difficulties in various English exam components such as Synthesis & Transformation and Comprehension.

The curriculum is carefully designed and frequently evaluated by the EESP team to ensure that it caters to the students' needs and school curriculum demands. Lessons are in line with the MOE English Language Syllabus, and in reference to the Orton-Gillingham principles.



## Entry Criteria

Application is open to:

- Primary 3 and 4 students
- Primary 5 and 6 Standard and Foundation students
- Students should have reasonable reading fluency



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# Specialised Educational Services

UNLOCKING POTENTIAL

## SPEECH AND DRAMA ARTS

The aim of the programme is to develop literacy, communication and presentation skills and boost the self-esteem of learners with dyslexia. Drama can be that powerful tool to help increase the self-esteem and confidence of students with learning differences.

### OUR APPROACH

Using drama activities, students get opportunities to enhance their persuasiveness and confidence in communication. Students are given the freedom to express themselves freely, using their imagination and creativity. Other vital communication skills that are fostered in the class setting includes listening and concentration. Activities ranging from role-playing to stage performances require students to understand the fundamentals of stage directions, character dialogues, music and light cues. To stage a production necessitates the child to understand and interpret the script, process the script in-depth. This allows them to work on the working memory and processing speed.

Class sizes are kept to a maximum of 10 students per class and are conducted once a week, 1.5 hours per session.

The SDA programme consists of 4 different modules catering to 2 age groups

- ◆ Creative Drama Programme (7 - 8 years old)
- ◆ Drama for Performance Programme (9 - 12 years old)

At the end of each module, parents will be invited to watch the progress of the children. This will also help in giving our students the experience and exposure of performance making. A certificate of participation and progress report will be given to students upon completion of each module.

# Specialised Educational Services

## Speech and Drama Arts

**Pushpaa Arumugam**

*Assistant Director, SES Enrichment Programmes*

*Dyslexia Association of Singapore*

### **INTRODUCTION**

The Dyslexia Association of Singapore (DAS) recognise Speech and Drama Arts as an effective means of developing our students' talents and self-confidence, which in turn can lead to a more positive self-concept for our students. Our goal is to provide an outlet specifically for DAS students to express their inner feelings and emotions and to demonstrate their talents in a fun and artistic way.

We recognise that Drama is a powerful tool for self-development and we would like to give dyslexic students the opportunity to increase their self-esteem through our structured drama classes focusing on language development, communication skills and personal experiences.

Apart from building our students literacy abilities in reading, spelling and writing, enrichment programmes, such as Speech and Drama Arts, are beneficial for students with dyslexia.

### **THE PROGRAMME AND ITS OBJECTIVES**

Understanding the background and characteristics of our dyslexic students has allowed the Speech and Drama Arts team to develop a programme that would enhance the students' learning journey and to discover their own potential.

#### **Identifying their inner strengths and hidden talents to boost self-esteem**

*"Undermining a child by destroying their self esteem will have a significant effect on their potential to learn and their success in life. Dyslexic children need to feel supported in order to succeed." (Eadon, 2005)*

Dyslexia does not only affect the academic component of learning – literacy, but also emotional well-being of a student (Eadon, 2005; Thomson, 2009). Thomson (2009), asserted that if children with dyslexia could overcome the "I am dyslexic and I can't do it" attitude, then it would increase their self esteem and determination to succeed. Therefore, Drama is a powerful tool for building self-confidence, which in turn can lead to a more positive self-concept for our students (Eadon, 2005; Winston, 2012).

### **Develop effective communication and presentation skills**

The majority of our students have difficulties in expressing or communicating their thoughts. Our objective is to enhance persuasive and confident communication with our students with dyslexia. Some of the activities in our drama classes will help our students to enunciate words clearly and effectively to convey their intended message. For example, activities such as role-play provides stimulation in learning conversational interactions. Such activities will be a platform for learners to express themselves freely with the use of the language while incorporating imaginative skills. In this way, our students would be able to make human sense of communicative acts, and shows them how they can present themselves to support the words they use (Winston, 2012).

### **Developing Literacy Skills**

The Dyslexia Association of Singapore (DAS) recognise Speech and Drama Arts as an effective pedagogy to develop our students' language skills such as reading, writing, speaking and listening by creating a suitable context.

Through drama, language learning becomes an interactive and participatory process that engages learners emotionally and playfully (Winston, 2012). According to Winston (2012), Drama is a multimodal form of pedagogy that engages students' interest at different level of entry. A multimodal form which combines visual, aural, verbal and kinaesthetic language allows students to retain a particular learning experience firmly in their minds (Chang, 2012). Also, the 'malleability' of the learning process enable teachers to swiftly respond and adapt to any student's comments, questions or ideas (Chang, 2012).

The presence of other co-occurring difficulties in children with dyslexia such as dyspraxia, dyscalculia, attention deficit hyperactivity disorder (ADHD), social, emotional and behavioural disorder (SEBD) and specific language difficulties worsen the

*“... our goal is to provide an outlet for our students with dyslexia to use language in a fun, creative and engaging setting.”*



already complex process of learning language (Everatt, Week and Brooks, 2008; Thomson, 2009). Chang (2012), suggests that the playful nature of Drama is advantageous in preparing students to express their thoughts and learn to take risks.

Drama, being a multimodal pedagogy, uses props, body language, facial expressions, sounds and images along with words to convey meaning (Palechourou and Winston, 2012). Within the drama experience, our students are given the opportunity to draw and make meaning not only from their spoken language but also the physical context combined with visual and aural cues. Hence, our goal is to provide an outlet for our students with dyslexia to use language in a fun, creative and engaging setting.

### **Enhancing Students' Listening and Concentration Skills**

Ranging from classroom lessons such as role plays to stage performances, students are required to understand the fundamentals of stage directions, character dialogues, music and light cues. Hence, listening and concentration skills are vital for an actor. Thus, our drama programme will, with no doubt help such dyslexic students.

### **Drama for Personal Growth**

Putting language into action will give the students an opportunity to become physically and linguistically part of the story by assuming roles of the characters and imagining they are facing the similar problems (Palechorou and Winston, 2012). Other than building rapport among students and teachers through activities, we create opportunities for students to:

- ◆ discover their strengths and weaknesses,
- ◆ re-consider their thoughts, attitudes and their feelings in the light of shared experience with their peers.
- ◆ learn to work together, to cooperate, to contribute, and to listen to and accept the viewpoints and contributions of others.
- ◆ to be team-oriented

### **APPROACH TO TEACHING**

This specialised programme is planned such that students participate in both guided and self-directed activities that will engage them kinaesthetically and cognitively. The activities facilitated during lessons encourage affective aspects of

reading and literacy while offering multiple opportunities for meaningful communication, social interaction, discussion and feedback.

The curriculum and lesson deliveries are influenced by Multiple Intelligence (MI) Theory that has a profound impact on thinking and practice in drama education and the Orton-Gillingham (OG) approach which is practiced by our Educational Therapists in ELA teaching. The SDA programme combines both approaches. Table 1 below shows how we use the MI theory in our speech and drama classroom activities.

### **MULTIPLE INTELLIGENCE (MI) THEORY**

According to Howard Garner's theory of Multiple Intelligences every learner possesses many intelligences despite the learner being more responsive to visual cues or kinaesthetic approaches (Baldwin and Fleming, 2003). Table 1 provides an overview on how Drama, as a teaching and learning medium, utilises and develops multiple intelligences in our students.

*In ideal multiple intelligences instruction, rich experiences and collaboration provide a context for students to become aware of their own intelligence profiles, to develop self-regulation, and to participate more actively in their own learning. (Moran, Kornhaber & Gardner, 2006)*

Gardner's Theory of Multiple Intelligences provides a theoretical foundation for recognising the different abilities and talents of students (Gardner, 2003; Pearson, 2001). This theory acknowledges that while all students may not be verbally or mathematically gifted, children may have an expertise in other areas, such as music, spatial relations, or interpersonal knowledge (Moran et al., 2006; Baldwin and Fleming, 2003). Approaching and assessing learning in this manner allows a wider range of students to successfully participate in classroom learning.

Table 1 Multiple Intelligence (MI) Theory

<b>INTELLIGENCE TYPE: VERBAL-LINGUISTIC</b> <i>Ability to understand and use language both written and spoken. A sensitivity to the meaning of words and the different functions of language. (writers, poets, orators, lawyers)</i>		
<b>Learns Best Through</b>	<b>Type of drama activity</b>	<b>Example</b>
Reading, Listening, And Seeing Words, Speaking, Writing, Discussing and Debating	Thought-tracking and monologue, extended dialogue, script-writing, explaining ideas to the group, using different language registers	Creating stories, writing scripts. Vetting and analysing a script. Acting: Speaking as the character using various registers.
<b>INTELLIGENCE TYPE: LOGICAL-MATHEMATICAL</b> <i>Ability to use inductive and deductive thinking, numbers, and abstract patterns. Often referred to as scientific thinking-comparing, contrasting, and synthesising information (scientist, mathematician)</i>		
<b>Learns Best Through</b>	<b>Type of drama activity</b>	<b>Example</b>
Working With Patterns and Relationships, Classifying, Categorising, Working with the Abstract	Thinking and planning the use of space, sequencing of scenes, implications of the actions of characters, dividing into groups for working, using and planning lighting for scenes	Analysing a script for creating stage setting. Problem solving: For example, How many people will be needed for this scene? How can we show the two families when they get the bad news? What is likely to happen after the boy returns home late? How can we organise the lighting for these three scenes? for these three scenes?
<b>INTELLIGENCE TYPE: MUSICAL</b> <i>Ability to discern meaning in or to communicate with tonal patterns, sounds, rhythms, and beats (musicians, composers)</i>		
<b>Learns Best Through</b>	<b>Type of drama activity</b>	<b>Example</b>
Picking up sounds, Rhythm, Melody, Singing, Listening to music	Responding to music to create atmosphere for a scene, keeping up a tempo/rhythm in synchronised work, awareness of vocal pitch and tone	Working on a sequence of movements to keep time with the music/rhythm for a synchronised sequence. Recognising (and using) a variety of vocal tones, pitches, and pace for a particular character. Can be well verse in creating / directing a musical theatre piece or acting in it.

<p><b>INTELLIGENCE TYPE: INTRAPERSONAL</b>  <i>Ability to self-reflect and have an awareness of one's own internal state of being. Ability to define one's own feelings as a means of understanding and guiding one's behaviour. (psychologist, motivational speaker, counsellor)</i></p>		
<p><b>Learns Best Through</b></p>	<p><b>Type of drama activity</b></p>	<p><b>Example</b></p>
<p>Doing Self-Paced Projects, Reflecting, Understanding Strengths and Weaknesses and Setting Goals</p>	<p>In groups being able to point out how they respond to a stimulus prior to working with it, as individuals expressing the inner motivations of themselves in relation to a character</p>	<p>Responding to the reflective aspects of a session in being able to apply a feeling or situation to themselves eg Who has felt like this character at any time in their life?                      During planning - 'I think the character might be feeling... because I would feel....'</p>
<p><b>INTELLIGENCE TYPE: INTERPERSONAL</b>  <i>Ability to make distinctions among other individuals in regard to their moods, motivations, and temperaments; and to communicate with others. (politicians, leaders, counsellors, coaches, directors)</i></p>		
<p><b>Learns Best Through</b></p>	<p><b>Type of drama activity</b></p>	<p><b>Example</b></p>
<p>Sharing, Comparing, Relating, Interviewing, Cooperating, Organising and Leading</p>	<p>Recognising and responding to the situations and stimulus of drama through awareness of moods, atmospheres, feelings, and with an awareness of facial expression, body language in both the actuality of the group and in the drama process</p>	<p>Show how this character would enter the situation if s/he knows that s/he will be accused of stealing the money.                      Seeing the signals of the character when asked - How did you know that the character was scared even though he was smiling?                      In group planning - We need to show the woman flirting with the man without other people knowing.</p>
<p><b>INTELLIGENCE TYPE: BODILY –KINAESTHETIC - SPATIAL</b>  <i>Ability to use and understand physical movement. A mastery over body movement or the ability to manipulate objects with finesse. (athletes, instrumentalists, dancers, surgeons)</i></p>		
<p><b>Learns Best Through</b></p>	<p><b>Type of drama activity</b></p>	<p><b>Example</b></p>
<p>Touching, Moving, Processing Knowledge Through Bodily Sensations, Dancing, Acting and Using Tools</p>	<p>Physical abilities - holding postures, creating a variety of gestures, balancing, moving in a variety of sequences and styles, using mime.                      Using space, creating groupings, diagrams of set designs, use of colour for costumes and sets, use of lighting effects for the space, using a variety of levels/rostra blocks</p>	<p>Still-image work holding a posture/gesture,                      Walking and moving in the manner of an old person answering the door.                        Draw the set from above showing the exits and where the chairs need to be placed for the character to remain important to the audience.                      Decide on which elements of the set need to be in the spotlight to show the character's monologue.</p>

## ORTON-GILLINGHAM APPROACH

Other than the MI Theory, SDA programme incorporated the Orton-Gillingham (OG) approach in our teaching, similar to MOE-Aided DAS Literacy Programme (MAP) as we are catering to same target group, that is children with dyslexia.

The OG approach consists of these six principles :

- ◆ **Language based** - exposure to different texts in order to enhance students' appreciation of the English language through Drama
- ◆ **Cognitive** - the activities are crafted to engage their cognition eg. improvisation, role play, creative story writing
- ◆ **Structured, sequential and cumulative** - includes direct and explicit instruction and has different range of difficulty level for all activities
- ◆ **Simultaneous multi-sensory** - presentation of skills through multiple senses eg. using visual and aural cues
- ◆ **Diagnostic prescriptive** - Drama Instructors regularly assess students' abilities
- ◆ **Emotionally sound** - Drama Instructors to adapt activities according to the class dynamics.

## HOW DO WE ENSURE AND EVALUATE THE QUALITY OF OUR SPEECH AND DRAMA ARTS PROGRAMME?

- 1) Placement of Students
- 2) Quality of our Curriculum / Lesson Plans
- 3) Teaching Quality of our Drama Instructors
- 4) Pre and Post Emotional Literacy Assessment based on Southampton Emotional Literacy Scale
- 5) Evaluating our Students after each drama component is covered
- 6) Parents' Feedback
- 7) Students' Feedback

### 1. PLACEMENT OF STUDENTS PRIOR TO THE START OF THE CLASS

This is to help the drama instructor in class management know the needs of the group and use the appropriate teaching methodologies.

Students from primary 1 to primary 6 are placed in our programme. Lower primary students and upper primary students are placed separately. There will be a maximum of 8 students in a class.

The Educational Therapists teaching the ELA programme, are required to complete the following information so that the drama instructors have prior knowledge about the students.

Information Required		Input by Educational Therapists
1	Banding (Based on the last CBA testing)	
2	How would you grade the student's speed of learning? For example, ability to read ORT books? (Fast, Mid, Slow)	
3	What type of learner do you think he/she is? (Visual, Audio, Kinesthetic, Tactile)	
4	Is the student on any status? (STAR Plus, IEP)	
5	Any other comments about the student and his / her learning needs?	

## 2. CURRICULUM

The SDA programme is modular and caters to students aged between seven and 12. During each term, students learn about specific Drama strategies such as Role-Play, Improvisation, Storytelling, Poetry Appreciation, Script writing and Story writing. Students also learn about Play building and script reading.

A Certificate of Participation will be presented to all students upon completion of each module.

The Speech and Drama Arts curriculum can be found in Table 2.

Table 2. SES - SPEECH AND DRAMA ARTS (SDA) CURRICULUM

	FOR AGES 7 - 8 YEARS OLD	FOR AGES 9 - 12 YEARS OLD
TERM 1	<b>MODULE 1:</b> Exploring Voice & Emotions through Choral Reading	<b>MODULE 1:</b> Exploring Voice & Emotions through Readers' Theatre
	What is Drama? & Pictures Alive! (Tableaux)	What is Drama? - Image Theatre
	Exploring Voice Production - PPPPIT	Exploring Breathing and Voice Techniques
	Emotions (Vocal & Physical Delivery)	Voice & Acting: Using Poems
	Introduction to Choral Reading (the 4 styles)	Expressing Emotions
	Expressive Voice Through Poetry and Choral Reading	Introduction to Readers Theatre
	<i>Short Performance for Parents:</i> Choral Recitation	<i>Short Performance for Parents:</i> Readers Theatre
TERM 2	<b>MODULE 2:</b> Dramatic Storytelling	<b>MODULE 2:</b> Improvisation
	Expressing Emotions through Voice	Object Improvisation
	Whose Story? (Skills: Verbal Expression)	Character Improvisation
	Story Web (Skills: Speaking & Listening)	Portraying Characters (based on the script given)
	Tell it Again (Skills: Speaking & Listening)	
	<i>Short Performance for parents:</i> Dramatising Stories	<i>Final Performance for parents:</i> Improvised Drama
TERM 3	<b>MODULE 3:</b> Role Play and Improvisation	<b>MODULE 3:</b> Creative Poetry, Story and Script Writing
	Role Play: based on Stimuli	Poetry Writing
	Role Play: Theme based	Story Writing
	Role Play: Characterisation	Script Writing
	<i>Short Performance for parents:</i> Short Drama	<i>No Performance</i>
TERM 4	<b>MODULE 4:</b> Playbuilding Towards Performance	<b>MODULE 4:</b> Playbuilding Towards Performance
	Introduction to play scripts	Playbuilding Skills: Script Analysis and Characterisation
	Exploring Characters through Voice & Emotions	Playbuilding Skills: Stage Directions
	Introduction to Poetry Theatre	Playbuilding Skills: Exploring Props and Costume Ideas
	<i>Final Performance for parents:</i> Short Drama incorporating all skills learnt in the 4 modules	<i>Final Performance for parents:</i> Short Drama incorporating all skills learnt in the 4 modules

### 3. QUALITY TEACHING OF OUR DRAMA INSTRUCTORS:

The Programme Director completes a class observation and provides feedback and mentorship.

#### Training Path for New Drama Instructors

Objective of the training:

1. To equip them with drama and theatre skills.
2. To learn the nuances of drama pedagogy
3. To be able to deliver DAS's specialised drama curriculum

Our training programme runs over a span of 10 weeks. Trainees will be equipped with the essential drama skills, theoretical knowledge, lesson planning and drama pedagogy.

#### How are the trainees assessed?

- Lesson Plan:** Create a lesson plan on any theme, incorporating Drama as a tool. The lesson plan must be an hour long and must include a brief/rationale of at least 300-500 words.
- Practicum:** Present part of the lesson plan, that is about 25 minutes. The lesson will be recorded for analysis and reflection.
- Reflective Essay:** A self-analysis of the trainee's lesson plan and style of delivery. To discuss his / her sense of self-efficacy and the strengths and weaknesses of his / her lesson. To be written in not less than 500-700 words.
- Journal:** To write down the trainees thoughts and what he/she had learnt in a journal after every lesson. The journal must be submitted along with his/her Reflective Essay.



## **STUDENTS EVALUATION PROCESS**

During the evaluation process, these are some of the questions that the SDA Drama Instructors would have to consider:

What are our objectives for the programme?

- ◆ Enhance students' concentration skill
- ◆ Develop and enhance imagination and creativity
- ◆ Help identify students' inner strengths and inner talents
- ◆ Develop effective communication and presentation skills
- ◆ Increase proficiency in English language
- ◆ Increase confidence and build self-esteem

### **Student's Progress Report**

Students are evaluated on the tenth session based on the skills taught in each module.

- ◆ Using rubrics students are evaluated for skills taught by the tenth lesson
- ◆ Observations by teachers during class for lessons one to nine and the final performance.

Besides this, the SDA team aims to promote Emotional Literacy through the Speech and Drama Arts Programme, Pre and Post evaluations are also conducted based on the Southampton Emotional Literacy Scale.

Emotional Literacy is an essential life skill and it improves social-emotional learning competencies that support academic performance.

Table 3: Sample of Rubrics used to evaluate our students

<b>DAS SPEECH &amp; DRAMA ARTS RUBRICS FOR PANTOMIME</b>				
	<b>POOR 1</b>	<b>FAIR 2</b>	<b>GOOD 3</b>	<b>EXCELLENT 4</b>
<b>Movement/ Blocking</b>	There is awkward, movement. Not well thought out.	There is movement but it is inconsistent with the scene or character, or several times the movement is lacking.	Movement is smooth, adds to the depth of character, and is interesting to the audience.	Movement is very innovative, adds greatly to the depth of character, and is interesting to the audience.
<b>Character- isation</b>	Performer did not have a distinct character and broke character several times.	Performer had a fairly distinct character and tried to stay in character through most of the performance.	Performer had a distinct character and stayed in character through <b>almost</b> all of the performance.	Performer had a distinct character and stayed in character throughout the performance.
<b>Emotional Commitment</b>	A weak character, one dimensional. Very little focus, very little emotional levels and variety.	A good character, with emotional levels. Very few spots were lacking focus.	A good character, some emotional levels. A couple of spots were lacking focus.	A well developed character, with a variety of emotional levels and good realism.
<b>Preparedness</b>	Student sometimes appears uncomfortable or awkward and it is sometimes hard to see the environment or understand the story line.	Student is comfortable with the piece most of the time but there are times when body and facial expression are inconsistent with the storyline or the environment.	Student is comfortable with the piece and had good use body and mask to propel the story and give a sense of the environment.	Student has achieved ownership and used body and extremely well to propel the story and give a sense of the environment.

Table 4: Sample of Student's Progress Report

<b>SPEECH AND DRAMA ARTS—MODULE PROGRESS REPORT</b>			
Student Name:		Learning Centre:	
Module:	<b><i>Creative Story, Poetry &amp; Script Writing</i></b>		
Drama Instructor :		No. of lessons:	<b>10</b>

Topics covered:

1. Introduction to Poetry & Poetry Writing
2. Story Writing/ Story Building / Story Development
3. Introduction to Script Writing

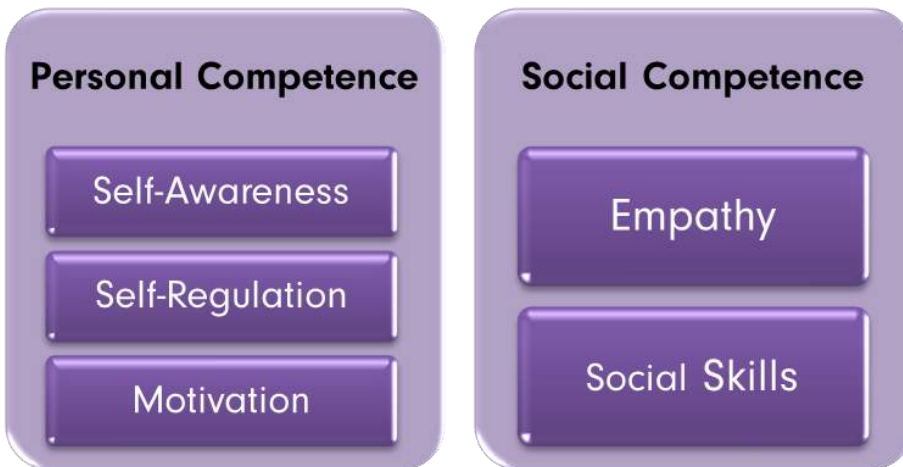
Mastery	Poor (1)	Fair (2)	Good (3)	Excellent (4)
1. Writing Behaviour				
2. Ideas & Creativity				
3. Organisation & Transition				
4. Use of Language				
5. Poetry Writing				
6. Enactment ( <i>presenting written work</i> )				
7. Storyboards				
8. Script-writing ( <i>plot</i> )				
9. Script-writing ( <i>structure</i> )				
10. Teamwork				
Points: (Max. 40)				
Overall Comments				
Name of Drama Instructor		<i>Pushpaa Arumugam, Assistant Director—SES Enrichment Programmes</i>		

## WHY DO WE USE SOUTHAMPTON EMOTIONAL LITERACY SCALES (SELS)?

Southampton Emotional Literacy Scales (SELS) would promote:

- ◆ a strong sense of self and an empathic awareness of others
- ◆ awareness of the role and power of emotions in learning and decision-making
- ◆ a sound basis for their values and morality
- ◆ collaboration and cooperation with others
- ◆ building resilience

Table 4: Components covered in SELS



## PARENT FEEDBACK

Some of the parents comments we have received about the impact of our Speech and Drama programme on their children.

"*Victor\** wants to go for the drama class even if he is sleepy because he is enthusiastic about the programme"

"*Kenny\** is now more focus and confident"

"*Cheryl\** is more confident and better able to take turns"

"The programme has helped *Albert's\** reading and pronunciation"

"I am impressed that the kids came up with their own 'play' - USS ...so wonderful!!"

*Andy\** looks forward to the next term of FUN"

"We can see *Zac's\** confidence level has improved compared to last time"

"My son, *John\**, attended the Speech and Drama Arts (SDA) programme since it first started in August 2013. He enjoys the interactions with other children, learnt language in creative ways and improved communications. I am pleased that DAS has started the SDA programme last year. Thank you for the initiative."

*\*Names changed to protect the confidentiality of students.*

## FEEDBACK FROM OUR SPEECH AND DRAMA ARTS TEACHERS



### **AMRIT KAUR GILL**

Educational Therapist & Drama Instructor

"I am extremely delighted to share that majority of the students in the Speech and Drama Arts programme have shown great improvement in their communication and presentation skills. When they initially step into our programme, they experience difficulties in expressing themselves, managing their emotions and working together as a team. However, over the terms with an active learning approach in our classrooms has proven to be beneficial to these students. They now demonstrate better articulation skills, and work well as a team. Credit goes to our teaching methodology that allows the students to express their thoughts and ideas confidently in a safe environment without any inhibitions. This positive change is indeed commendable."



### **MUZDALIFAH HAMZAH**

Educational Therapist & Drama Instructor

"Reminiscing the time when the SDA Team had its first meeting back then in November 2012, our passion and dedication was focused towards building the social-emotional development of our students so that they would be 'bold and courageous' to pursue more successes in life. Today, our programme has developed further and groomed students in line with our initial objectives.

Through the non-intimidating nature of Drama, our students experiment with roles and values, while gaining self-awareness

and discovering their own voice. Infused with stimulating activities, our programme promotes the active learning of literacy skills which benefits our students in different areas of development.

Honing their skills and being able to grade their progression each term is truly a privilege for me. Undeniably, it was not an overnight success story for these children. Our students had put in a lot of effort and hard work every lesson, alongside with their Drama Instructors. Kudos to their parents for being so supportive!

## **CONCLUSION**

Based on the premise of improving the social-emotional competencies and the literacy skills of our students, the SDA Team aims to work towards the continuous improvement of our specialised Drama programme catering to the specific needs of students with dyslexia.

Moving forward, the SDA team will be conducting trial classes for students to experience the wonders of drama. The trial classes will culminate with awareness talks for parents to understand the benefits of our specialised drama programme.

## **ACKNOWLEDGEMENTS**

Special thanks to all SDA Team members, Muzdalifah Hamzah, Educational Therapist & Drama Instructor, Soofrina Mubarak, Educational Therapist & Drama Instructor and Amrit Kaur, Educational Therapist & Drama Instructor for their contributions and dedication in this programme.

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## ABOUT THE AUTHOR



### **PUSHPAA ARUMUGAM**

*Assistant Director, SES Enrichment Programmes*

*Pushpaa is the Assistant Director for SES Enrichment Programmes. She has years of experience conducting enrichment courses for Kindergarten, Primary, Secondary, Junior College and Tertiary students. Pushpaa has obtained her Bachelor of Performing Arts majoring in Drama & Theatre Studies at Monash University, Australia in 2004. She is a National Arts Council Theatre Grant Award Recipient for the years 2001 – 2003. She has also obtained a Diploma in Educational Studies (Enrichment Education), accredited by The College of Teachers, UK.*

*Here at DAS, we recognise Speech and Drama Arts as an effective means of developing our students' talents, and self-confidence. Pushpaa's objective is to provide a channel specifically for our dyslexic students to develop their language skills, express their inner feelings, and demonstrate their talents in a fun and artistic way.*



**Specialised  
Educational  
Services**  
UNLOCKING POTENTIAL

## SPEECH & LANGUAGE THERAPY

Children start to learn language from the day they are born. As they grow and develop, their speech and language skills become increasingly complex. Children with speech and/or language difficulties will find it difficult to express and make others understand what they want to communicate.

Children with dyslexia and other specific learning differences often have associated speech and language difficulties. These include delayed speech and language development, inaccurate articulation and poor language skills. The child may be intelligent but have a speech and language problem. This will slow down his learning and can be very frustrating for the child and his parents

DAS Speech and Language Therapists (SLTs) are qualified professionals who assess, diagnose and provide intervention for speech, language and communication-related difficulties in children. A Speech and Language assessment helps to find out if a child's speech and language ability is age-appropriate. It also identifies individual language strengths and weaknesses. An individual intervention plan is then tailored according to the profile of the child obtained from the assessment.

Depending on the child's needs, Speech and Language Therapy is conducted individually or in small groups. SLTs aim to build up the child's fundamental speech and language skills to support his learning in school. Therapy is carried out in a child-friendly, lively and bright environment. Language is aided and enhanced through fun and functional activities.

DAS SLTs also provide awareness talks and workshops in the area of speech and language difficulties.



# Specialised Educational Services

## Speech and Language Therapy

Shuet Lian Ho

*Senior Specialist Speech and Language Therapist*

*Dyslexia Association of Singapore*

### INTRODUCTION

The Dyslexia Association of Singapore (DAS) recognises the importance of Speech and Language therapy for the diagnosis and intervention of specific learning differences in the Singapore mainstream school population. Currently, DAS has five Speech and Language Therapists (SLTs) of which two are senior therapists. They work across seven learning centres to serve a percentage of the student population who are diagnosed with dyslexia and attending DAS classes across Singapore.

At the DAS, SLTs work on improving listening, understanding and speaking skills which are critical components in the development of language in children whereas the Educational Therapists work on improving the children's reading and writing (literacy) skills which are critical in the development of written language.

Several studies (Bishop & Adams, 1990; Lombardino, Riccio, Hynd, & Pinheiro, 1997; Scarborough & Dobrich, 1990; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998; Tallal, Curtiss, & Kaplan, 1989) have found evidence to explain the association between language impairment and reading disability. Catts and Kamhi, 1999 pointed out that language problems are a major component of almost all cases of reading disabilities, while Catts, Fey, Zhang & Tomblin, 1999 found that language problems are sometimes the cause of reading disabilities. Snow, Burns & Griffin, 1998 reported that language problems are a consequence of reading disabilities.

In 2010, the American Speech-Language-Hearing Association (ASHA) issued an official policy statement addressing the roles and responsibilities of speech-language therapists. The statement has highlighted the interrelationship between language and literacy. It states that "Current research supports the interrelationships across the language processes of listening, speaking, reading, and writing. SLPs contribute significantly to the literacy achievement of students with

communication disorders, as well as other learners who are at risk for school failure, or those who struggle in school settings.”

Hence, without remediating their speech, language and communication needs (SLCN), these students may not be reaching their full potential in accessing the MOE Aided Literacy programme (MAP) at DAS as well as the mainstream curriculum at school.

DAS SLTs also work with children who are diagnosed with other learning difficulties such as dyspraxia, speech and language impairment and/or autism spectrum disorder.

## **OBJECTIVES**

Children with language and literacy needs require speech and language therapy to enable them to:

1. access the MAP and other SES programmes at the DAS
2. access the MOE mainstream curriculum
3. achieve functional communication

## **HOW TO DETERMINE THAT A CHILD NEEDS SUPPORT FROM THE SLT?**

Studies have shown that speech, language and communication disorder can co-exist with dyslexia, in particular Specific Language Impairment (SLI). Many students with SLI meet the diagnostic criteria for dyslexia (Bishop & Snowling 2004).

Specific Language Impairment is diagnosed where a student has an average intelligence but the verbal scores fall below average. This profile is consistent with that of a student with dyslexia. Therefore a referral from the MOE/DAS Psychologists to a SLT may be required for further investigation. Formal and/or informal assessments are administered by the SLT to diagnose speech, language and communication disorder as well as to determine whether speech and language intervention is required. The latest categories of speech, language and communication disorders in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) which a fully qualified Speech and Language Therapist can diagnose and treat include Phonological disorder, Stuttering, Specific Language Impairment, Speech-sound disorder, Childhood onset fluency disorder and Social (pragmatic) communication disorder.

At the DAS, we take a multidisciplinary approach to assessment as it is widely accepted as proper practice.

## SPEECH AND LANGUAGE THERAPY

Speech and language therapy is conducted individually or in small groups of two to three students. It is tailored to meet the SLCN of a child so that the child will be motivated to learn. SMART therapy targets are set to enable the child to succeed.

<b>Specific</b>	Tailor made to your child's needs
<b>Meaningful</b>	Useful and functional targets
<b>Agreed upon</b>	By parents and child
<b>Realistic</b>	Achievable within the block of therapy
<b>Time</b>	Therapy can be evaluated and progress is measured

## EVALUATION OF STUDENTS' PROGRESS

To determine if students had benefited from attending speech and language therapy, a pre-intervention test and a post-intervention test were done to measure each student's progress. Two subtests were selected from the widely used standardised assessment tool known as Clinical Evaluation of Language Fundamentals 4th Edition UK (CELF-4UK) to get an overview of each student's ability to understand and use spoken language.

Concepts and Following Directions subtest was used to measure the student's ability to understand spoken language (receptive language skills). This subtest requires the child to comprehend and follow increasingly complex instructions that include language-based concepts, such as coordinating conjunctions (and, or, but), time (when, after, before), quantity (one, none) and sequence (first, middle, last). An example would be "Point to all but one of the shoes." These abilities are needed for following classroom instructions, activities and interaction.

Formulated Sentences subtest was used to measure the student's ability to use spoken language (expressive language skills). This subtest requires the child to plan and make sentences using given words with reference to a picture. This ability to use words in a precise manner is required in story-telling, writing compositions, sentence completion tasks and other literacy activities.

The pre-intervention test was conducted during the first therapy session and the

post-intervention test was conducted after 20 hours of intervention. One student was tested at a time. The same subtests, namely Concepts and Following Directions and Formulated Sentences were used in the pre- and post-intervention tests. In addition, pre- and post-intervention Student Questionnaires, pre- and post-intervention Parent Questionnaires as well as pre- and post-intervention Educational Therapist Questionnaires were administered. A copy of the questionnaire is shown in Appendix A, B and C respectively. When parents were not able to understand the questionnaire, the SLT would explain or translate the questionnaire to a language which the parents could understand to ensure that the questionnaires were completed meaningfully.

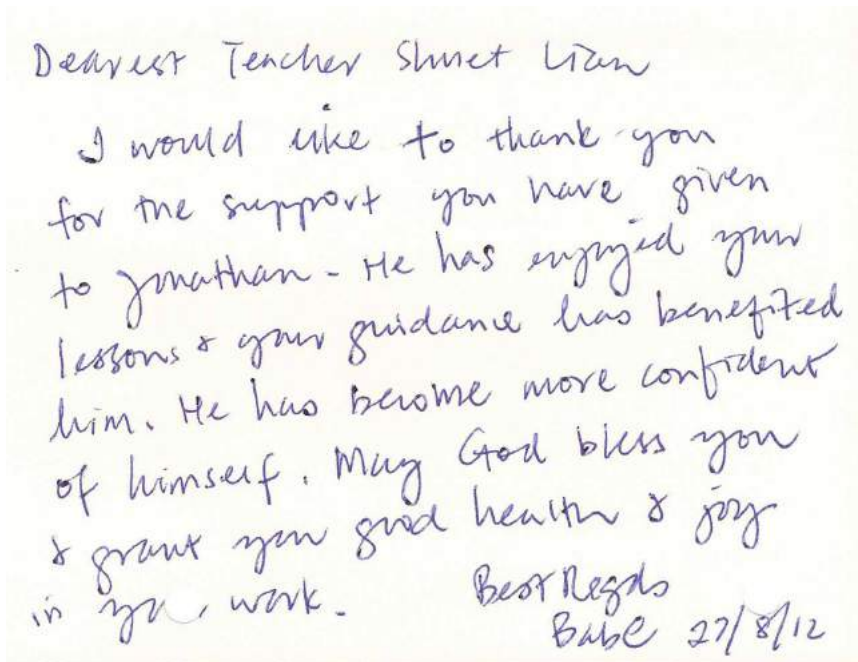
A total of 42 students were tested. 40 students attended one hour of speech and language therapy weekly over 20 weeks and two students attended two hours of speech and language therapy weekly over 10 weeks.

While these students were attending speech and language therapy, 36 of them also attended a 2-hour weekly literacy programme which was taught by the Educational Therapists at the DAS. The remaining 6 students attended only speech and language therapy during the 20 weeks of intervention.

**TEST RESULTS**

	Percentage of students who showed improvement (%)
Concepts and Following Directions	78
Formulated Sentences	73
Student Questionnaire	61
Parent Questionnaire	86
Educational Therapist Questionnaire	67

## SUCCESS STORIES FROM PARENTS



"I would like to share a piece of good news with you. Zach has passed his PSLE with grade B for his English which is totally unexpected. Overall aggregates is 180 which is much higher than his set target. He was so surprised with his results and so do I.

Thank you once again. He enjoyed your class very much and has gained more confidence since."

### **Mrs Ho—Parent of Primary 6 student**

"He seems more confident and now he talks more clearly. He thinks as he talks. Slowly but surely he has improved in the way he communicates in school and with his friends."

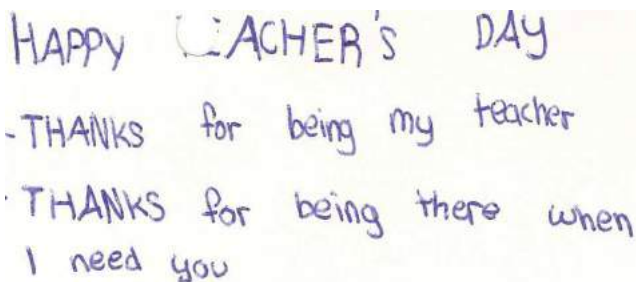
### **Mdm Aminah—Parent of Primary 6 student**

## THANK YOU MESSAGES FROM STUDENTS

"I have learnt that my pronunciation of some words is unclear because I can't hear some sounds accurately. In therapy, I learnt to identify and join the different sounds that form words. I also learnt that one way to improve my listening comprehension is to have an image or picture in my head as I listen to what people are saying since I tend to forget the words easily.

I find it easier to communicate with my friends now as I am better able to understand what they are saying. It was really difficult for me to have friends in school as I don't know how to talk to them. I don't have the confidence to approach them too. Since last year, I made two close friends whom I can share my thoughts with. My classmates told me that they can better understand what I am saying now. I no longer fear so much when I have to talk to others."

### Secondary 3 Student



HAPPY TEACHER'S DAY  
- THANKS for being my teacher  
THANKS for being there when  
I need you

Finally....  
HAPPY TEACHERS DAY

From: Jonathan

## CONCLUSION

The SLT team will continue to develop, execute and evaluate speech and language therapy approaches as well as teaching resources to optimally support children with different learning needs. The team will adopt the best practices that have shown apparent improvement in children's speech, language and communication skills post intervention. The team will continuously improve their knowledge and skills by attending workshops, focus group discussions and talks within the given training budget.

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*She provides speech/language/communication assessment and intervention services to children with specific learning differences. Her clinical experience includes working with children between the ages of 5 and 16 years. In addition, she provides advice and clinical support to Educational Therapists and junior Speech and Language Therapists at the DAS. She also gives advice to parents on speech/language/communication issues. She conducts Social Skills workshops as well as give public talks on speech/language/communication difficulties faced by children with specific learning differences.*



**APPENDIX A**

**DYSLEXIA ASSOCIATION OF SINGAPORE  
Speech and Language Therapy**

**STUDENT QUESTIONNAIRE**

Student's name: \_\_\_\_\_

Educational Level: \_\_\_\_\_

Learning Centre: \_\_\_\_\_

Speech-Language Therapist: \_\_\_\_\_

Date: \_\_\_\_\_

	Never	Sometimes	Often	Always
I can remember the things that people say.				
I can say what I am thinking of.				
People understand what I say all the time.				
I know when to ask a question.				
I enjoy my class with Teacher xxxxxx.				

**APPENDIX B**

**DYSLEXIA ASSOCIATION OF SINGAPORE  
Speech and Language Therapy**

**PARENT QUESTIONNAIRE**

Parent's name: \_\_\_\_\_

Student's name: \_\_\_\_\_

Educational Level: \_\_\_\_\_

Learning Centre: \_\_\_\_\_

Speech-Language Therapist: \_\_\_\_\_

Date: \_\_\_\_\_

	Never	Some-times	Often	Always
My child uses words that are unclear in their descriptions (e.g. this thing, that one, go there)				
My child struggles to find (think of) the right words to say.				
My child struggles to tell me what has happened in an event.				
My child can remember the things that I say.				
My child is able to talk about the same topic in a conversation.				
My child's answers are related to what I asked.				
When my child does not know something, he/ she asks what it is.				
My child looks forward to attend Teacher xxxxx's class.				

Other comments before/after speech-language intervention:

\_\_\_\_\_

**APPENDIX C**

**DYSLEXIA ASSOCIATION OF SINGAPORE  
Speech and Language Therapy  
EDUCATIONAL THERAPIST QUESTIONNAIRE**

Educational Therapist: \_\_\_\_\_

Student's Name: \_\_\_\_\_

Educational Level: \_\_\_\_\_

Learning Centre: \_\_\_\_\_

Speech-Language Therapist: \_\_\_\_\_

Date: \_\_\_\_\_

	Never	Some-times	Often	Always
1. This child uses words that are unclear in their descriptions (e.g., this thing, that one, go there)				
2. This child struggles to find (think of) the right words to say.				
3. This child struggles to say what has happened in an event.				
4. This child can remember the things that I say.				
5. This child is able to talk about the same topic in a conversation.				
6. This child's answers are related to what I asked.				
7. When this child does not know something, he/she asks what it is.				
8. This child asks for help when he/she can't do something.				

Other comments before/after speech-language intervention:

\_\_\_\_\_





# EMBRACE DYSLEXIA



## BRIDGING PROGRAMME



The key purpose of the programme is to provide intensive remediation in order to bridge the learning gap between your child and his or her mainstream peers.

The programme is delivered in small class groups or individually by our team of specialists:

- Specialist Tutors
- Occupational Therapist
- Speech and Language Therapists
- Educational Psychologists

Our aim is to support the development of essential literacy and numeracy skills that are required in the mainstream school curriculum to empower your child with greater confidence, self-esteem and academic competence.



**DYSLEXIA ASSOCIATION  
OF SINGAPORE**

HELPING DYSLEXIC PEOPLE ACHIEVE

**Find out more at our website:  
[www.ses.org.sg](http://www.ses.org.sg)**

Specialised Educational Services | 6444 5700

# Walking Up Hill: My Experiences as an International School Student with a Learning Difficulty

John Gallagher

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*Tufts University, USA*

A great deal of ink has been spilled attempting – with varying degrees of success - to delineate the exact nature of the “international school student experience”. One only has to google “third culture kid” to find the angsty musings of teenagers living overseas. While all third culture kids struggle with abstract notions of belonging and home, a select few of us belong to an oft-disdained minority, a group that faces its own unique set of challenges – international school students with learning difficulties. Collectively, we are confronted with uninformed and/or indifferent teachers, unbending external examining bodies and administrations at times more concerned with the school’s reputation than the success of “different” students, all in an environment that places an absolute premium on academic achievement. That being said I, and others like me, ended up succeeding, largely by virtue of our own efforts, the efforts of our parents, and the work of the handful of excellent teachers and administrators willing to act in our best interests. With school behind me I thought it might be worthwhile to recount my experiences – good and bad - in case they prove useful to students and families in a similar position as my family and I once were.

I am Dyslexic. Specifically I have always struggled with spelling, the arcane rules under which letters arrange themselves into words have always eluded me. To this day I survive on paper via a combination of rote learning and spellcheck. By extension, learning foreign languages was next to impossible, if I could barely spell in my mother tongue you can imagine how I fared when faced with a new lexicon. I am also dyspraxic, meaning that both my fine and gross motor skills are poor. Put simply, my movements, both large and small, aren’t particularly graceful. Academically this impacted my handwriting, I never mastered cursive and my printed scrawl was (and still is) hard to decipher. When I was nine I resorted to

writing in all capital letters so I wouldn't have to worry about reversing my b's and d's any longer. My dyspraxia also made physical education classes torture. As you might imagine, I never had any aptitude for sports; I am far too slow and uncoordinated. Thus, when we were made to play team sports, my awkward fumbblings would invariably jeopardize my team's chances of success. Being forced to fail in front of one's peers is never pleasant.

I attended an international school from September 1998 to June 2013, starting what was effectively preschool, just before my fourth birthday. The first two years of school weren't concerned with any substantive academic endeavor (I distinctly recall my spending an "English" lesson scribbling winding coils that were ostensibly the letter "O") but nonetheless my Mother remembers me being distraught one day after school and saying "I just can't do it like the other kids". While my being distressed could easily have been chalked up to a bad day at school, as it turned out my anxiety proved prophetic.

A few years after that fateful statement, a kindly looking man with glasses appeared outside my classroom and my teacher told me I would be spending an hour or so with him. The man introduced himself as "Mr Moseley" and walked me to his office where he informed me he would be performing some tests. My memory of those tests is fuzzy but I do recall him apologizing for the spelling portion - he was aware of my distaste for arranging letters. I assumed that Mr Moseley's visits would be a semi-regular occurrence but I never saw him again.

Learning how to spell is not an insignificant portion of everyone's early education and hence there are myriad ways of teaching spelling. One particularly cruel method my teachers conceived to teach this dark art was the "Have a Go Book". The "Have a Go Book" was a tall, thin, lined notebook with a pale yellow cover made of heavy textured paper; if I close my eyes I can still see it. The idea was simple. Whenever you needed to use a word you couldn't spell you made an attempt at spelling it in your "Have a Go Book"; if your attempt satisfied the teacher you were rewarded by being told the correct spelling. As the words in my vocabulary were far beyond my spelling ability, I was perpetually reaching for the infernal thing and scribbling down incomprehensible jumbles of letters. My attempts were always in vain, and I was made to repeat the futile exercise again. I will forever resent my Year 2 teacher for thinking if I failed spectacularly at something six times the seventh would somehow be different. I expect the whole system was designed to encourage "perseverance" or "self-reliance" or whatever educational buzzwords were in vogue at the time. However, for me and others like me, the "Have a Go Book" only served as an instrument of continual humiliation - it also improved my spelling not one iota.

Beyond the "Have a Go Book", when simply asking someone how to spell a word, I



*“Learning how to spell is not an insignificant portion of everyone’s early education and hence there are myriad ways of teaching spelling. One particularly cruel method my teachers conceived to teach this dark art was the ‘Have a Go Book’.”*

was confronted with the great torment of those who can’t spell – people talking slowly. Many people assume the appropriate response to a spelling query is saying the word in question slowly, emphasizing each syllable. Daily, my peers would answer me with their mouths contorted into exaggerated shapes, as they tried to “teach” me the spelling. This approach didn’t (and still doesn’t) work, all I learned from their pantomime of speech was which of my classmates flossed daily (fewer than I would have liked). As a consequence of this grand misconception someone enunciating a hard “ch” sends my blood pressure rocketing.

When someone asks you how to spell a word tell them. Tell them by listing, at a normal cadence, the letters that comprise the word they are

unsure about. All saying the word in question ridiculously slowly accomplishes is to make you look foolish.

At the same time as the worst of my spelling woes, Mr Mosely recommended that I have a “Personal Learning Support Assistant”, or PLSA. In a nutshell, a PLSA is a person who sits beside a student during every class and helps them cope with the demands of the lesson. For me, that boiled down to scribing. I would dictate whole pieces of work to my PLSA who would then transcribe my words in elegant, flowing cursive. Freed from the dual tyrannies of my glacial hand writing and my inability to spell, I was finally able to get down on paper the ideas in my head. The results were immediate; I went from being in the “bronze” ability group for English to “gold” in the space of one lesson. I only used my scribe for longer pieces of writing, for subjects like maths and the sciences I found it much easier to think on paper.

Despite the undeniable efficacy of my scribing class work, there were instances where I was deprived of this tool. I recall I was made to laboriously compose a poem by hand, the idea being that everyone’s poems would be typed up afterwards by the mothers who came in to help out each week. My poem made reference to a birthday cake, at the time I couldn’t spell birthday so I abbreviated it to “B-day”, trusting that my meaning was clear. I was wrong. Whoever was tasked with deciphering my hieroglyphs mistook “B-day” for “boney” and lo, the typed copy of my poem hanging on the wall referred to a “boney cake”. The macabre idea of a mal-adjusted eight year old writing about a cake full of bones must have chilled the parent typing up my poem, it’s a wonder that the typo didn’t get me quietly sent to the school counselor. I remember thinking that the error never would

have happened if I'd been allowed to dictate the poem. It makes no sense to grant a child an accommodation one day and arbitrarily take it away the next. Such needless inconsistency leads to unnecessary stress and hugely impacts academic performance.

At 13, in order to keep my documentation up to date, I underwent an assessment with my school's new education psychologist. She recommended that instead of the use of a scribe I be given access to a word processor (with spell check disabled) and extra time for exams, the one size fits all solution my school doles out to students with learning difficulties. To be clear, I face all of the same problems using a word processor as I do hand writing and hence it wasn't much of a solution. Suddenly, I found myself failing exams in English, History and Geography where before I had been thriving. It was as though I had been given glasses and then someone had taken them away, leaving my vision as blurry as before. Despite the abject failure of my using a word processor in exams the school refused to apply for a scribe for my GCSEs. The mother of all battles ensued between my parents and the school, which eventually resulted in the school agreeing to apply for a scribe. The external examining body that administered most of my GCSEs (Edexcel) granted me a scribe, the body that administered Geography (AQA) did not.

The experience left me entirely mistrustful of school administrators. I feel that for people in my position it is a safe assumption that administrators will, wittingly or unwittingly, act in a manner that is not in our best interests. Hence, parents of students with learning difficulties must advocate tirelessly for their children and never assume that the school knows best. In my experience, most of the people in charge of exam accommodations are as incompetent as they are indifferent and wish you would just go away.

By and large, my Edexcel GCSEs went well, bar art, which I flunked because of an abject lack of talent, along with a propensity for earnestly applying my ineptitude to "drawings" of tanks, superheroes, and robots. Despite my not being granted a scribe for Geography, I still managed to scrape a good grade, largely by virtue of pre-exam coursework. Still, I didn't do nearly as well as I would have with a scribe.

After my GCSEs, I initially choose a raft of technical A Levels, (maths, physics, and chemistry) out of a supreme overestimation of my abilities and a misguided desire to build my own Iron Man suit. I reluctantly took history because my mother insisted. However, I quickly discovered that I needed to take my shoes off to do advance arithmetic, a less than ideal approach. By contrast, history was effortless. After realizing where my strengths lay, I salvaged my academic career by switching to essay-based subjects, where I thrived, without removing any footwear. My success in the humanities came in no small part due to my having access to a scribe for every exam – practice or otherwise – that I took.

During both my first ham fisted attempt at choosing subjects, and subsequent damage control, I had to ensure I picked subjects administered by examining bodies that would grant me a scribe. In practice this meant that I couldn't take English, one of my best subjects, as it was administered by AQA. Although a disappointing compromise, being realistic, there was no way I was going to be able to successfully write several essays in one sitting without a scribe. While campaigning for accommodations, it is important to keep in mind that schools are often only the lesser of two evils, and that unbending external bureaucracies that administer exams often simply refuse valid requests. With this in mind, where possible, it is often better to compromise and simply take a similar subject administered by a different examining body.

A major obstacle for those going through school with a learning difficulty is accommodations being perceived by some teachers as an indulgence, a result of education somehow gone soft. Students are regularly confronted with the unspoken notion that they should just "get on with it", sans accommodations, as, "there are no accommodations in the real world". A teacher of mine managed to voice this viewpoint, with singular clarity, during a sermon she delivered one afternoon. This teacher was overseeing my school's annual trip to UK universities – a trip I was going on. In order to create the most useful itinerary, students were asked to compile a list of the universities they would most like to see. I handed in my list, with the proviso that it was not final, as I had not investigated the accommodations offered by those universities. This addendum triggered an unlettered tirade. I was told, in no uncertain terms, that while the school may provide accommodations, universities would have no interest in doing so. I would have to "learn to get by without them", as, according to her, there are no accommodations in the "real world". Having arrived at university, I can say with some satisfaction that she was wrong. In my experience at university, professors are more concerned with what is in your head, not how it gets down on the page. Perhaps things are different in the UK, although I have it on good authority that they aren't. I find it is important to simply laugh at these situations, the people who hold these views are ignorant and wrong, and you'll probably be successful and write about it later.

Perhaps the strongest rebuttal I have to her empty claims are the actions of my history professor one night last fall. Our midterm exam began at 7pm and had no time limit, most students finish the paper in about two to four hours. I proceeded to work on the exam for eight hours, till 3 o'clock the next morning. Given that I was using voice recognition software in lieu of a scribe, I was sitting the exam alone in an isolated basement room lest I disturb anyone. The basement locked

*"In my experience at university, professors are more concerned with what is in your head, not how it gets down on the page."*

automatically past a certain hour, and there was no way for my professor to let me know he was going home for the night. To get my attention, he climbed down the six foot shaft to the basement window and signaled me to let him in. It is not every day that one sees a man in a flamboyant three piece suit and Cuban heels lowering himself down a sheer wall. After he had clambered back out and came inside, he first reminded me to take as much time as I needed, then he asked me to slip my exam under his door when I was done. The whole episode was refreshing after the often begrudging attitude of staff in secondary school.

Ultimately, the point that I'm trying to make with this essay is that having a learning difficulty is hard, no matter what kind of school you are in. However, by campaigning strenuously for the accommodations necessary to level the playing field, opportunities for success abound. Furthermore, the "words of wisdom" my teacher imparted ring hollow, at least in my experience. Universities are in the business of recruiting and training fine minds, most couldn't care less if a student has a learning difficulty. As far as they're concerned, if those minds needs extra time and a scribe to really shine, so be it.



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# “Amazing Shortcomings, Amazing Strengths”: Beginning to Understand the Hidden Talents of Dyslexics

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*Editor's note. This concept of giftedness in dyslexia is one that has not yet been widely addressed within the Asia Pacific context. This is despite the recognition given to the mild dyslexia of former prime minister of Singapore, Lee Kuan Yew, a seminal force in government for over 30 years. A search for eminent dyslexics in these areas reveals only the Indian actor, Abhishek Bachchan, and the young dyslexic Malaysian pilot, Captain James Antony Tan, the youngest pilot to fly around the world, with two entries in the Guinness Book of records, who is still only 21. There are undoubtedly many more famous dyslexics who have not yet revealed their difficulties in learning, because of the potential stigma attached. This recognition of the extraordinary strengths of some dyslexics, if they are not too daunted by the difficulties they experience in school, should begin to redress the balance. Above all, identifying and supporting the problem early can reduce the potential impact on self-esteem, allowing dyslexic people to fulfill their potential and make a full contribution to their environment*

## **OVERVIEW OF A NEW AWAKENING**

In recent years, developmental dyslexia is coming to be seen, remarkably, as a significant advantage in an increasing number of fields – often linked to substantial success in design innovation, entrepreneurial business and scientific discovery. As hard as it is for many to believe, it is becoming more and more clear that some dyslexics are capable of envisioning possibilities, seeing patterns and making discoveries that are missed by even the smartest non-dyslexics.

It is also becoming increasingly clear that all of this is because of the dyslexia, not

in spite of it. Currently, during a period of new awakening, a small number of researchers are finding more evidence that dyslexia does not result from damaged “wiring” in the brain, as many have long believed. Rather, they see an alternative (a different but valuable) “wiring” pattern – one that involves early educational difficulties – but one that provides alternative strengths and capabilities generally not available to non-dyslexic brain structures.

An example of these new perspectives on dyslexia research and practice is found in the recent book *Dyslexic Advantage* by Drs. Brock and Fernette Eide, which asserts: “the brains of individuals with dyslexia aren’t defective; they’re simply different. These wiring differences often lead to special strengths in processing certain kinds of information, and these strengths typically more than make up for the better-known dyslexic challenges.”

“We don’t see the reading, spelling, or other academic challenges associated with dyslexia as the result of a ‘disorder’ or a ‘disease.’ Instead, we see these challenges as arising from a different pattern of brain organisation – [which predisposes] dyslexic individuals to the development of valuable skills” (Eide & Eide, 2011, xvii).

There are many cases of this paradoxical mix of weaknesses and substantial strengths. It is becoming increasingly apparent that these are not really unusual – and appear to be representative of an important subgroup that needs to be studied in a systematic and rigorous fashion. A good example (to be dealt with at greater length below), is one of the founders of the modern study of molecular biology. He was a classic dyslexic, with the usual reading and writing problems throughout his early education. Yet, as he as he eventually struggled through college and graduate school and progressed into laboratory work, he found that he could predict the results of many experiments. He found that he could use his powerful dyslexic imagination to see interactions at the molecular level – seeing new patterns and developing fundamental insights and new theories (in one instance, twelve years ahead of all others in the field) about the links between the human genetic code and the development of the immune system. Later, a different scientist proved experimentally that he was right and received a Nobel Prize (Tauber & Podolsky, 1997).

The US National Science Foundation has been funding a Harvard-Smithsonian study of when and where dyslexia may be an advantage in

*“There are many cases of this paradoxical mix of weaknesses and substantial strengths. It is becoming increasingly apparent that these are not really unusual.”*

doing science, especially within astrophysics (Schneps, 2013). In the UK, the dyslexic head of the Virgin Group explained long ago that his dyslexia had been a motivator in building his group of more than 250 companies as well as giving him a “business edge” (Branson, 1999). In the field of computer graphics and simulation, dyslexic artists, scientists and technologists are often leading innovators (West, 2004; 2009).<sup>1</sup>

A dyslexic professor at Columbia University has written the book, *The Great Ocean Conveyor*, about how he was able to integrate complex information (in a manner similar to many other dyslexics) from extremely diverse sources to understand the way historic changes in ocean currents have led to abrupt climate change in the past. In the preface, he explains, “As a dyslexic, I receive my most valuable information and ideas from what I hear and diagrams I see rather than what I read on the printed page” (Broecker, 2010, ix-x).

A world famous professor of paleontology, dyslexic himself, says that he tries to teach his graduate students how to “think like a dyslexic” so they can see patterns invisible to others, making discoveries long thought impossible. The rest is “just memorisation,” he says, without significant discovery or true innovation (Horner, 2007).<sup>2</sup>

Very recently, in an especially striking example, the British electronic intelligence agency GCHQ announced publically, “Dyslexia is Britain’s secret weapon in the spy war: Top code breakers can crack complex problems because they suffer from the condition. GCHQ bosses say those with the disorder see things in codes others do not. The Cheltenham-based agency has set up a dyslexia support group.” One agency official noted that “dyslexia may in other circumstances be regarded as negative – but most people only get to see the full jigsaw picture when it’s nearly finished while the dyslexic cryptographers can see what the jigsaw looks like with just two pieces” (Mail Online, July 13, 2013). Long aware of the important contribution of distinctive dyslexic talents (along with other forms of “different thinking”), GCHQ had held its first “Diversity Day” as early as June 2006. However, the agency had rarely been so public about these considerations until they were raised by recent comments from MPs on the Commons Intelligence and Security Committee.

While many are still skeptical, an increasing number of researchers believe that learning from the lives of highly successful dyslexics and visual thinkers can lead to new insights and approaches that will help dyslexics and non-dyslexics alike – profoundly transforming fundamental ideas about education and work in a time

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<sup>1</sup> Note: Some sections from this edition, with other writings, have been modified for inclusion in this paper.

<sup>2</sup> Filmed by NHK cameraman (Tokyo, Japan) on site of dinosaur dig, far northern central Montana on Canadian border, about 9 minutes, July 5, 2007.

when computer technologies are rapidly turning the world upside down and the established professionals seem to have lost their way. Accordingly, they say it is high time for us to begin to recognise and understand and learn how to deal with these puzzling extremes in talent – the unexpected academic weaknesses that seem often to be associated with special capabilities and success in both life and work. Low level weaknesses should not be allowed to prevent high level accomplishment. Schools, they say, almost never teach or test what dyslexics are good at – but life does.

## **EARLY PUZZLE**

From the time of the earliest researchers (in the 1890s) until Samuel Torrey Orton (in the 1920s) and Norman Geschwind (in the 1980s), the central puzzle of dyslexia has always been the linkage of high ability in some areas with remarkable and unexpected difficulties and disabilities in other areas. For more than a century we have recognised this pattern, but have generally focused on only one aspect. With the best of intentions, we have learned much about how to fix the problems that dyslexics experience but we have done almost nothing to develop a deeper understanding of the varied and hard-to-measure talents that many dyslexics possess (Geschwind & Galaburda, 1987).

As we have noted, highly successful dyslexics nearly always say that their accomplishments and special ways of seeing come directly from their dyslexia – not in spite of their dyslexia. More researchers are now saying that we should take them at their word and give credence to what they say. Most professionals in the field have long agreed that talents are important, but eventually they almost always come to focus exclusively on the serious business of reading and academic remediation alone.

In contrast, more and more researchers are feeling a sense of personal responsibility to dyslexics as a group. They feel the need to substantially change the course of what is being done within the field. They believe there is a need to seriously embrace a radical change soon or there will be no change at all – allowing additional generations of dyslexics to suffer needlessly – as well as wasting the distinctive talents that are sorely needed by the larger society and economy as we enter an age of great uncertainty on many fronts. They recognise that we badly need the big picture thinking and original insights that seem to be the signature contributions of the most successful dyslexics. (It is a paradox, among many paradoxes, but it may be that those who would appear, initially, to need the most help are, in time, may be those most likely to be able to help the most.)

Much has changed in recent years that would suggest that these fundamental



changes in perspective may be much closer to taking place: a small conference of foundations, researchers and highly successful dyslexic individuals and their families took place in April 2013 – which has built considerable momentum in this direction; the increasing influence of the “positive psychology” movement (Seligman, 1990); efforts to integrate dyslexia research with work psychology research (in the UK and elsewhere); books, articles, blogs and websites devoted to “the dyslexic advantage.” (Eide & Eide, 2011)

### **WILLIAM J. DREYER – CASE STUDY OF A DYSLEXIC DISCOVERER AND HIS GRANDSON**

Sometimes, a longer look at a particular case can indicate the potential of these major reversals in perspective. The passage below is excerpted from the oral history project at the California Institute of Technology in Pasadena. The speaker is the late William J. Dreyer, Ph.D., who is increasingly recognised as one of the major innovators in the early days of the biotech revolution that is now washing over all of us. In September 2007, one of his inventions was placed in the National Museum of Health and Medicine in Washington, D.C. – the first gas-phase automated protein sequencer, which he patented in 1977. The sign over the machine on exhibit reads: “The Automated Gas-Phase Protein Sequencer: William J. Dreyer and the Creation of a New Technology.”

“I knew I was different in the way that I thought, but I didn’t realise why I was so dumb at spelling ... and rote memory and arithmetic. The first time I realised how different ... brains could be ... was when I bumped into Jim Olds at a dinner party back in the late sixties. Jim ... was a professor here [at the California Institute of Technology] ... famous for his pleasure center work. A speaker talked about the way we think and compared it to holography. Jim was across the table from me. I said, ‘Oh, yes. When I’m inventing an instrument or whatever, I see it in my head and I rotate it and try it out and move the gears. If it doesn’t work, I rebuild it in my head.’ And he looked at me and said, ‘I don’t see a thing in my head with my eyes closed. ‘We spent the rest of the evening trying to figure out how two professors – both obviously gifted people at Caltech in the Biology Division – could possibly think at all, because we were so different. So then I took this up with Roger Sperry [Nobel Laureate and near lab neighbor] and I realised that I had some amazing shortcomings as well as some amazing gifts” (Caltech, 1999).<sup>3</sup>

A strong visual thinker and in many ways a classic dyslexic, Dreyer developed new ways of thinking about molecular biology. With his powerful dyslexic visual imagination, he could somehow see the molecules interacting with each other.

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<sup>3</sup> PDF at <http://oralhistories.library.caltech.edu/108/>. Roger Sperry, mentioned in this quotation, was Caltech Hixon Professor of Psychobiology 1954-1984. Sperry was awarded the Nobel Prize in Physiology or Medicine in 1981.

Sometimes he was almost entirely alone. He (with his colleague J. Claude Bennett) advanced new ideas based on new data about how genes recombine themselves to create the immune system. These ideas turned out to be many years ahead of their time.

Most did not like this new theory because it conflicted with the conventional beliefs held by most experts in the field in those years. "It was so counter to the dogma of the time that nobody believed it," his widow, Janet Dreyer, explained (Dreyer, J., 2005). Dreyer's approach also used a form of scientific investigation ("peptide mapping") with which most immunologists were then entirely unfamiliar. "Knowing what we know now pretty much any biologist would look at Bill's data and say that is what it has to mean. But few could understand it then," she noted. However, gradually, they all learned to think the way Dreyer thought. Then, it was obvious that Dreyer (and Bennett) had to be right.

### **TO SEE WHAT OTHERS CANNOT SEE**

In his earlier school days, Dreyer had the usual reading, writing, memory and other academic difficulties experienced by most dyslexics. Throughout his career, he avoided reading and writing whenever possible. But in time, he was able to make it to college and even graduate school – where he developed his own ways of learning and began to find roles that made use of his strengths while he learned to get help in his areas of weakness.

He joined a study group. The others in the group all took careful notes in the lectures. He took no notes. He just sat there while he listened and observed carefully. Then after the lecture, they provided him with the detailed data, and he told them what it all meant. "He was giving the big picture and all the major concepts, ..." explained Janet Dreyer. Eventually, surviving a major life-threatening illness made him realise it was time to refocus his life – and then his fascination with laboratory work began to draw him in.

Soon, with his remarkable ability to visualise the molecular interactions (using his dyslexic imagination), the young Bill Dreyer became a star in the laboratory. While in graduate school in Seattle, Washington state, and while working at the National Institutes of Health (NIH) in Bethesda, Maryland, he could tell his professors and colleagues which were the best experiments to do. Somehow he knew how to proceed and where to go in this brand new field of study that came to be known as protein chemistry. He was seeing patterns and connections the others were not seeing. Like many highly successful dyslexics, Dreyer could thrive in the leading edge of a new field. Like so many dyslexics, Dreyer seemed far better suited to creating new knowledge than he was in memorising old knowledge.

At this time, his professors and section heads would write the grants, get the funding and write the research papers with him and for him based on his ideas and observations. "The money just came. Because he was doing good work, grants would just be there for him," observed Janet Dreyer. He was happy at NIH but eventually (after a previous Caltech offer had been refused) in 1963, Caltech persuaded Dreyer to come to Pasadena as a full professor at the age of 33. Clearly, the value of his pioneering work had been recognised.

However, later, because of the further development of his new and increasingly heretical ideas, William Dreyer could not get funding from academic or foundation sources for inventing his new instruments. His department head would get irate phone calls from professors from other institutions complaining about Dreyer's publications and talks. He gave many talks at the time, making some attendees angry, although others could see the importance of his innovative observations. "He was on the lecture circuit then and he [gave these talks] a lot." Of course, these were not really unproven theories, explained his widow Janet. She pointed out that Dreyer was sure of his ground because he had the data to prove the veracity of his ideas. "It was not merely a hypothesis in that paper, it was real data." However, it was data in a form so new and so alien that almost everyone in the field could not understand what he was talking about. In time, these professors, and all their students, came to see, much later, that William Dreyer had been right all along.

Because he could not get funding from the usual sources, Dreyer went to private companies to manufacture the innovative instruments he had designed and built himself – something quite unusual and discouraged at the time but now wildly popular among universities hoping for a share of large royalty payments. Seeing the potential for his inventions (and their scientific impact) but having a hatred of administration and corporate politics, Dreyer came to be the "idea man" for seven new biotech companies (including Applied Biosystems).

Years later, when Susumu Tonegawa was awarded a Nobel Prize (Physiology or Medicine, 1987) for work he had done in Switzerland, his innovative sequencing work proved (through experiments that were illegal in the US at the time) that Dreyer and his colleague had been correct in their predictions many years earlier. In

*"...it was data in a form so new and so alien that almost everyone in the field could not understand what he was talking about. In time, these professors, and all their students, came to see, much later, that William Dreyer had been right all along."*

the words of two scientific historians of this period: "This experiment marked the point of no return for the domination of the antibody diversity question by nucleotide studies: it was Susumu Tonegawa's final proof of the Dreyer-Bennett V-C translocation hypothesis through the use of restriction enzymes" (Tauber & Podolsky, 1997, 207).

## **FAMILY WEAKNESSES, FAMILY STRENGTHS**

Later in his life, Dreyer taught molecular biology to his grandson who was clever with computers but had been having a very hard time in high school because of his own dyslexia. The grandson went to live with his grandfather. Employing the grandson as a kind of apprentice, Dreyer would start each work day (using a form of applied just-in-time learning) saying something like: "I want you to write this little search program for me today but first let me explain the biology you need to know to do this task." In time, working with Dreyer, the grandson skipped the latter part of high school, most of college, all of graduate school and was doing advanced "post-doc" level work writing computer programs, doing advanced programming developing databases, graphic user interfaces (GUIs), and other tools.

The grandson also used sophisticated scientific information visualisation techniques to help link various human traits to sections of the genetic code. In doing this work, he noted that he used his "visual thinking ability to design the architecture of the programs ... visualising the components in his head, trying it out and fixing what doesn't work, before I write the code – much like my grandfather..." He is not only doing high level work; as Dreyer and others pointed out, the grandson was in fact working at the leading edge – co-authoring peer-reviewed journal articles (King, in Roden, 2005, Hart, 2006). Indeed, one of the grandson's work colleagues only got his own Ph.D. degree (and a required publication) because the grandson was able to write a tutorial and GUI that helped a member of the colleague's required publication review committee better understand the significance of the advanced work done by the colleague (Dreyer, Dreyer & King, 2001-2004).<sup>4</sup>

Much later, after years of post-doc level work without even a high school diploma, the grandson decided it was time to go to college. He chose a university with very challenging standards but also an extremely good system for supporting his dyslexia—which presented continuing problems throughout his four years of study. This happened to be the University of California at Berkeley. In May of 2013, the grandson, Brandon King, graduated in Cognitive Science with honors and distinction.

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<sup>4</sup> Additional clarifications and further details were provided by Brandon King via email, March 23, 2009, available from Thomas G West.

Brandon's grandfather, William Dreyer, died of cancer in the spring of 2004. One of the enduring passions of his later work had been to try to understand the relationship between his dyslexia, his visual thinking and the high levels of creativity he had experienced in his own life and work. Dreyer's interest led to his participation in a small conference on visualisation technologies, creativity and dyslexia held at the National Library of Medicine in Bethesda, Maryland. This author's second book, *Thinking Like Einstein*, is dedicated to: "William J. Dreyer, 1928-2004, molecular biologist, strong visual thinker, prescient inventor, instrument maker, who loved to fly high to see what others could not see, frequently alone."

### **MAGNIFICENTLY ILL-ADAPTED ENGINES OF DISCOVERY**

The story of the life of William Dreyer and his grandson, Brandon King, brings into sharp focus the considerable advantages, in the right setting, of the dyslexic kind of brain – at least of certain variations within the great diversity of dyslexic brains. (Of course, this story also strongly suggests what sometimes might be possible employing nontraditional educational approaches such as apprenticeship or home schooling.) We can see that this kind of brain – seemingly so magnificently ill-adapted to conventional education – can (sometimes) be a powerful engine of insight, innovation and discovery.

This kind of brain may cause many problems in early schooling but it may also, sometimes, raise some individuals rapidly to the top of a new field of knowledge – pushing forward way beyond the many who are conventionally successful students but who find it hard to conceive of anything really new or really important. Perhaps they cannot see through to the novel, unexpected solution because they have learned too well exactly what the teacher wanted them to learn, what was expected on the conventional test. Perhaps they cannot easily unlearn what they have been taught.

In another example, one high-achieving researcher at NIH, with three professional degrees, in law, medicine and pharmacology, once admitted that he was aware of his own limitations, constrained beneath a kind of glass ceiling. He was aware that in spite of all his success and academic accomplishments, he "was not dyslexic enough" to do really original, creative and important work – as he had seen in his dyslexic colleagues. (Personal communication, R.S., March 2000.)

With stories such as these, we can begin to understand that these visual-thinking dyslexics do indeed see the world differently. They think differently. They are not like non-dyslexics. They are not like each other. Often, they seem to "see things that others do not see." (This same phrase – with almost exactly the same words – reoccurs with striking frequency in many different and unconnected settings.) Yet

these same individuals have great difficulty with things that are easy for almost everyone else – especially at the lower levels of education. In schools, they are constantly tested on what they are not good at – almost by definition.

Why are they never tested, we should ask, in the areas where (some and perhaps many) have enormous talent and can make major contributions in their later life and work? Can teachers and school psychologists believe that this is possible? It is hoped that some of the stories offered here will have created a new vision of what is possible. But this new vision may also require the development of new tests and measures – ones quite different from conventional academically-oriented measures - - but perhaps ones that are better suited to the new realities of life and work, suited for the visual-thinking dyslexics but also suited for many non-dyslexics as well.

To succeed with such extremely mixed abilities, as these individuals often do, one needs to have a deep reservoir of confidence and fortitude to carry on in spite of the judgments of others that you are, in fact, really slow and lazy and stupid. To maintain the required drive, determination and sense of mission in the face of almost constant early failure and humiliation is often nothing short of miraculous. It would appear that only a comparatively small number survive these early days with enough confidence and drive to press on, against all odds, to find success in some area of special knowledge, deep understanding and passionate interest. We need to better understand the nature of this kind of success and the remarkable individuals who seem able to find their way around so many obstacles, seeking an area where they are at home with their work, often performing at very high levels of proficiency and productivity.

Those of us who are trying to understand and to help dyslexics (along with others more or less like them) must come to see that conventional academic remediation is only part of the job – and not the most interesting or important part. We need to seek ways to help dyslexics find and develop their own talents, large or small, so that they cannot be beaten down – hiding their distinctive talents along with their disabilities. One of the best ways – perhaps the only really effective way – to do this is to study the lives and work of highly successful dyslexics (in some detail and in all their great diversity) – to allow other dyslexics to see what can be done as well as showing how it can be done.

*“To succeed with such extremely mixed abilities, as these individuals often do, one needs to have a deep reservoir of confidence and fortitude to carry on in spite of the judgments of others that you are, in fact, really slow and lazy and stupid.”*

The story of Bill Dreyer and his grandson shows clearly the mixed problems and great potential of dyslexic individuals and dyslexic families in a most modern, scientifically-sophisticated and technologically-advanced context. The talents that many dyslexics exhibit are powerful and valuable assets (frequently hidden and misunderstood) in a rapidly changing world. These individuals may appear to be slow and backward, but in many cases they are way ahead of nearly everyone around them, those who are mostly blind to what visual thinking dyslexics can do and what they can contribute.

Over the years, more and more dyslexic individuals have become aware of their own special talents as they confront their long-hidden weaknesses and humiliations. Many are finally coming to understand the positive aspects of their own mixed abilities well enough to give themselves permission to talk about and think about things they no longer need to see as only failures and weaknesses to be hidden and denied. They have discovered that it does not go away just because you pretend it is not there.

Fathers are realising that they cannot drive it out of their sons by ever more rigid discipline. Rather, they are learning that it is best to confront it, face on, with the new realisation that there are hidden talents to be acknowledged (and used) as well as fears that will increasingly fade away in the clear light of day.

Learning to see the positive side can be powerful indeed. Of course, there is still a great deal of work to be done, but it can be focused on increasing strengths rather than decreasing weaknesses. It is urgent at this time to outline the kinds of things that need to be done – to take seriously, at long last, the varied talents and considerable strengths of dyslexics. The time is right. The time is late. The time is long overdue. Those on the front lines – the teachers, tutors, parents, advocates and school psychologists—those who have cared the most, those who have been able to understand when no one else did—unfortunately, they have often done less than they could have done because they have attended to only half of the job. They have too often focused on fixing the problems – and have totally ignored the development of talents. This should change – and we hope that it will change soon.

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### ABOUT THOMAS G. WEST

Thomas G. West is the author of *In the Mind's Eye: Creative Visual Thinkers, Gifted Dyslexics and the Rise of Visual Technologies* (Prometheus Books), selected as one of the "best of the best" for the year by the American Library Association (one of only 13 books in their broad psychology, psychiatry and neuroscience category).



*In the Mind's Eye* was published in Japanese translation in as *Geniuses Who Hated School*. A Chinese translation was published in 2004 and a Korean translation was released in 2011. West's second book is *Thinking Like Einstein: Returning to Our Visual Roots with the Emerging Revolution in Computer Information Visualization*. Dyslexic himself, Mr. West has been invited to provide presentations for scientific, medical, art, design, computer and business groups in the U.S. and overseas, including groups in Australia, Canada, New Zealand, Hong Kong, Taiwan, Dubai and twelve European countries. Mr. West is associated, as board advisor or board member, with several organisations, including the Krasnow Institute for Advanced Study at George Mason University, the Dyslexic Advantage organisation, the Siena School and the Wye River Upper School, among others.

Recent invited conference lectures or keynotes have included: Magdalen College Oxford, Harvard and MIT, University of California at Berkeley, University of Malta, University of Trieste, the Arts Dyslexia Trust in London and an education conference in Dubai, United Arab Emirates. Early in 2013, West gave a talk on creative visual thinking, computer graphic information visualisation and dyslexia at Pixar Animation Studios in Emeryville, California – and presented a Director's Colloquium on a similar topic for scientists and staff of NASA Ames Research Center (at Moffett Field in California's Silicon Valley).

### POSTSCRIPT

Important alternative research trends and perspectives have been becoming more apparent recently. The Dyslexic Advantage organisation (with which this writer is associated) has recently formulated a strategy for research progress built around the following series of observations:

It is increasingly clear that dyslexic individuals do not only differ from non-dyslexics in the ways they process written language. Rather, they differ in the ways they process almost all kinds of information. Consequently, researchers now see that they will need to study more than reading and writing.

In addition, dyslexic individuals are seen to share common strengths as well as areas of difficulty – and these strengths usually involve brain functions unrelated to reading. Indeed, the strengths of dyslexics provide the reason that there are so many dyslexic individuals in the human population – that is, the dyslexic wiring pattern in the brain has been selected over long periods of time as a favorable trait and this provides the basis for achieving such high prevalence.

Increasingly, researchers are becoming more aware that dyslexia is a late-blooming profile. The strengths of dyslexics are often more apparent later in development than the strengths of many non-dyslexics. Consequently, because these strengths are more apparent in adults than children – when the nervous system is fully matured – it is now seen as important to study dyslexic adults, including those who are excelling in their lives and work as well as those who continue to have difficulties.

Another important observation within the Dyslexic Advantage perspective is that it may be inherently difficult to measure the things that many dyslexics are good at. Dyslexic individuals often excel in complex high-level cognitive tasks. Consequently, researchers believe they need to develop more creative research approaches and testing methods capable of measuring these high-level skills and talents. These researchers are learning to re-examine dyslexic children in light of what they have learned about the mature adult dyslexic brain. This way, they hope to be able to better understand the true nature and significance of what they observe in the earlier stages of development.

To emphasise this last point, the Dyslexic Advantage organisation has chosen to adopt the image of the butterfly as the institutional logo and symbol – believing that one can only see what the dyslexic brain is “trying to become” by considering its mature form. If one were to study caterpillars only, one would never guess that this fat, ugly worm with so many legs is ultimately destined to fly high and far on wings of iridescent beauty. (Personal communications, Dyslexic Advantage, October 2013.)

Thomas West  
1 November 2013

# “Left Behind at the Beginning of the Race: The Paradoxes of Dyslexia”

Thomas G. West

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I am sometimes asked to write about the positive aspects of dyslexia and the way these positive traits have been reflected in my own life story.

In my own story, the beginning is familiar. The story of a little boy who could hardly read at all for the first three or four years of primary school – and then struggled for many years to keep up with his classmates. For a long time, his greatest ambition was to not be at the bottom of the class.

Gradually, however, as the curriculum changed from rote memorisation to larger concepts and logical thinking, the little boy began to see that he could easily do things that his classmates had trouble with – and that he could quickly see things that they did not easily see.

Over time, amazingly, this little boy became an author of books about dyslexia, visual talents and emerging computer graphic technologies. His writing led to invitations to give many talks, including presentations in 18 foreign countries.

His first book has been translated into three languages – Japanese, Chinese and, most recently, Korean. To his surprise (and to the delight of his publisher), over time, his first book became a classic – an “evergreen,” as they say in the trade, a book that never stops selling.

“I was happy as a child... I have been happier every year since I became a man. But this interlude of school [made] a somber grey patch upon the chart of my journey... All my contemporaries and even younger boys seemed in every way better adapted to the conditions of our little world. They were far better both at the games and the lessons. It is not pleasant to feel oneself so completely outclassed

and left behind at the beginning of the race.”

These are not my words. However, these words perfectly reflect my own feelings through most of my own early education. They are the words of Sir Winston Churchill writing in 1930 of his own early life. When he wrote these words, Churchill was a well known public figure – indeed, one who many thought was well past his prime – although his greatest test and his chief accomplishments were not to unfold until nine years later with the beginning of World War II. (Churchill, *My Early Life*, 1930, pp. 38-39.)

## **PARADOXES OF DYSLEXIA**

The field of dyslexia is full of puzzles and paradoxes. One of the greatest of these is that sometimes – perhaps one can say many times – the student who appears most dumb in the early years of schooling can be among the most capable and successful later on in the world of work – especially when the work is creative and innovative – involving the ability to ponder, think deeply, envision possibilities and to see patterns that others do not see.

As one highly successful dyslexic pointed out, it is not hard for a dyslexic to think “out of the box” because, as he says, “they have never been in the box.” In contrast, those who always could do quickly exactly what the teacher wanted (getting top grades) can sometimes find it very hard – if not impossible – to have a really new thought or to deal successfully with a really new problem or novel situation. They find it easy to retain old knowledge, but they may find it nearly impossible to create new knowledge.

## **PERSONAL DISCOVERIES**

In my early school years, mostly in a rural state school system, I had learned to read very poorly and very late and had great difficulties with most primary school subjects. This was a puzzle to my teachers and a worry to my otherwise supportive parents.

Even in this comparatively undemanding rural school system, I could barely keep up. I could learn almost nothing by rote. I could not memorise. I could not retain exact texts or numbers. I had to have time to ponder and

*“As one highly successful dyslexic pointed out, it is not hard for a dyslexic to think “out of the box” because, as he says, “they have never been in the box.”*

think. I had to understand. I needed to see the connections between things. I needed to know the story. I had to find a way to visualise the information. Then, I would never forget.

I knew nothing of my own dyslexia at the time. I was not diagnosed until decades later – at the age of 41. But I did know that there were many things that I could not do – that were quite easy for my classmates. Gradually, in the last years before college, at another school, the increasingly high-level content began to change what was wanted – and what I could produce. Gradually, everything was transformed. The higher-level curriculum began to play to my strengths and my weaknesses became less important.

Before, I had trouble with arithmetic and “math facts,” but in time I came to love geometry, log tables, and even the slide rule. I eventually got good grades in a course on the philosophy, basic concepts and history of mathematics and logic that I was required to take in college. I had trouble with foreign languages, but loved linguistics and the history of language. I still had lots of trouble with spelling and my slow, faltering reading – but I began to see that I seemed to have a special knack for following logical arguments, complex story lines and higher level conceptual thinking in science, engineering and technology.

Gradually, strangely, by my final school year before college, I felt that I was getting more out of the readings than many of my classmates. I can still recall, in some detail, almost all of the readings we did during that year.

I went to a small liberal arts college that proved to be the right place, on the whole, for the further growth of these new-found strengths and abilities. Remarkably, my major studies were English Literature and Philosophy (so many books to be read and understood) and later earned a Masters degree. I found that I was well suited to do high level work – but I had to be careful because I could easily be overwhelmed by large volumes of work.

I had begun to see that, for some people, the easy things in primary school could be quite hard – but the hard things in college, graduate school and work could be quite easy.

## **SCHOOL WEAKNESSES, WORK STRENGTHS**

After graduate school and military service, I was employed by several consulting and engineering companies where I worked in early computer information systems, studies of the effectiveness of certain new medical services, developing national energy policy and international trade (participating in one trade mission to four

Asian countries and then leading a second Asian trade mission).

Eventually, I was the number two manager for a five-year renewable energy development and training program for engineers in Egypt, funded by the US Agency for International Development.

Throughout these work experiences, I found ways around my weaknesses and ways to exploit my talents. I could easily see the big picture of our projects and how to deal with co-workers and clients. However, I learned to never mention a number unless I had it printed in front of me. My memory for certain details was too unreliable. I had little technical training, but – coming from a family of engineers and usually working with engineers, economists or computer programmers – I found I could easily understand the technical concepts and technical projects at an appropriate level. Others could be relied on for the data and details. I could write reports about the projects, explain them, plan them and, eventually, manage them.

## **FAMILY PATTERNS**

However, I didn't really begin to understand the common difficulties and the common patterns of talent among dyslexics until our own two sons started having problems in their early years of primary school.

The idea that they were going to go through what I had gone through – this was a great emotional shock for me. Suddenly, I realised that I had to understand this thing that had been running my life – and, in part, the life of my dyslexic artist father as well as other family members, more or less.

So I had myself tested for dyslexia. I attended dyslexia conferences and started the library research that eventually became the book, *In The Mind's Eye*. I had learned that almost all the professionals in the field wanted mainly to fix reading problems. But that they mostly ignored the special talents that many dyslexics have. Coming from a family of visual-thinking artists and engineers – many with dyslexia or related problems and talents – I realised that there was more to the story than just reading problems.

My research and book focused on these talents as no other book had done before – the neurological foundations, the case studies and the profiles of famous people and the growing role of new computer graphic information visualisation technologies. I found that several important earlier neurologists had emphasised the talent side – but they had been largely ignored. Also, as I did my research, I could see the world of technology was changing in fundamental ways – almost all in favor of the dyslexics and their distinctive talents – while, of course, most

conventional educators and institutions were then – and still are – blind to these changes.

I was shocked to suddenly realise that, in most cases, the major technological changes unfolding today required skills and talents that seem to come easily to most dyslexics (information visualisation, for example) – while the things dyslexics had most difficulty with (rapid reading, fact memorisation and spelling) were becoming less and less important in life and in the workplace. Few experts understand the inevitable consequences of this major trend.

I suspect that the strong focus on the talents of dyslexics is the reason that the book is still very much alive today – and still, amazingly, regarded as radical new thinking – over twenty years since it was first published in 1991. (However, I have often pointed out that most of the basic ideas were not really new. They were set forth earlier by neurologists like Samuel Torrey Orton and Norman Geschwind. But, as noted, these ideas were largely ignored by later researchers and practitioners who mostly focused on pathology alone.) Even the university research librarians liked the book. It was selected out of some 6,000 books as one of the “best of the best” for the year by the American Library Association (one of only 13 books in their broad psychology, psychiatry and neuroscience category).

Over time, the book has come to be highly regarded in many quarters. To my great delight, Dr Oliver Sacks (the famous author of *Awakenings* and *The Man Who Mistook His Wife for a Hat*) came to write in the foreword to the second edition: “*In the Mind's Eye* brings out the special problems of people with dyslexia, but also their strengths, which are so often overlooked... It stands alongside Howard Gardner's *Frames of Mind* as a testament to the range of human talent and possibility.”

## **VISUAL THINKERS, VISUAL TECHNOLOGIES**

Over the years, I have been invited to give talks and workshops for scientific, medical, art, design, computer and business groups in the U.S. and overseas, including groups in Australia, New Zealand, Canada, Hong Kong, Taiwan, Dubai and twelve European countries.

In addition, I came to be asked to write a regular series of articles and columns on the broad effects of visualisation technologies for a quarterly publication of the international professional association for computer graphics artists and technologists (ACM-SIGGRAPH) – a truly international organisation with many creative dyslexics (with conferences as large as 60,000 attendees, often in Los Angeles, California).

These columns have been collected into a second book with the title: Thinking Like Einstein – Returning to Our Visual Roots with the Emerging Revolution in Computer Information Visualisation.

Attitudes toward the special talents of dyslexics have been changing, but very, very slowly. Gradually, non-dyslexics are beginning to see why it is important to have dyslexics involved in their start up businesses – or their scientific research.

However, no one could be more surprised that I am with the wide and continuing interest in my books and articles and the ideas they contain. As I started my book research long ago, it was more than a small comfort to me to know that Winston Churchill, for all his major achievements as a leader in time of great crisis, had also once been at the bottom of the class – feeling “completely outclassed and left behind at the beginning of the race.”

## **ABOUT THE AUTHOR**

### **THOMAS G. WEST**

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# What Factors are Important to Ensure that Students with Dyslexia have a Positive Learning Experience?\*

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## **ABSTRACT**

*This research review investigates the factors that are important to ensure that students with dyslexia have a positive learning experience. Dyslexia is a learning disability that makes it very difficult for children to read, write and/or spell. Dyslexia is life-long, but the difficulties caused by dyslexia can be overcome with successful specialist teaching and the use of compensatory strategies (DAS, 2011). This research review has shown that dyslexic students can have positive and negative learning experiences. Some of the factors that promote a positive learning experience are effective support by teachers in the education system, appropriate learning accommodations, professional support from an Educational Psychologist providing a diagnosis and recommendations of strategies for learning, specialist teaching to assist in areas of weakness, parents and peers support to ensure that the dyslexic student feels good about themselves. This research review investigated Psychological studies and research into dyslexic self-esteem, academic self-concept, and depression as well as teaching methods, teacher training and learning strategies. A metaphor study was used to investigate how dyslexic students thought about their learning difficulties. Other texts and professional books on the subject of dyslexia, study strategies, counselling dyslexics and learning strategies were also reviewed. It was determined that when positive factors such as multisensory learning strategies, teaching support and teacher recognition and understanding of dyslexia, technology assistance in the form of computers, laptops, software and touch typing, and emotional support from parents and peers were the best way a student with dyslexia could be supported to ensure a positive learning experience. When these factors were not in place research showed that this could lead to low self-esteem, inferior and poor views of themselves which could lead to depression, increased frustration and anxiety and where social support was not present this could lead to bullying and rejection by peers.*

## 1. INTRODUCTION

Dyslexia is a learning disability that affects approximately 10% of the population (DAS, 2011). It's not a disease or illness that can be cured it is something that stays with you for your whole life. The World Federation of Neurology (1968, cited by Riddick, 2010) says that "Dyslexia is a disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin" (Riddick, 2010. p4). This shows that dyslexics do have the potential to work as well, or even better, than their peers but they have a disability that means they need to understand. As dyslexics, they will never reach their potential if they don't understand about their own disability and how they learn.

For dyslexics to be able to reach their own potential they need help and support through their learning journey. Cogan and Flecker (2004) identify that teaching methods should reflect different learning styles to suit individual cognitive strengths and that teachers need to take the responsibility to ensure that dyslexic students flourish at school. They also identify the learning strategies necessary for the success of dyslexic students which overall are good strategies for all learners (Cogan and Flecker, 2004).

The factors that affect a dyslexic learning journey and have a direct affect on them having success in their life are, positive interaction with educators and education systems, emotional support from their friends, peers, and their Parents as well as professional help such as assessments by Educational Psychologists and additional tuition from specialist teachers (Scott, 2004).

The education system affects a dyslexic child's development dramatically because students need to have a positive learning experience and also need to have good teachers that understand their disability to be able to support them (Scott, 2004).

Peers play a big role because they are always interacting with the dyslexic children in school and the way they treat them can affect them dramatically from either being a bully to them or someone who's there to make sure they can keep up with the rest of the class (Riddick, 2010).

Parents play a major role in the learning experience of a dyslexic child; they need to nurture their development in school and make sure they are getting support for their disability (Burden, 2005).

Finally, students with dyslexia are supported by professionals and having a diagnosis that identifies strengths and weaknesses as well as an assessment that

makes recommendations to those who work with the child with dyslexia on how to support them (DAS-a, 2011). Humphrey and Mullins (2002) states that children usually associate people that can read well and fast as being intelligent and for people that can't read well they see them as usually unintelligent. Therefore, children with dyslexia usually see themselves as being "dumb and stupid" which has a negative effect on their self-esteem.

This review of research on dyslexia is important because it will explore the different factors that affect a dyslexic's learning experience and will highlight the main factors to ensure that their educational development is a positive and enjoyable learning experience.

*"Parents play a major role in the learning experience of a dyslexic child; they need to nurture their development in school and make sure they are getting support for their disability."*

## **2. DEFINITION OF DYSLEXIA**

The Singapore Dyslexia Association defines dyslexia as a "condition that makes it very difficult for children to read, write and/or spell. It has nothing to do with the person's intelligence. Often weaknesses may be seen in areas such as language development, memory and sequencing. Dyslexia is a specific learning difference that is neurological in origin and can go undetected in early years of schooling. Dyslexia is life-long, but the difficulties caused by dyslexia can be overcome with successful specialist teaching and the use of compensatory strategies." (DAS-b, 2011). Riddick (2010) further identifies that the British Dyslexia Association definition specifies that dyslexia is "resistant to conventional teaching methods" and that "appropriately specific intervention, including the application of information technology and supporting counselling" will mitigate the effects of dyslexia (Riddick, 2010, p5).

## **3. LEARNING DIFFERENCES - A PERSONAL VIEW OF DYSLEXIA**

This research review was inspired by the fact that the writer and both his older sisters have dyslexia. All three have had different learning experiences. The writer's learning experience has been a very positive one with many supporting and understanding teachers. His parents have been very helpful, especially his mother who has been very active in learning all about dyslexia and how to support all three of her children's education. However, the writer's sisters have had learning

experiences that have had more negative effects. Many of the negative factors that are described in this research review have been experienced by them.

The writer suspects that his positive learning experience is as a result of the learning curve that his parents have had with the issues they faced with their daughters education. The writer feels lucky to have had a positive learning journey and therefore feels that he is in a position to review effectively the factors that are necessary for individuals with dyslexia to have a positive learning journey.

#### **4. NEGATIVE FACTORS OF DYSLEXIA AND THE RESULTING BEHAVIOR**

Ryan (1992), identifies that the emotional effects and problems with dyslexia usually appear in early reading when they see their classmates surge ahead while they fall behind. Frustration is built up because they are not able to meet expectations of parents and teachers. Teachers usually highlight that the student is smart and that they just need to work harder, not realising that they are working at their hardest (Ryan, 1992). The dyslexic's inability to reach academic goals usually plays a significant role in how they see themselves as learners, the difficulties they have in learning often mask the fact that they have a competency in different learning areas (Cogan and Flecker, 2004).

In the classroom, students are required to do many things at once listen, learn, remember, write, spell and read all of which happens at a very fast pace and when some of the skills are weak it lets down in the whole process of learning (Cogan and Flecker, 2004). Through this experience dyslexic students believe that it is terrible to make mistakes and therefore failure is associated with negative effects rather than the positive effects of learning (Ryan, 1992). With dyslexia, strengths and weaknesses are usually exaggerated. Students experience anxiety and are more frequently frustrated at their abilities which can lead to anger and stress, by the age of 10 students can develop feeling of inferiority and negative images of themselves which can place them at higher risk of depression (Alexander-Passe, 2006, Ryan, 1992).

Burden and Burdett (2007) studied 50 boys who have dyslexia to identify their attitudes and feelings about the difficulties they had with learning. The study explored the idea of how dyslexia was representative of their difficulties by using metaphors as images. The results showed a trend towards descriptions of barriers to learning which were either surmountable or insurmountable depending on the emotional stress the individual associated with their condition. One student described his dyslexia as "it's a big blob of something sticky – it, like, sticks to you. You can't get rid of it really, but you can get rid of little bits." (Burden and Burdett, 2007, p79)

Ingesson (2007), interviewed teenagers and young adults where he gathered that the early grades of school was full of distress and failure for the majority. Many experienced bullying and as they grew older the problems became more limited to their school work. Teasing was found to be one of the issues dyslexic children faced in Riddick's (2010) research where one child reported that peers said "I was thick because I was always last" (Riddick, 2010, p142), and that many children lived in fear of being teased about their difficulties.

Alexander-Passe (2010), in his research on depression in people with dyslexia, identified that the most significant factor that led to their depression was the stigma of being different and how others perceived and treated them because of their learning differences. Most felt that they were misunderstood by their peers and teachers and felt alienated, rejected and abnormal.

## **5. PARENTAL SUPPORT**

The first major positive factor that children with dyslexia have is parental guidance during their learning journey. Parents, especially mothers, are probably the most important person to make sure that their child is developing in school and they really have the responsibility to make sure that their children are developing well (Scott, 2004). This is supported by a qualitative study by Roll-Peterson (2007), where he highlights that the mothers in the study were active in developing strategies to support their dyslexic children. Parents are instrumental in their children seeing an educational psychologist because this is one of the only ways that their problem will be attended to but also making sure that they get adequate support inside and outside of their school (DAS-a, 2011). Parents should also be there to support their child with their studies and give them help with homework or ensure they are staying on top of their school work. Mothers are acutely aware of the issues their children face and will attempt to improve their child's self-esteem by dwelling on the positive (Riddick, 2010).

Alexander-Passe (2007) highlights that parents need to make sure that they don't over compensate for their child with learning difficulties and that it is important that they do not ostracise siblings who do not have a learning difficulty. There are many studies that have shown that dyslexia is passed down through families' by genetics and therefore it should help many families identify dyslexic problems early. Parents should learn from their experiences and help their children understand what they are going through and teach them how to live with it (Scott, 2004).

Many researchers have highlighted that it is important that parents are proactive and look after their children as having dyslexia themselves guide their children through their problems (Scott, 2004). Also parents need to be role models and

need to act the way that they want their children to work because they want encouragement that dyslexia won't control their life and affect them adversely in the careers. Mothers are "superb role models of how to be hardworking and persistent... [they] can demonstrate coping strategies for their dyslexic children" (Scott 2004, p138). Ultimately, it is the mother that does the "detective work" to have their child assessed, diagnosed and get the appropriate help and support. It is the mother who sets the example and is the role model for their child, it is she who focuses on the positives and their strengths to ensure that their child has good self-esteem and feels worthy during their education (Scott, 2004).

*“Ultimately, it is the mother that does the ‘detective work’ to have their child assessed, diagnosed and get the appropriate help and support.”*

## **6. PEERS**

Humphrey (2003), identified in his study that peers are very significant in the life of a child with dyslexia and this can often outweigh parenting. Peers inside a student's school probably have the biggest social influence because they hold the key to how the student sees themselves socially and this can affect how they perform in their classes. Many dyslexics have been bullied at an early age because they can't keep up with their fellow classmates (Ingesson, 2007).

Dyslexics need to feel like they are in a safe or helpful environment to be able to work at their best because it makes them feel better about their disability and therefore they associate that it is normal to be dyslexic. Usually, near the age of 10 the students start to see the difference in their levels of reading and fall behind in their development quite quickly (Ryan, 1992). In a study conducted by Gans, Kenny and Ghany (2003) they found that children with dyslexia seemed to have usually lower self-esteem than their peers. What this identified was that dyslexic children are more susceptible to having a low self-esteem than their peers and sometimes exaggerate their failures more than their peers.

Peers acceptance affects the dyslexic the most in the classroom because they care how their peers perceive them as learners and can have a large effect on their self esteem. An encouraged and supported dyslexic is empowered in their learning journey (Scott, 2004)

## 7. PROFESSIONAL SUPPORT

Ingesson (2007), identified that professional early diagnosis of learning difficulties is advantageous in that interventions recommended can be put into place and this is very effective for younger children. Diagnosis will also help to alleviate secondary issues such as low self-esteem and negative effects of learning difficulties such as bullying and stress. Ingesson (2007), describes that the proper explanation of the diagnosis to the child, parent and teacher also helps to reduce the negative effects of dyslexia. Scott (2004), explains that the effects of assessment are “strikingly positive” and explains that the diagnosis can be extremely liberating where they finally understand why it is so difficult for them to learn. Burden (2005), explored the diagnosis by an educational psychologist and identified the relief that parents felt and that it was helpful for them to know and gave them a greater understanding of the problems faced by their child at school. Scott (2004), identifies that dyslexia must be diagnosed correctly and that the testing must be done by psychologists as “without proper diagnosis, the right help cannot be given” (Scott, 2004, pg. 25). A well informed teacher and parent on the diagnosis can ensure that adults do whatever is necessary to support and help the child. Scott (2004), suggests that professionals are needed to diagnose dyslexics because they need to make sure that it is dyslexia and not just a reading difficulty. Otherwise the child could be labelled wrongly and not get the support they need, therefore, not helping the child cope with their learning.

Professionals are very important because they need to make sure that they confirm that children have dyslexia rather than other learning difficulties and show parents and even teachers how to work with the disability. Specialist tuition is another way that professionals can support students with dyslexia. Specialist tutors require appropriate training in being able to support students with dyslexia and in many schools special support in small classes is also provided to ensure that the student can learn (Scott, 2004). Learning strategies such as books on tape, mind-mapping, touch-typing, laptop and tablet PC’s, software aids, audio and video resources, time management such as extra time, and multisensory learning are ways in which specialists support a dyslexics learning (Cogan and Flecker, 2004).

The writer used all of these strategies in his learning journey. Books on tape made a dramatic difference to ensure he remained in sync with his classmates. Mind mapping is a good skill for a dyslexic to learn because they can express their ideas quickly before forgetting concepts and the mind-map then is used to develop a more structured essay.

Touch typing can be a vital skill for a dyslexic to learn because they are able to put their ideas into words more quickly when using a word processor with an added advantage of support from the spellchecker. In the words of Sandra Hargreaves,

(2009) in her book on 'Study Skills for Dyslexic Students', she states that the strategies and techniques that help dyslexics to achieve should be implemented and teachers are obligated to make 'reasonable adjustments' to accommodate individual needs.

## **8. EDUCATION**

Teachers play a big part in how a dyslexic child develops; firstly the growth of a dyslexic student depends on how well the teacher works with the student by incorporating appropriate teaching strategies. Riddick (1995), identified in her study that both mothers and children with dyslexia thought that the "teachers they encountered during their school career had a critical role in how they coped at a personal level with dyslexia" (Riddick, 1995, p.71). Secondly, the teacher needs to make sure that the student is progressing and not falling behind because the teacher needs to make sure that the student with dyslexia can understand the work like everyone else. If a student is to succeed the teacher needs to make sure that they are able to cope with the course that they are learning. In fact, teachers must take responsibility for identifying students differing ability and make sure their content is accessible by all (Cogan and Flecker, 2004).

Teachers need to be taught about how to assess a student who may have learning differences and understand how the student learns because they should be one of the first people to see their difficulty with learning. This view is expressed by Humphrey (2003), who states that teachers should be adequately trained and must be accepting of students with learning difficulties. He states that the teacher-pupil relationship is critical for positive learning and the development of positive self esteem. Alodi (2000), indicated that students with dyslexia who were provided support during their educational careers have better relationships with peers and teachers. The role of teachers need to be more of a counselling role and that they need to support students with dyslexia where he states that "it is critical that teachers of children with dyslexia adopt an empathetic stance, like acceptance, this will lead to decreased feelings of isolation or exclusion" (Lawrence (1996) cited by Humphrey, 2003, p.25).

Gwernan-Jones and Burden (2009), in their review of student teachers and their attitudes towards teaching students with dyslexia was positive and that their attitudes towards teaching revealed positive beliefs about their ability to teach, however, they remained unclear as to how this could be accomplished as this was not included in their teacher training. They recommend that postgraduate training would be needed to ensure that teachers were instructed on how to practically support and help students with learning difficulties at school. Humphrey (2003), concludes in his paper that educationalists have the greatest challenge in that they not only have to teach children to succeed but they also need to ensure that their



students value themselves and that self-esteem is critical to success.

Teachers are probably the most important factor in the learning journey because the students are learning from them. Teachers should be open to the idea of dyslexia and should always recognise that it is a real problem. Teachers are probably the catalyst on how well a student performs because if they support them and help them they can really flourish. Teachers who are not understanding of learning differences can be de-motivating, students suffer because they cannot live up to their teachers expectations and also they feel like they are not good enough because they teacher does not support them. Students usually always remember teachers because of their good or bad qualities and their actions can either support or stunt their growth later in life. (Alexander-Passe, 2010)

## **9. CONCLUSION**

Whitehead (2007) suggests that the publicity of dyslexia is vital for the development of positive picture of dyslexia for dyslexics and non-dyslexics alike. This implies that people with dyslexia will feel more comfortable and have a better self concept and also non-dyslexic people like teachers and peers will better informed and will more readily give support to people they know who have dyslexia.

The writers learning journey has been a little bumpy but it wouldn't have been as positive without all these factors in place. Most of his teachers have been understanding and helpful. His parents have helped to organise and support him at school and at home. His diagnosis of learning differences has given him strategies to help him learn and has provided access to exam accommodations such as extra time to allow him to be competitive with his peers. And finally his peers, although not always accepting and helpful in his earlier years, in recent years, they have been supporting and have an appreciation of how difficult it is for the writer to learn. The writer's journey has been more positive than that of his sister who experienced the polar opposite. Firstly, she was diagnosed quite late and therefore was not given the appropriate support that she rightfully needed at the early stages of her education. Secondly, many of her teachers were not very supportive and also misunderstood her difficulties because they were not informed about dyslexia and that meant that they were not sensitive about her learning needs, her learning journey was stressful and difficult.

Peers are important in this journey because they have the influence that parents and teachers don't have, the children want to aspire to act more like their peers and sometimes feel bad when they can't keep up with them in class. Therefore, there is usually a gap between the peers and themselves that they try to hide when working in class, for example, dyslexics find it difficult reading in front of their class

and it can make them look like they are a bad reader but really they just can't read as fast out loud. This can make them feel bad and create a bad self concept by how their peers perceive them. It is important that peers have an understanding of the difficulties that dyslexics have in learning which would make the dyslexic feel more comfortable in class.

Professionals are probably one of most influential for dyslexic children as they diagnose dyslexics and help show teachers and parents how they can support the children with dyslexia. Also they are the people who are leading research into how to deal with dyslexia and its effects and develop teaching strategies for the future (Gwernan-Jones and Burden, 2009; Alexander-Passe, 2010).

Teachers are the front line in education and it is critical that they understand what dyslexia is and its effects on learning. "Teachers instinctively teach in the way that they learned so successfully themselves" (Cogan and Flecker, 2004, pxiii) however, teaching a dyslexic student required exploration of all learning styles in a multi-sensory way which will mean teachers need to explore better ways in which to deliver the curriculum. Teachers need appropriate training on how to support and teach children with dyslexia, the better the teacher is at supporting and encouraging them the better they flourish in their education journeys.

*"Teachers are the front line in education and it is critical that they understand what dyslexia is and its effects on learning."*

Parents are usually the ones that have to pick up the pieces when the other factors fail because dyslexics will usually let out their stress towards their family because they feel comfortable with them. Parents need to make sure that, like teachers, they are there to be able to talk to and make sure their children are excelling in school and also still enjoy school. They need to supervise how the other factors are affecting their children because parents have the largest commitment than any else because it's their child. Parents always need to be there as advocates for their children and they need to focus on the positive and act in a determined way to ensure they succeed. Mothers are at the vanguard of this fight they are the number one supporter of their child's journey.

No single factor will make a dyslexic's journey easy and enjoyable; all the factors work in unison to ensure the dyslexic has a good experience. Without these factors there will be moments and there will be times when it will be annoying, frustrating and oppressive. If the factors are managed well there can be a limit to the uncomfortable times they will encounter which ensures a dyslexic student can have an enjoyable, fun and effective learning experience.

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I would also like to thank my sisters, Rachael and Katrina, for setting me a good

example of how to study and giving me advice and encouragement when learning becomes too difficult for me. They have had to go through harder times than I have but through their experiences, and learning by their mistakes, I have benefited from their learning journey. They have showed me the way.

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Thank you  
Sean Hewes  
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## POSTSCRIPT

*I grew up in Singapore and lived there for 12 years attending an International School. I am now in Australia studying at Newcastle University. I am undertaking a double degree in Teaching and Technology. I chose this course because I had always loved the aspects of teaching and I enjoy it immensely. I also believe I have a talent for Design and Technology and therefore decided that I would match the two together because it seemed like a profession that I would love.*

*I am now in my second year doing quite well and enjoying it greatly. It has been quite challenging starting university because of how different the learning environment is in terms of studying independently and also living in a different country. I feel that the main challenges that I have faced have been motivation and organisation.*

*Motivation has been troubling because I live in Hall Accommodation at university and therefore there are a lot of people that can distraction me from going to class and getting my assignments done on time. I understand that I need to be much more disciplined than my peers to make sure that I get things done on time. As I am not being motivated and pushed by my parents and teachers to get my work done and with good quality, like I had while in high school, I find that distractions get the better of me.*

*Organisation has not been too difficult but there have been many times where I leave work to the last second therefore creating a sub-par assignment. But besides these issues there have not been too many troubles and my work gets done and I am achieving good grades.*

*The only area where I feel that my dyslexia is challenging me is the reading that I have to do for some courses, which can be up to 40 pages for each class, and sometimes there is just not enough time for me to finish the reading in time.*

*Living on college has many positives too. I always have help from my peers when I get stuck with my assignments. The transition from high school to university has be difficult and my university study is still challenging me but I am loving my course and that helps to keep me motivated to become a good teacher. I have had doubts about how much I would like my course, especially when things have been difficult, however, after my first week of teaching placement where I was teaching students for real I realised that it had made the right decision.*

## ABOUT THE AUTHOR



**SEAN HEWES**

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# Positive Dyslexia: Working to our Strengths!?

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*[www.bdadyslexia.org.uk](http://www.bdadyslexia.org.uk)*

Professor Tim Miles, the great British dyslexia pioneer, always highlighted the enigma of dyslexia, in that individuals with dyslexia tend to show a 'spiky' skill profile, with great strengths in some skills despite critical difficulties in others.

The global dyslexia community has made great strides over the last decades in terms of identifying individuals with dyslexia; removing barriers to their achievement; and providing support for their reading difficulties. The British Dyslexia Association (BDA) has of course played a leading role and has an outstanding track record with the 'Dyslexia Friendly Schools' initiative.

Wouldn't it be wonderful, though, if we could move to a higher level, where every individual with dyslexia – child or adult – was allowed to identify and develop their own signature strengths and skills!? We believe that the time is now right to start achieving this goal, and in this 'opinion' piece, which we hope will stimulate discussion and engagement in the dyslexia community we outline the reasons for what we term 'Positive Dyslexia'.

Positive Dyslexia has its roots in three currently unrelated 'communities of practice': dyslexia, positive psychology, and work psychology. We start with Positive Psychology, a dominant new approach that has transformed approaches to dealing with difficulties.

*"... Curing the negatives does not produce the positives. . . . The skills of becoming happy turn out to be almost entirely different from the skills of not being sad, not being anxious, or not being angry".* This quote, from the preface to Martin Seligman's book 'Authentic Happiness' captures the spirit of positive psychology – find what you're good at, and 'craft' your life so that you spend more of it doing what you enjoy and are good at, and happiness will result. The approach is based on sound principles, and is closely related to

long-standing evidence that pull-goals (working towards one's own objectives) are much more effective than push-goals (doing something because you're told to do it).

Positive Psychology has three points of focus: Positive experiences such as happiness, pleasure and joy; Positive individual traits including character, talents and interests; and Positive institutions, including families, schools, businesses, communities and societies. Its growing literature has captured the attention of academics and the media.

We are writing this just after the 2012 Olympics. There can seldom have been such inspiring examples of how Olympians and para-Olympians have made extraordinary achievements through the application of effort towards challenging goals. In many cases these achievements have come relatively late – some Olympians have just happened to find that they had real talents for boxing, rowing, cycling, weight-lifting ... And for those lucky athletes, the infrastructure and funding were there to identify and nurture those talents.

So, if we are to identify and nurture the talents of individuals with dyslexia, what are these talents likely to be? Characteristic talents identified by Thomas West and other skills researchers include: good visual and visualisation skills in scientific areas such as mathematics, engineering and physical sciences; abilities to recognise patterns of information especially in work with computers; creative and novel design skills with a special facility for mentally rearranging designs and information; good practical and problem-solving skills (big picture approach), an ability to avoid 'group-think' by taking a different approach.

In summarising these strengths, Brock and Fernette Eide describe four primary talent patterns, the MIND strengths, namely; Material/Mechanical Reasoning (3D spatial processing); Interconnected Reasoning (making over-arching connections between ideas and events); Narrative Reasoning (constructing detailed mental scenes using fragments of personal experience); and Dynamic Reasoning (predicting events through insight-based processing or mental simulation).

In order to further investigate the strengths relevant to positive dyslexia we undertook a series of interviews with successful adults with dyslexia and with experts in the field, aiming both at character strengths and work-related strengths. These interviews confirmed the strengths mentioned above, with a key finding being innovation within the workplace given opportunities for creativity. We also identified work-related strengths that have not previously been noted, including extensive preparation to cope with anticipated challenges, high levels of determination, and resilience to cope with setbacks. Other talents we found include an intuitive empathy with others, leading to a talent for negotiation or for support.



These strengths and talents have two characteristics: they lie well outside any education curriculum, and they are crucial to successful workplace performance. We are not claiming that every individual with dyslexia will have all these talents. Nor that an individual's greatest strength will be world leading. What we are claiming is that every individual with dyslexia will have their distinctive 'personal best' strengths, and we should be able to identify and nurture the talents that will allow them to make their strongest and most distinctive contributions.

This brings us to the third leg of this enterprise – work psychology. Personnel selection involves finding the best person for a given job, but work psychologists have significantly broadened this focus by: considering how to find the most appropriate job for a given individual; how best might an individual or a team 'craft' their roles to optimise their performance; and how to 'onboard' new staff so as to facilitate their inclusion and performance. There have been major developments in all aspects in recent years, but there is currently far too little research on dyslexia in the workplace.

We are convinced that individuals with dyslexia can provide the cutting edge for organisations in many respects—from acting as 'pit canary' for identifying system weaknesses right through to being the creative talent that transforms the organisation's systems or products. But this can only occur in an environment where their strengths are identified and nurtured.

We contend that an individual with dyslexia (of whatever age) must have, as an integral part of their assessment, an analysis of their strengths as well as their weaknesses. Our dream is that this 'profile' of skills should prove the basis of a career development plan in which strengths are discussed, suitable careers identified, appropriate role models found, and then a development programme designed to attain the planned outcomes.

So, how can Positive Dyslexia build on the foundation built by the British Dyslexia Association and other dyslexia organisations to achieve these goals?

We propose to apply the general methods that proved successful for positive psychology, which is a co-operative venture between experts in different areas, with strong involvement from the

*“We are convinced that individuals with dyslexia can provide the cutting edge for organisations in many respects—from acting as ‘pit canary’ for identifying system weaknesses right through to being the creative talent that transforms the organisations systems or products.”*

extended dyslexia community, including most importantly the legion of individuals with dyslexia and their supporters who are best placed to provide the insights and the impetus needed to provide the necessary inspiration and acceleration.

We have completed the necessary initial research, focused on strengths of individuals with dyslexia, and analysis of best practice in matching individual skills and personality profiles to different professions and roles, and we hope to stimulate the dyslexia community to commit to the goal of developing the agenda further.

Positive psychology has stimulated a rethink of approaches to depression, to health, and even to education, by focusing on positive individual experiences and aspirations as the driver for future happiness and success. Positive dyslexia has the opportunity to focus and strengthen these powerful ideas, stimulating individuals with dyslexia to work to their strengths.

## **ABOUT THE AUTHORS**

### **PROFESSOR ROD NICOLSON**

*Professor Rod Nicolson from the University of Sheffield has a lifelong interest in learning, and his research with Angela Fawcett on dyslexia is internationally recognised for both theory and practice. He is currently leading the research movement into Positive dyslexia [www.shef.ac.uk/psychology/staff/academic/rod-nicolson](http://www.shef.ac.uk/psychology/staff/academic/rod-nicolson)*

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# The Role of Positive Emotions in Learning

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Emotion is said to be the on/off switch for learning in the brain (Vail, 1994). Research has showed that positive emotions (such as academic enjoyment, pride, etc) predicted high achievement at end of semester exams whereas negative emotions (such as boredom, hopelessness, etc...) predicted low achievement on the same outcome measures (Pekrun, Goetz, Titz, & Perry, 2002). Thus, positive emotions may play a facilitating role in learning.

Fredrickson's (2001) broaden-and-build theory provides a basis for how positive emotions could impact learning. The theory hypothesises that positive emotions (e.g. joy, interest, etc) broaden humans' thoughts and behaviours and thus facilitates more adaptive responses to the learning environment. This in turn creates more learning opportunities and builds enduring personal resources. Fredrickson (2001) shows that people experiencing positive emotions have more flexible thoughts, are more creative, show more integrative thinking, are more open to information, and are more efficient. These support the "broaden" aspect of the theory that suggests that positive emotions broaden cognition. Fredrickson also shows that positive states of emotions expand attention and negative states narrow attention. For the "build" aspect of the theory, Fredrickson showed that positive emotions build psychological resiliency, an enduring personal resource.

By measuring positive and negative emotions and broad-minded coping at two time-points five weeks apart, Fredrickson showed that individuals who experience more positive emotions than others became more resilient to adversity over time (i.e. develop enhanced coping skills). In addition, there is also evidence that show that positive emotions undo lingering negative emotions: Fredrickson used a time-pressured speech preparation task to induce anxiety in participants and increased their anxiety-related sympathetic arousal. After this, participants were randomly showed one of four films that elicited positive emotions (joy and contention), neutral (control), or a negative (sadness) emotion. The participants who were shown either one of the two positive emotional films exhibited faster cardiovascular recovery

than those in the neutral condition and participants shown the sad film had the slowest cardiovascular recovery. This provides evidence to support that positive emotions are able to undo negative emotions (in this case, anxiety). Relating this to learning, the theory suggests that positive emotions broaden a student's thinking and build enhanced coping skills. Thus, a student who experiences more positive emotions should have better outcomes in school and is also better able to cope with negative events that happen as compared to a student who experiences more negative emotions. As the Fredrickson (2001) paper was one of the first expositions of the broaden-and-build theory, the theory still needs much research, especially in its direct application to student learning.

Reschly, Huebner, Appleton, & Antaramian (2008) examined the application of Fredrickson's broaden-and-build theory with a sample of students in grades 7 to 10 to specifically apply the theory in the context of school experiences. There were a total of 293 participants in this 3-year longitudinal study. The study employed three questionnaires, the first was the Positive and Negative Affect Schedule - Children (PANAS-C) used to measure positive and negative emotions. This is a good questionnaire with good evidence supporting its validity and internal consistency values of between 0.87 to 0.94. The second questionnaire was the Self-Report Coping Scale (SRCS), used to measure Fredrickson's concept of "broad-minded coping". This scale had only adequate levels of reliability and validity, in particular test-retest reliability over a 2-week period ranged from 0.6 to 0.73. Although this was not ideal, the scale's ability to closely approximate Fredrickson's concept was deemed more important than its relatively moderate reliability scores. The third questionnaire used was the Student Engagement Instrument (SEI) used to measure student engagement (both cognitive and psychological engagement) and learning at school. Validity and reliability measures of the SEI ranged from 0.72 to 0.88 (internal consistency) and 0.77 to 0.92 (alpha coefficients), deemed adequate for research use.

The results of the Reschly et al.'s (2008) study revealed that Positive Affect (PA) were significantly correlated to several engagement subscales with correlation coefficient scores ranging from 0.37 to 0.47 (all  $p < .01$ ). Interestingly, Negative Affect (NA) was significantly negatively correlated with engagement (-0.18 to -0.25, all  $p < .05$ ). In addition, there was a significant correlation between PA and coping strategies ( $p < .01$ ) but there was a lack of significant association between NA and coping. Also, regression analyses reveal a mediating effect of problem-solving coping strategy on the relationship between PA and engagement. There were other significant results that are not reported here as they do not directly relate to the role of emotions and learning.

The pattern of results reported here provides support for the idea that positive emotions were related to broaden cognitive and behavioural coping strategies,

mediated by broadened problem solving coping strategies. This supports Fredrickson's broaden-and-build theory as positive emotions broaden a student's cognitive resources and builds personal coping resources and a greater student engagement in school activities and more supportive relationships with adults (e.g. teachers). This shows the importance of positive emotions to engage a student in learning. Conversely, negative emotions negatively impact on a student's engagement in learning and in contrast to positive emotions, negative emotions do not lead to enhancement of resources for coping. This study was not intended to be an intervention study that aimed directly to promote positive emotions in participants to measure learning outcomes, nevertheless, it provides strong support that positive emotions play a facilitating role in learning by increasing engagement and enhancing problem solving and coping strategies.

Linares et al.'s (2005) research examined a teacher-led programme called the Unique Minds School Program (UMSP). This programme focuses on promoting cognitive-social-emotional (CSE) competencies (self-efficacy, problem solving, and social-emotional functioning) in the presumption that such improvements in CSE skills will result in classroom level changes and thus result in improved academic learning. Although not explicitly mentioned in the paper, this aim is in line with Fredrickson's broaden-and-build theory (Fredrickson, 2001). There were a total of 119 participants across two schools and 13 classrooms and included 8% classified as special education students. The demographics of the participants reflect the general population in New York City (the location of the study). This longitudinal study had three repeated observations of the participants started in grade 4 (Baseline), then again in spring of the first evaluation year (year 1) and again in the spring of the second year (year 2).

The study was well conducted with good teacher training and consultation, and on measures of intervention integrity, the teachers met 70% fidelity standards (how well the protocol is followed and delivered) and 83-88% dosage standards (how much of the protocol was followed). The outcome measures used included the Morgan-Jinks Student Efficacy Scale (MJSES), the Teacher Observation of Classroom Adaptation-Revised (TOCA-R), and the Classroom Observation Rating Scale (CORS), all of which had adequate validity and reliability scores to be used in research. In addition, an interviewer rating of problem-solving skills containing a set of five vignettes to assess problem-solving strategies was also used. Although not a standardised measure, the

*“...a student who experiences more positive emotions should have better outcomes in school and is also better able to cope with negative events that happen as compared to a student who experiences more negative emotions.”*

vignettes were modelled after previous research and also had a perfect  $r=1.0$  agreement between raters. Thus, this was also seen as a good measure of problem solving skills. Standard academic grades and tests of academic achievement of reading and maths were also used.

The results of the Linares et al. (2005) study showed that there was across the three time conditions, students in the intervention school reported significantly higher MJSES total self-efficacy than students in the comparison school. Students in the intervention school also used a significantly higher number of different problem-solving strategies over time than those in the comparison school. In addition, students in the intervention school were consistently described by their teachers as more socially emotionally competent over time on the TOCA-R total and all four subscales. Specifically, attention, concentration and social and emotional competence improved from baseline to Year 2 for intervention students, conversely, for comparison students, authority and compliance and lack of aggression deteriorated (i.e. more problems and more aggression) also from baseline to Year 2. Interestingly, students in the intervention school over time and after 2 years received higher maths grades than those in the comparison school, this is in spite of the fact that at baseline, the comparison school actually had significantly higher standardised maths scores. This pattern of results illustrate that the UMSP leads to consistent gains in CSE competencies (including emotional skills such as ability to develop positive emotions) and more excitingly, actually led to a higher learning outcome (as measured by maths grades). With the CSE training, students paid attention more, stayed on task longer, showed empathy and compassion for others, and helped each other in the classroom (Linares et al., 2005). Again, this provides strong evidence that positive emotions in the classroom can facilitate learning.

Another intervention study that examined the effect of promoting social, emotional, and behavioural skills looked at a programme called the Social and Emotional Aspects of Learning (SEAL) piloted by 25 Local Authorities (LA) in the United Kingdom (Hallam, 2009). The study used a repeated measures design that had two time periods (pre-assessment and post-assessment) and two key stages (Key Stage 1: aged 5-7 years and Key Stage 2: aged 7-11 years). Questionnaires used for the study were specifically designed by the authors and were not standardised tests. The questionnaires were adapted for use with young children from existing measures and consulted LA coordinators and LA project staff to ensure that the developed measures were appropriate and valid. However, little was reported on the actual validity and reliability scores of the questionnaires used and instead, the authors referred readers to Hallam, Shaw, and Rhamie (2006) for questionnaire information. Unfortunately, the Hallam et al. (2006) paper was a 225-page research report prepared for the Department for Education and Skills in London and was not published in a peer-review paper.

Hallam et al. (2006) also did not report any validity and reliability measures for the questionnaires. Hence, there are serious doubts about the validity and reliability of the questionnaires, in spite of the fact that this research was published in the Oxford Review of Education, a peer-reviewed well regarded journal. Questionnaire responses were received from 29 head-teachers, 84 teachers/teaching assistants, and 19 non-teaching staff. Questionnaire data were available from 78 schools, totalling 4257 children at Key Stage 1 prior to the introduction of the pilot initiatives and 2163 following it. At Key Stage 2, 5707 children completed the questionnaire prior and 3311 children following the pilot. Due to the large scale of this study, it would be premature to dismiss it just on the basis of questions of the validity and reliability of its measures. Unfortunately, an analysis of the procedure of the implementation of the SEAL programme revealed more weaknesses. There were many inconsistencies among the various schools implementing the programme. Some schools restricted implementation to particular year groups, in others, the whole school participated. Implementation was sometimes absorbed into the existing curricula or as a particular focus, taught every day or two or three times a week. To add to all this, there were missing data in that not all the head-teachers, teachers/teaching assistants, or non-teaching staff actually completed the entire questionnaire.

Despite all of these weaknesses, the results do show that all three groups of staff believed that the SEAL programme promoted the emotional wellbeing of pupils with a total of 91.8% of staff agreeing or strongly agreeing with the statement and only 3.3% disagreeing with the statement with the rest reporting "don't know". However, in terms of perceptions of the impact on school work, only 62% of head-teachers agreed or strongly agreed with the statement "SEAL has been successful in raising the standard of learning achieved", furthermore, only 29% of teachers agreed or strongly agreed with the same statement. This points to the notion that although students' emotional competencies improved, this may not have translated to any actual impact on learning. Analysis of the results of the pupils' responses also showed a gender difference in general with boys showing a positive change whereas the girls remained the same after implementation at both Key Stages.

Moving from the quantitative results, the qualitative findings of the study suggest that the SEAL programme helped teachers in four main aspects. Firstly, to understand their pupils better and made the teachers more aware of their responsibilities as role models for the children. Secondly, enhanced staff confidence in dealing with behavioural issues in the classroom. Thirdly, enabling teachers to have a dialogue with pupils about behaviour and fourthly, teachers were more aware of children's circumstances and realised that children do have emotional baggage. Overall, even though there were many limitations to the study and there was a lack of a proper control group, the results do point towards the role of emotions still playing at least some facilitating role in learning, not only for

the learners but also for the instructors.

The role of positive emotions in learning can be thought of in terms of Fredrickson's (2001) broaden-and-build theory. Positive emotions lead to cognitive broadening that in turn leads to building of coping resources and increased well-being that then leads to improved learning. The studies reviewed here show that including emotional skill training in schools has a facilitating impact on student learning and improve overall student wellbeing. One important point to note is that if positive emotions influences learning for children in general, what more for children with special educational needs? More research could thus specifically look at emotional skill training for children with special educational needs.

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# INTERNATIONAL PERSPECTIVES





# Dyslexia, Dyscalculia and Maths Learning Difficulties

Professor Steve Chinn

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This chapter is written from a UK perspective. However, I know from lecturing and speaking with teachers in many countries across the world, including Singapore, that many, if not most, of the issues discussed in this chapter are experienced internationally.

As our knowledge of the theoretical bases of learning difficulties has improved so has awareness in schools. The key to meeting the demands that that awareness brings lies in training teachers. I believe that it would be beneficial to include our knowledge of why some children find learning difficult in all teacher-training so that it is available at that critical interface between learner and teacher.

The concept of the co-occurrence of learning difficulties and their influences on children and adults is now recognised. This was not always so. I was unaware when I started to work in the field of dyslexia (in 1981) that my dyslexic students could also have very significant difficulties with maths as well as with language.

At that time we in the UK were unaware of Asperger syndrome. We didn't understand ADHD or dyspraxia. Although Kosc had written about dyscalculia in 1974 few teachers were aware of its existence (although they were well aware of under-achievement in maths). Not so very long ago people argued, often quite vehemently, as to whether dyslexia was 'dyslexia' or 'specific learning difficulty' or even 'specific learning difficulties/dyslexia' (and that's before we get to the discussions on 'difficulty' and 'disability'). These arguments did not include anything about the influence on learning maths.

There was a long definition of 'Learning Difficulties' (LD), the alternative term for dyslexia in the USA, published in 1988. As you read it, note how comprehensive it

is with regard to the influences, factors and co-occurrence issues involved in LD:

*Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition of listening, speaking, reading, writing, reasoning or mathematical abilities or of social skills. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance), with socio-environmental influences (e.g., cultural differences, insufficient or inappropriate instruction, psychogenic factors) and especially with attention deficit disorder, all of which may cause learning problems, a learning disability is not the direct result of those conditions or influences. (Kavanagh and Truss, 1988)*

After an initial flurry of interest from the Department of Education in the UK, interest in dyscalculia seems to have waned somewhat. The definition that the Department of Education published dates back to 2001:

*Dyscalculia is a condition that affects the ability to acquire mathematical 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 produce a correct answer, or use a correct method, they may do so mechanically and without confidence.*

Even though this definition is somewhat succinct, it is informative. My understanding of the various features covered in the definition are that:

It states that these learners have problems with numbers and thus the quantities represented by the symbols. This infers problems at the very early stages of maths and thus, for children, almost the first maths experiences they meet. The use of the word 'intuitive' suggests an inborn ability to deal with numbers/quantities. This should not preclude successful intervention for the majority of learners. We have to remember that there is often a big difference between what children can repeat or chant and what they understand.

'Learning number facts and procedures' could suggest that a key approach to maths involves memorising facts and procedures. There is evidence to support that this interpretation is applied in UK schools (for example, DCSF, 2008). An over-reliance on memory without understanding is ineffective for any learner, but is very detrimental for many, particularly those with

*“Dyscalculic learners may have difficulty understanding simple number concepts, lack an intuitive grasp of numbers and have problems learning number facts and procedures.”*

learning difficulties. There is further evidence that maths education in the UK is not effective for around 25% of learners (Rashid and Brookes, 2010 and the OECD Report, 2013). This leads into the part about performing maths tasks mechanically and without confidence and probably infers that there is no ability to appraise answers for validity and correctness. The skill of estimation and its use for the evaluation of answers is not a natural one for many learners. This vital life-skill area of maths has, therefore to be taught, and in an empathetic way, that is a way that is appropriate to the learner.

## **WHY CHILDREN MAY NOT LEARN MATHS**

The answer to my question to teachers, from across the UK and abroad, *'At what age are enough children giving up on maths in class for it to be noticeable?'* varies, of course, but the most frequent answer I get is *'7 years old.'* Then I meet 18 year old students who know less maths than we expect a 10 year old to know... despite some 13 years of maths lessons. Amazingly, impressively, many still try, often spurred on by the reality that to enter the higher or further education course of their choice, someone has decided that it is 'important' to have a maths qualification. Without maths, there is no access to training as a designer or an artist, for example.

The percentage for whom this is a problem in the UK is around 25 percent, of whom some will be dyscalculic, some dyslexic, some dyspraxic, some all three. Since this has been the situation for over twenty years, it seems obvious to conclude that the way they are being taught is not working.

So what factors are blocking learning? If it starts at 7-years-old, we can't blame algebra, or even fractions, or even division, though these topics probably finish off a lot of children later on when they appear in the curriculum. It could be anxiety. That would be very bad, to have children as young as seven being anxious about maths to a level where they want to give up.

Basically, I don't know a definitive answer and I feel that I should. However, my preliminary research suggests a number of factors:

- ◆ Having to do maths calculations quickly.
- ◆ Learning facts and procedures (without understanding them).
- ◆ The extremely judgmental nature of maths. An answer is right, or it is wrong. The issue here is that failure rarely motivates, especially over-exposure to failure.
- ◆ The inconsistencies in early arithmetic confuse children, making bigger challenges on memory and blurring concepts.
- ◆ Being asked to do tasks that are beyond the capacity of the child's

working and short-term memories.

- ◆ The vocabulary and language of early maths is often everyday vocabulary and language, but used in a maths setting. This is bad for communication and is an example of confusing inconsistencies.

(For a longer discussion on these factors see Chinn, 2012a or Chinn & Ashcroft, 2007)

The combinations of these factors and their relative impact on a child will differ from child to child. Children with learning difficulties in maths are a heterogeneous group.

The significance of early learning experiences is both critical and long lasting. This is known and pro-actively addressed in Singapore, but not in the UK. Geary et al. (2013), highlight the influence of these early experiences on later learning, noting that 'early number system knowledge predicted functional numeracy more than six years later.'

As ever in teaching and learning, communication is critical. In maths, teachers are not merely communicating facts and information, they are communicating concepts. There are a number of essential elements in communication:

- ◆ **Short-term memory.** If instructions or information are given out in quantities that exceed the short-term memory of the child, the information will not be remembered by the child, and when short-term memory forgets an item or items, it forgets completely. Thus the communication has failed at the first hurdle.
- ◆ **Working memory.** This is the memory that is particularly important for mental arithmetic. Assuming the pupil has enough short-term memory capacity to remember the question, he then has to use working memory to perform the calculation. If the number of steps he uses, or plans to use, exceed his working memory capacity then he will fail the task. If that makes him anxious then the problem gets worse, because anxiety can depress the capacity of working memory even further.
- ◆ **Consistency is reassuring.** It makes the general background of life secure, so that a few new experiences can be dealt with. Without that consistency and the security it brings, learning will be less effective. For example, fractions give the impression of inconsistency if they are not explained carefully, in the vocabulary used, in the procedures (which appear as inconsistent) and in developing a number sense of fractions.



- ◆ **Speed of calculation.** Having to do maths calculations quickly can challenge children with special needs, who often are slower at processing information. This creates more anxiety, which results in less working memory capacity, more failure, more anxiety, less motivation and the cycle spirals downwards.
- ◆ **Long term memory.** Committing basic facts to long-term memory, in particular, times-tables facts appears to be an international problem for a percentage of the student population. Again, I do not know why this task is so very difficult for some children (and adults), but I do know that it is difficult to the level of being impossible, or certainly unproductive in the time spent on the task compared to the gains made. Learning times-tables is something parents can do with their child (which may challenge their relationship). This task, unlike many topics in maths, has not been changed by curriculum 'innovations'. It is consistent and is the same as when the parents were taught. There is a way to deal with the problem constructively and productively that involves the use of strategies that are conceptually based (Chinn, 2009). Another of my surveys in the UK of the teachers who attend my training sessions and lectures is about the percentage of pupils who know these facts at age 10 or 11 years. The responses are rarely lower than 50% and can reach as high as 70%. Once more, if the pupil does not know the answers then it is more experience of failure.
- ◆ **Math vocabulary.** The English language vocabulary of early maths is particularly inconsistent, and even misleading and the problem continues as the maths progresses. For example,  $1/2$ ,  $1/3$  and  $1/4$ , which are the first fractions that children will meet and meet most frequently thereafter. They have names that are exceptions to the later pattern of 'fifth, sixth, seventh, etc. They are not, 'twoth, threeth and fourth.' 2, 3 and 4 now mean that the fraction is getting smaller.

It may be that teachers and parents have not recognised and acknowledged these factors with the consequence that the learning environment for children is not efficacious. It is a not uncommon belief in life that just because something makes sense to one person that it automatically makes sense to everyone else.

## COGNITION AND META-COGNITION IN MATHS

Maths curricula across the world seem to be moving towards some similarities in pedagogy. One of which is that the curriculum should encourage flexible thinking and meta-cognition or 'thinking about how you are thinking'. There seems to be

some consensus, even if only in principle, that there should be less emphasis on the non-thinking application of formulas (or algorithms).

Usiskin (1998) listed the benefits and attractions of algorithms

- ◆ **Power:** An algorithm applies to a class of problems.
- ◆ **Reliability and accuracy:** Done correctly, an algorithm always provides the correct answer.
- ◆ **Speed:** An algorithm proceeds directly to the answer (the pupil does not have to think).

The seductive power of algorithms is enhanced by the many students who collude with teachers in accepting the use of algorithms. For example, the mantra for dividing by a fraction, 'Turn upside down and multiply' is accepted as avoiding a lot of agony and effort in trying to understand the logic behind the procedure.

There is a problem here for students who do not have reliable mathematical memories. Formulas, procedures and accurate and swift recall of facts will lead to a version of success in number work for those children with strong mathematical memories, but even in this scenario, countries need problem solvers as well as computationally adept pupils (particularly when calculators and computers are readily available). And our brains are designed to forget as well as remember, particularly when the topic is not 'topped up' in memory. I firmly believe that understanding maths enhances the memory for maths. Singapore, a country with a strong reputation for success in maths, overtly encourages meta-cognition.

I was involved in research into thinking (cognitive) style in maths with two colleagues in the USA in the mid 1980s (Bath, Chinn and Knox, 1986). Our literature search showed that two styles of thinking seemed to be recognised and that good problem solvers needed to have access to and use the appropriate thinking style at different stages in problem solving. We labeled our interpretation of the two styles as 'Inchworm' and 'Grasshopper'.

Grasshopper thinkers are holistic, flexible and intuitive. They have very good number and operation senses. They resist documenting their methods. Grasshopper thinkers are answer-oriented. Inchworm thinkers are formulaic, procedural, sequential and literal in their interpretation of numbers. They need to document and want only one way to solve problems. Inchworms are procedure-oriented.

It is possible that some educators under-estimate the impact of this concept. It seems obvious that the way that learners think will be a very critical factor in the way they learn and in the way they are taught. The concept of meta-cognition has

been recognised as a major contributor to success in teaching and learning. The National Research Council of the USA published their findings and research in 'How People Learn' (Bransford et al., 2000). They summarised their research in just three key findings, the third of which is:

The teaching of metacognitive skills should be integrated into the curriculum in a variety of subject areas. Hattie's (2009) study of research into what is effective in education found that meta-cognitive strategies were highly effective in improving learning. He also mentions within this context the use of self-questioning and states that 'the more varied the instructional strategies throughout a lesson, the more students are influenced.' I am often asked if too many strategies are explained, will they cause confusion? My answer is a succinct, 'No', but the way that variety is presented is very critical as to whether or not it is beneficial.

*“Uncertain learners like the security of the familiar, even if the familiar is not all that successful. Consistency is a key factor in motivation.”*

Uncertain learners like the security of the familiar, even if the familiar is not all that successful. Consistency is a key factor in motivation. Teachers may have to do the hard sell on those alternative methods.

There are some potential consequences, in terms of being successful at maths, that are linked to the two thinking styles. If the learner is at either extreme then he will be at risk. It is possible to survive maths as an 'extreme' inchworm thinker, but there are some essential pre-requisite skills that are needed to make this an effective style, for example a good long term memory for sequential information and a good working memory. It is less likely that a grasshopper thinker will survive secondary school maths, particularly when documentation is essential. A grasshopper mathematician is likely to be successful at 'life maths', but probably not successful as an accounts clerk.

Some maths curricula encourage pupils to share their different methods and encourage teachers to present different methods for solving problems. Again, this will require good sales techniques from teachers, because some pupils will just not want to buy into different methods because they think one method is enough and two or more will be confusing (and surplus to requirements). However, each method should illustrate another facet of the concept and, even if the pupil doesn't adopt the new method, an exposure to a different way of perceiving a problem should be beneficial. And there will be a range of needs in any group of pupils.

However, there are persuasive reasons why it is beneficial for learners to be able

to draw on both thinking styles, maybe even in the course of solving a single question. A problem solving sequence might be to start with the over-viewing skills of the grasshopper, moving onto the documenting and procedural skills of the inchworm and finally checking the answer using the appraising skills of the grasshopper. Then there is the situation that some questions and topics lend themselves more to one thinking style than the other, for example, mental arithmetic tends to be a better experience for grasshoppers, whilst algebra is more inchworm friendly.

The ethos of the classroom is another key factor in encouraging or discouraging flexible thinking styles. If learners are encouraged to explore different methods and their efforts are praised and appreciated (children are adept at spotting false praise) then they will generate a learning culture of flexible thinking. This goal also requires a risk-taking ethos in the classroom where pupils can be wrong without losing motivation.

Pupils can be encouraged to share and discuss different methods, but teachers must be aware that there is a need to manage those extreme inchworm thinkers who may be confused by too much choice. Valuing different approaches will encourage flexibility. The maths culture of answering quickly will be counter-productive for these goals. If we are encouraging pupils to read, digest, analyse and comprehend questions, to use meta-cognition, then the culture of speedy answers may discourage them from doing that.

There is almost always more than one way to solve a maths problem, however simple the problem seems to be. Children will become better problem solvers if they can think of 'another way' to solve a problem. This will also help them check their answers and become more confident with those answers. Adults can still learn this skill. Learning to leave the old skill behind for a time while you learn another, almost contradictory skill, is hard for any sports player, for example. It's hard to do in academic activities, too. The old, safe and secure methods are just that, safe and secure. In the early stages of learning, a new skill may appear unappealingly inefficient. Hopefully that changes and the new skill can take its place alongside the old skill.

Finally it should be noted that there may be some inchworm thinkers and some grasshopper thinkers whose thinking style is extreme and totally impervious to change, however skilled the teacher. Then the teacher has to remember the adage, 'Teach the subject as it is to the child as he is.'

## MATHS SKILLS AND COGNITIVE STYLE

*Three key grasshopper thinker skills an inchworm thinker should adopt:*

1. *Inter-relating numbers and the operations, for example, seeing 9 as 1 less than 10, seeing 5 as half of 10.*
2. *Overviewing any problem, for example reading to the end before starting or getting a feel of what the answer might be.*
3. *Appraising their answer.*

*Three key inchworm thinker skills a grasshopper thinker should adopt:*

1. *Explaining their methods.*
2. *Documenting their methods.*
3. *Accepting algebra!*

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<b>BOOKS BY STEVE CHINN</b>			
<b>Year</b>	<b>Title</b>	<b>Author</b>	<b>Publisher/ISBN</b>
2012	The Trouble with Maths. A Practical Guide to Helping Learners with Numeracy Difficulties <i>2nd ed. (The 1st edition won a nasen/ TES book award in 2004)</i>	Steve Chin	David Fulton/Routledge ISBN 978-0-415-67010-4
2012	More Trouble with Maths. A Complete Guide to Identifying and Diagnosing Mathematical Difficulties	Steve Chin	David Fulton/Routledge/ nasen ISBN 978-0-415-67013-5
2011	The Fear of Maths: Sum Hope 3	Steve Chin	Souvenir Press ISBN 978-0-28564-051-1
2009	What to do when you can't learn the times tables	Steve Chin	Egon ISBN 978-1904160-95-3
2009	What to do when you can't add and subtract'	Steve Chin	Egon ISBN 978-1904160-9-6
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2010	Addressing the Unproductive Behaviours of Students with Special Needs	Steve Chin	Jessica Kingsley ISBN 978-1-84905-050-0

<b>OTHER BOOKS</b>			
<b>Year</b>	<b>Title</b>	<b>Author</b>	<b>Publisher/ISBN</b>
2009	The Elephant in the Classroom; Helping Children to Learn and Love Maths'	Jo Boaler	Souvenir Press. ISBN 978-0-285-63847-1
2003	Dyscalculia Guidance'	Brian Butterworth & Dorian Yeo	GL Assessment. ISBN 978-0-708-71152-1
2005	Teaching Maths to Pupils with Different Learning Styles'	Tandi Clausen-May	Paul Chapman Publishing. ISBN 1-4129-0358-9
2005	Individual Differences in Arithmetic	Ann Dowker	Psychology Press. 1-84169-235-2
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2004	Dyslexia and Mathematics' 2nd ed	Tim & Elaine Miles (eds)	RoutledgeFalmer. ISBN 0-415-31817-3
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<b>SCREENER</b>			
2003	The Dyscalculia Screener'	Butterworth, B	GL Assessment. ISBN 978-0-708-71814-8

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# Phonological Skills and Dyslexia

**Emeritus Professor Angela Fawcett**

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There is unanimous agreement that problems with phonological processing are associated with both dyslexia and problems in reading. The phonological deficit hypothesis has been one of the major hypotheses for over 30 years now, but it is still hotly debated what exactly phonology comprises, and the subsequent implications from theory to practice. This is reflected in differences in the definition of dyslexia. The British Dyslexia Association definition (2007) notes problems in phonological processing, whereas the Rose Dyslexia Review (2009) notes difficulties in phonological awareness. In a recent meta-analysis, Lervag, Lyster and Hulme (2012) examined 235 studies that included phonemic awareness, rime awareness (Goswami and Bryant, 1990) and verbal short-term memory (Gathercole and Baddeley, 1990) in relation to reading. They aimed to resolve the controversy on the comparative role of these components on phonological processing. The findings of the meta-analysis showed that there was a major role theoretically for phonemic awareness as a predictor of reading ability, even taking into account rime and verbal short-term memory.

In educational circles, the concept of synthetic phonics, that is blending together the phonemes or sounds in a word to create a whole, has impressed the UK government to the extent that it has become standard practice in UK schools. In this article we will consider further the role of phonological processing and phonological awareness, not just in reading English but also in the Chinese language, which seems at first glance to be pictorial. Nevertheless, I shall demonstrate that phonological skills can have an impact here as well as in English.

*“In educational circles, the concept of synthetic phonics, that is blending together the phonemes or sounds in a word to create a whole, has impressed the UK government to the extent that it has become standard practice in UK schools.”*

So what are the differences between phonological processing and phonological awareness? Phonological processing is assessed by a variety of tests related to the abilities to perceive, produce, manipulate, analyse and remember the sounds of spoken language. A widely used approach to assessing phonological processing, especially in children, is the use of phonological awareness tasks. These include skills such as breaking down words into their sound parts, or making judgments about them. For example, knowing that 'cat' can be divided into its 'onset' consonant /k/ and 'rime' unit /at/, and that in turn, its individual sounds (phonemes) are /k/.æ/.t/, or, judging that 'cat' rhymes with 'mat', are all demonstrations of phonological awareness. Although awareness can occur at various levels, such as the syllable, the onset and rime, it is awareness of individual phonemes (speech sounds) that seems to be the skill most critically related to emergent literacy ,

Phonological awareness is a meta-linguistic skill involving knowledge about the sounds that make up words. There are two levels of phonological awareness - syllabic knowledge and phonemic knowledge. At the syllabic level, which is the simpler, awareness is measured by a variety of tasks, including tapping out the number of syllables, counting syllables, and deleting syllables. The development of awareness at the phonemic level (e.g., that cat is /c//a//t/) is far more difficult to acquire (Adams, 1990), and is measured by counting phonemes, dividing words up into a series of phonemes, deleting phonemes, and substituting phonemes. The ability to divide words into onsets and rimes (e.g., that cat may be broken down into /c/, the onset, and /at/, the rime) falls midway in difficulty" between syllabic and phoneme awareness.

So when and why do children acquire their phonological skills? This turns out to be another controversial area. In terms of the acquisition of phonological awareness skills, the ability to count the phonemes in a word develops around first grade for normal readers, but the ability to manipulate these phonemes is developing up to secondary school level (Adams, 1990). A typical progression would be, first, syllable recognition at around three or four years; then an intermediate stage based on recognition of onsets and rimes; and finally recognition of individual phonemes after the age of 6 (Goswami & Bryant, 1990). It is no coincidence that these skills develop at this time, in that early phonological awareness skills provide the foundations for the acquisition of higher levels of meta- phonological skill. Data from illiterate adults (e.g., Morais et al., 1986) suggests that these higher level skills are to some extent acquired through learning to read, and themselves form the foundation of spelling skills.

Within the general category of phonemic awareness, there are considerable differences in the level of ability each task demands. This may explain why some experimental tasks produce either more or less significant results. The sound categorisation tasks, particularly rhyming and alliteration, are amongst the simpler

phonemic awareness tasks (Bradley & Bryant 1978; Stanovich, et al., 1984), because children do not require much knowledge of how to segment phonemes, and the task is simply dependent on the ability to compare and contrast words in terms of similarities and differences in their onsets and rimes. The easiest phoneme deletion task (Stanovich et al., 1984) is deletion of the initial phoneme (for example, say cat without the /c/), with the most complex being phoneme substitution (for instance, replacing the /c/ of cat with /s/ to make sat). The slow development of phonemic awareness has been linked to memory organisation, perception and lexical representation.

Phoneme awareness helps children to learn the connections between alphabet letters and their sounds and these skills need to develop by the time children begin to learn to read alphabetic orthographies, like English, if they are to learn successfully. Children who cannot learn these connections effectively are limited in the strategies that they can use to read words; for example, they may need to rely on memorising printed words as wholes, or on guessing, and of course this would seriously limit their ability to learn to read new words autonomously (Share, 1999; Byrne, 1998; Hatcher, Hulme, & Ellis, 1994). There is solid evidence dating from the seminal work of Bradley and Bryant (1983), that phonological awareness, as well as a variety of other phonological processing skills, including rapid pronunciation of words, the repetition of nonsense words, and verbal short term memory are impaired in children with dyslexia and the impairments persist into adulthood. For a review of the area see Vellutino, Fletcher, Snowling, and Scanlon (2004).

As noted above, there is a solid literature on deficits in phonological awareness in dyslexic children, but how long do these problems last for children with dyslexia? We ourselves have shown that impairments persist up to the age of 17 years, with skills closest to (but inferior to) the 8 year-old control children. In our study, that is children 9 years younger than the oldest dyslexic group (Fawcett & Nicolson, 1995). Our work on the Dyslexia adult screening test shows that there are continued problems in segmentation and spoonerisms – taking the first sound from the first word and swapping it with the first sound of the second word, so that Michael Jackson becomes ‘Jichael Mackson’. Somewhat to my surprise I have even had mature dyslexic students cry when asked to perform a spoonerism task! A good way to test phonological skills in adults is to use a timed nonsense passage, in

*“Our work on the Dyslexia adult screening test shows that there are continued problems in segmentation and spoonerisms. ... I have even had mature dyslexic students cry when asked to perform a spoonerism task!”*

which the only way to read nonsense words is to break them down into their phonemes and then reassemble them to make an unknown word. In our research in Sheffield with 100 students attending for diagnosis (unpublished data) we found over 70% of dyslexic university students showed difficulties with this task in terms of their accuracy and the extra time needed to complete the passage. Moreover, nearly 60% of these dyslexic university students showed problems in phonological segmentation, by contrast with younger control children who are largely successful at this task by secondary level.

In terms of Chinese learners clearly there is a strong role for morphology in recognising the symbolic basis of the written language. So does this mean that phonological skills are not important in Chinese? A study of Chinese pre-school children at risk for dyslexia, showed impairment in phonological skills, morphological skills and verbal memory in a longitudinal study over a 3 year period (Ho, Leung & Cheong, 2011). It also seems that because of the similarities between symbols, phonological verbal memory is implicated in retrieving the correct pronunciation in reading. There are clear links between phonological awareness and successful spelling. Awareness of tones in Chinese characters in Level 1 predicted English language learning in level 2 (Yeung & Chan, 2013) Moreover, it seems that an alphabetic or phonological approach as in Pinyin can be important in early reading, with maternal input influencing progress, and also in adult learning (McBride-Chang et al., 2012). On the other hand, in order to acquire English as a second language, studies have shown that phonological skills are particularly important in the early years from age 3, with those Chinese children who show the strongest phonological awareness skills, making the most progress with their second language learning (Lei et al., 2012). It may be seen that phonological skills plays an important role in bi-lingual Chinese literacy, in conjunction with morphological and rapid naming skills.

In summary, therefore phonological skills have been shown to be critically important in learning to read, but it is not yet clear what causes these phonological deficits in dyslexia. Moreover, it is not entirely clear whether these are a predictor, a pre-requisite or a consequence of learning to read. It is clear that almost all children who show difficulty in reading have problems with phonology, including both dyslexic children and low achievers. However, it is rare to find a dyslexic child who shows just a 'pure' phonological problem and it is the presence and intensity of co-occurring difficulties that has been implicated in the expression of dyslexia, even in families at risk of dyslexia (Muter & Snowling, 2009). It is clear from the studies analysed by the National reading panel, that phonological training can improve phonology significantly, but this seems to have little impact on speed, which forms a key component of fluent reading. More recent theories of dyslexia such as the cerebellar deficit theory and the procedural learning theory (Nicolson & Fawcett, 2001; 2007) have set out to explain problems in both reading and phonological

awareness in terms of learning and the acquisition of skills. It seems that there is still much to learn about the causes of phonological deficits in dyslexia and other reading problems., and their role in the development of fluent reading

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# Study Skills for Dyslexic Adults in Higher Education

Dr Margaret Meehan

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The student with dyslexia faces many challenges when embarking on a university course. Most first year students in Higher Education (HE) are unprepared for the speed at which the modular system is delivered, that is 10-12 weeks of teaching followed by a three or four week vacation and examinations.

Although the modular system may favour dyslexic students because they can focus for a short time on a small number of specific subjects, it also provides less time to assimilate new material and complete coursework before an examination is demanded.

The first few weeks of term can be exciting but stressful. Students are acclimatising to the transition from school, college or work and possibly a change or move from home life all of which can be disorienting. Sometimes their first assignment deadline may be upon them before they have finished the required preparation of reading and research.

Specialist Tuition for students in HE is specifically tailored to the individual student. The main aim of the tutor is to facilitate the student becoming as independent a learner as possible, effectively making herself redundant. The student-tutor relationship is unique, student-centred and dynamic. In the first meeting with a student, the tutor will have read a Diagnostic Assessment and a Needs Assessment Report which will give the experienced tutor some idea of the student's present strengths and difficulties and what may be required in the way of skills. This view will be modified as a result of a discussion with the student particularly if a significant amount of time may have passed between the dates of these reports and when the student presents themselves for support. The recommendations in

both these reports should be discussed with the student and the student's responses recorded, possibly on an Individual Learning Plan (ILP). The ILP can take various forms and Figure 1 below is a quick checklist which, after an interview with a student, can help the tutor to build up a picture of how the student approaches the different aspects of study and what they feel is necessary in the short, medium or long term. A plan for the next 2 or 3 sessions may be decided on but this must be flexible as priorities may change over the course of a week and the tutor has to work with whatever the student presents at the time of the session.

If a student is a first year and seeks support at the beginning of the term, it is likely that the delivery of study skills may follow a general pattern of organisation, reading skills, approaches to research, concept mapping, note taking, writing skills, memory techniques, revision and examination techniques. These skills have to be monitored and reviewed at each level of the course as approaches at level 1 will probably need to be modified as the student moves through the higher levels when the volume of reading and writing increases more and the tasks become more complex.

It is important for the tutor to establish in the first meeting with a student whether black writing on white paper is problematic. Most students do not understand the question, but if the tutor says that she finds the text stays perfectly still, the words are discreet and not too close together and that blocks of text are not out of focus, some students are surprised. They realise that they have spent their education trying to read an almost impossible script. A screen for coloured overlays can then be recommended which can lessen the students' effort in reading.

Students present themselves for support at different times in the year and at different levels, so the tutor needs to be flexible and work with the student in the 'here and now' of the session. If students find it hard to attend sessions, support can feel disjointed for both the student and tutor but this does not mean that the student is not progressing in awareness of their own strengths and developing study skills strategies. The tutor has to understand what the student needs and help her to develop strategies to succeed. This can be challenging for the tutor who needs to be creative in adapting skills to the particular way a student works. It is almost as if the tutor has to try and experience how an individual student's brain works and help the student to develop strategies so that she can deliver the assignments that her course requires.

Sometimes the student has little knowledge of dyslexia or why she experiences difficulties in academic and everyday life, and yet such awareness helps the student to work with her strengths. Maximising the student's strengths is the best way for the student to succeed. It is rare to meet a dyslexic student who has a positive view of herself or her academic potential, but an exploration of a student's strengths



provides an opportunity to build up confidence and self esteem. This is particularly necessary as dyslexic students are often assessed through their main area of weakness – writing. Stress generally accompanies a dyslexic student as she progresses through her academic career, but stress exacerbates dyslexic traits and if her self esteem is not maintained a negative spiral can result. To succeed in HE a dyslexic student has to develop good strategies to deal with stress.

A student in HE has many demands on their time and she has to deal with academic, administrative, financial, family, social and personal tasks, so organisation is of paramount importance. If a student is organised, this leaves her free to concentrate on her studies. However, it takes time to be organised and most dyslexic students are so focused on the reading and writing aspects of their courses that other tasks may be overlooked.

How skills are delivered depends how the student works but also on the discipline and demands of the course. Reading skills may cover skimming and scanning techniques to find a particular word or phrase, or gather the general outline of a topic. A ladder read can be a very valuable skill for students with large volumes of reading, for example, English Literature or History (Pavey, et al., 2010). The tutor can demonstrate this skill but the student has to judge when it can be applied.

Students have to read aloud when giving presentations and sometimes a tutor may help a student pronounce jargon words (usually Latin or Greek based). This is usually coupled to a session on spelling these words notably for students on professional courses where handwritten notes have to be recorded, for example, nursing students where the spelling of drug names has to be accurate. If a student has a visual learning style chunking the letters and creating a visualisation as a memory aid can be a very effective strategy.

The majority of students will say that their main difficulty is expressing thoughts in writing and the effort involved in this task can be considerable. Good organisation can help to minimise the stress involved in writing. This may involve a Gantt Chart or electronic calendar with reminders to monitor progress. Time must be given to the analysis of the task or assignment question, research skills, the various sections of the assignment, several drafts and proof reading. The type of writing style

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**Figure 1. INDIVIDUAL LEARNING PLAN**

<b>INFORMATION ABOUT THE STUDENT</b>		
<i>Student Name:</i>	<i>Student Number:</i>	<i>Date:</i>
<i>Course:</i>	<i>Time of Appointment &amp; Duration:</i>	<i>Contact Number:</i>
<b>STUDY SKILLS EVALUATION</b>		
<b>INDEPENDENT LEARNING SKILLS</b>		
Learning Style	<input type="checkbox"/>	Metacognition <input type="checkbox"/>
<b>READING SKILLS</b>		
Management of Reading Volume	<input type="checkbox"/>	Prioritising reading <input type="checkbox"/>
Skimming/scanning	<input type="checkbox"/>	Critical reading skills <input type="checkbox"/>
Highlighting/summarising	<input type="checkbox"/>	Speed reading <input type="checkbox"/>
Comprehension	<input type="checkbox"/>	Ladder Read <input type="checkbox"/>
Coloured overlays	<input type="checkbox"/>	
<b>RESEARCH STRATEGIES</b>		
Analysis of research aim	<input type="checkbox"/>	Time management <input type="checkbox"/>
Identification of key points	<input type="checkbox"/>	Research mind maps <input type="checkbox"/>
Effective use of library/search engines	<input type="checkbox"/>	Effective use of abstracts/journals <input type="checkbox"/>
Summarising	<input type="checkbox"/>	Note Taking <input type="checkbox"/>
<b>MATHEMATICS</b>		
Mathematics	<input type="checkbox"/>	Statistics <input type="checkbox"/>
<b>PROOFREADING STRATEGIES</b>		
Structured Proofreading strategies	<input type="checkbox"/>	Editing <input type="checkbox"/>
<b>NOTE TAKING STRATEGIES</b>		
Mind mapping	<input type="checkbox"/>	Key points in discussions <input type="checkbox"/>
Generating notes	<input type="checkbox"/>	
<b>TIME MANAGEMENT STRATEGIES</b>		
Organisation of files etc.	<input type="checkbox"/>	Managing deadlines <input type="checkbox"/>
Managing stress	<input type="checkbox"/>	Procrastination <input type="checkbox"/>

**STUDY SKILLS EVALUATION****COMPOSITION STRATEGIES**

Organisation of material	<input type="checkbox"/>	Planning of written work	<input type="checkbox"/>
Introductions	<input type="checkbox"/>	Conclusions	<input type="checkbox"/>
Critical writing skills	<input type="checkbox"/>	Systematic work	<input type="checkbox"/>
Writing an abstract	<input type="checkbox"/>	Report writing	<input type="checkbox"/>
Structuring written work	<input type="checkbox"/>	Written expression	<input type="checkbox"/>
Paraphrasing	<input type="checkbox"/>	Developing an argument	<input type="checkbox"/>
Maintain a theme	<input type="checkbox"/>	Use of key vocabulary	<input type="checkbox"/>
Scientific writing—instructional	<input type="checkbox"/>	Scientific writing—explanation	<input type="checkbox"/>
Dissertation writing	<input type="checkbox"/>	Thesis writing	<input type="checkbox"/>
Spelling	<input type="checkbox"/>	Punctuation	<input type="checkbox"/>
Grammar	<input type="checkbox"/>	Referencing	<input type="checkbox"/>
Concepts of citing	<input type="checkbox"/>	Plagiarism	<input type="checkbox"/>

**EXAMINATION STRATEGIES**

Time management in examinations	<input type="checkbox"/>	Revision	<input type="checkbox"/>
Memory techniques	<input type="checkbox"/>	Presentation skills	<input type="checkbox"/>
Analysing questions	<input type="checkbox"/>	Model answers	<input type="checkbox"/>
Past papers	<input type="checkbox"/>		

*A copy of the Individual learning Plan has been given to the student*

*Has consent been given for the tutor to contact the Mental Health Mentor:* Yes:  No:

<i>Tutor Name/Signature:</i>	<i>Student Signature:</i>	<i>Date:</i>
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*Action Plan for Tuition*

required varies from module to module and the level at which the student is studying but may include: reports, reflective essays, journals, literature reviews, book reviews, a poster, a dissertation or a thesis. Thus a student may need to develop a wide variety of writing skills.

It is important to help the student establish revision skills at the beginning of each term, so that notes, concept maps or flash cards of each lecture can be stored for later use. Revision may involve memory techniques and these will be unique to the student and how her mind works. If revision is discussed early in the course student can feel more prepared to face examinations.

In a short article it is hard to describe the complexity of working with adult dyslexic students in HE. It is both exciting and challenging working with students but it is also very rewarding.

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*Dr Margaret Meehan has worked with adults with Specific Learning Difficulties in Higher Education for over 15 years. Initially supporting dyslexic students who experienced difficulties with mathematics and science, she delivers specialist tuition to students across all disciplines. She was a researcher on an award winning Tempus Project on the Identification and Support in Higher Education of Dyslexic Students (ISHEDS) in the Balkan countries and Wales, and has carried out small research projects on Dyslexia and the Experience of Students in Higher Education; Dyspraxia, Dyscalculia and Mathematics; Dyslexia and Entrepreneurship; and Dyslexia, Welsh and Bilingualism. The co-author of Dyslexia Friendly Further and Higher Education (Sage, 2010). Margaret has also delivered Dyslexia Awareness Training to Universities, Local Authorities and private companies. Margaret's main areas of expertise are:*

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# Dyslexia in Adolescent Dyslexics and Students

Emeritus Professor Angela Fawcett

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Many people think that dyslexia is a problem that is found only in children, and mostly in young children at that. However, dyslexia is a difference in the way the brain processes which therefore persists throughout life. It has been legally acknowledged in the United Kingdom (UK) and elsewhere across the world that dyslexic students in higher education continue to need support (Disability Discrimination Act, 1995; 2005; SENDA, 2002).

Students who have had a positive diagnosis of dyslexia in the UK can access the Disabled Students Allowance (DSA), which entitles them to an Assessment of Needs, computers and computer packages, support, and 25% extra time in examinations. Support is also available in Singapore to allow students with dyslexia to achieve up to their potential but the extra time allocated here is 15 minutes in the hour. Moreover, support is not universal in junior high school and the polytechnics or further education centres. We are currently working with research students from the Lee Kuan Yew School of Public Policy on a Policy Analysis Exercise.

## **DYSLEXIC STUDENTS – RESEARCH STUDIES**

The questions:

- ◆ Is the profile of dyslexia in adult students the same as in childhood?
- ◆ Do they have problems with phonology, and reading and spelling difficulties?

The evidence suggests that no two students present identical profiles! There are continued problems in phonology, speed of processing and also in cerebellar function (Ramus et al., 2003; Reid et al., 2007) particularly in phonology. Spelling, non-word reading, digit span, and writing speed have been identified as a problem

in 95% of small samples (Hatcher et al., 2002). Although phonological skills may be adequate for familiar words, there will be continued orthographic problems, (Kemp et al., 2009), morphological deficits (Deacon, Parrila & Kirby, 2006), and they are more dependent on context than their peers (Corkett & Parrila, 2008). There are different profiles for compensated and uncompensated dyslexia (Birch & Chase, 2004), with no phonological deficits, only non-word reading deficits in the compensated group. There is strong evidence for non-word reading deficits even in well-compensated dyslexic adults (Gross-Glenn et al., 1990; Felton et al., 1990). The answer therefore depends how good their reading skills are and how complex the task they are asked to complete!

Moreover, there are a number of additional problems for dyslexic students that can extend across the curriculum. Problems have been identified with speed and accuracy in mental and written arithmetic (Simmons & Singleton, 2006). There is slow speed of processing in verbal and non-verbal tasks (Miller-Shaul, 2005). Verbal working memory deficits have been identified, and there are spatial deficits on complex tasks, (Smith-Spark et al., 2007; 2003), and everyday cognitive lapses (Smith-Spark, Fawcett et al., 2004).

This is one of the most striking problems for this age group and it affects their organisation and time management so that it becomes very difficult for them to succeed without support. We have identified problems in a range of learning tasks including consolidation (Needle et al., 2009). All of these difficulties naturally leads to academic and social anxiety (Carroll & Iles, 2006), and more psychiatric problems (Undheim, 2003). This is likely to be a major problem in a country such as Singapore, where expectations and academic standards are exceptionally high.

## **DIAGNOSIS USING IQ TESTS**

Dyslexia has traditionally been defined by a discrepancy between ability (IQ) and achievement (reading ability). This is controversial! It works well for students with high IQ, but successful students may no longer show reading difficulties, and reading tests designed for children are not really suitable for adults. It is now recognised that an IQ test alone is not sufficient to diagnose dyslexia but an IQ test

*“Interestingly, in the UK around 50% of students coming forward for diagnosis have not been identified in school. They have worked so hard that they have managed to achieve well enough to reach university, but it all becomes too difficult when juggling the competing demands of university.”*

does give a profile of strengths and weaknesses – dyslexic students tend to know their weaknesses, but not necessarily their strengths!

## **METHOD OF DIAGNOSIS**

An IQ test must be administered by a Qualified psychologist. However, in 2005 the UK Department for Education and Skills Specific Learning Differences working group recommended a battery of tests to be used by other Qualified Professionals to identify Specific Learning Disabilities, such as dyslexia. These tests include literacy (reading, spelling, writing), cognitive processing (working memory, phonological processing, speed of processing), numeracy, motor control and underlying ability along with a history of reading and spelling difficulties. It can be seen that this is a complex process. Interestingly, in the UK around 50% of students coming forward for diagnosis have not been identified in school. They have worked so hard that they have managed to achieve well enough to reach university, but it all becomes too difficult when juggling the competing demands of university.

## **WHAT PRACTICAL PROBLEMS DO WE FIND DYSLEXIC STUDENTS SHOW?**

- ◆ Speed of reading and preparing essays
- ◆ Residual problems in spelling even for relatively fluent readers
- ◆ Difficulty in processing the large amounts of information at degree level in different subjects
- ◆ Time management
  - juggling multiple deadlines
  - either putting in greater effort than others of similar ability,
  - or an unrealistic failure to recognise the need to do this!
- ◆ Coherence and organisation in written work
- ◆ Self esteem and anxiety
- ◆ Organising a new environment without support

## **SOURCE OF THIS DATA AND EXPERTISE**

I have had extensive experimental research experience with students over a 20 year period. I ran the student dyslexia assessment service at Sheffield University from 1994-2006 with Rod Nicolson training postgraduate students who were researching into dyslexia. Around 150 students annually presented for diagnosis – around 50% had not previously been diagnosed in school. Assessment included the WAIS, the WRAT and other tests recommended by the SpLD group, plus tests we have found useful in our own research. We were able to see how useful the

recommended standardised tests of reading and spelling were for this group.

Tests we found useful in Sheffield included tests of fluency drawn from the Dyslexia Adult Screening Test (Fawcett & Nicolson, 1998) including One Minute Reading, Phonemic Segmentation/ Spoonerisms, Rapid Naming and One Minute Writing. A passage containing real words and nonsense words, which can only be read by grapheme/phoneme translation, and scored for both speed and accuracy is also particularly useful for relatively skilled readers. These tests of fluency in our view are more diagnostic for dyslexia in high achieving adults. Using the full IQ plus WRAT standardised tests we were only able to identify half the students with difficulties. However, when we added our tests of fluency, we identified all but one of the dyslexic group. A short form IQ using Working Memory and Processing speed in conjunction with fluency tests may be the most useful way forward in terms of costs and efficiency. For countries where diagnosis is not yet established, screening may be a useful way forward

## DEALING WITH MULTI-CHOICE QUESTIONS

Recently I have been working with a number of students to help them in dealing with multi-choice questions. These are often particularly stressful for dyslexic students, because they often involve large amounts of reading, a heavy memory load remembering the question while considering each of three or four potential answers. Moreover, these questions often include at least two of the answers which are potentially confusable.

One sure way to be successful, is to make sure that you complete the paper. Help your students to pick out the short questions first, and the ones that they are confident they can answer. If time is running out, advise your students to go through and tick the first answer, and then they have at least a 25% chance of being successful. These extra marks can make all the difference between passing and failing.

Students with dyslexia have a tremendous amount to offer to society, once they have successfully completed the examinations that may limit their progress. However, in order to be successful, most students at this level will need greater support than their peers, and this will be true in school in successfully completing the exams that will allow them to progress. For these students,

*“Students with dyslexia have a tremendous amount to offer to society, once they have successfully completed the examinations that may limit their progress.”*



study skills, time management and practice for exams will be the way forward. They need an understanding of their own processing, and that they can never be the students who leave things to the last minute, because they need to put in more work than others to be successful.

However, dyslexic students also have distinctive strengths in terms of their communication and social skills, as well as empathy and their ability to see the big picture, which can ensure that they are highly successful, once the demands of education are behind them

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# CASE STUDIES





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# Dyslexia with Attention Deficit Hyperactivity Disorder: A Case Study

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*This article is a case study of a child with dyslexia and ADHD who was provided with behavioural strategies to cope in class which proved to be effective. Children who have dyslexia and Attention Deficit Hyperactivity Disorder (ADHD) often face great challenges in school as their academic abilities are usually impeded by these two learning disorders. While dyslexia affects their literacy abilities, ADHD often affects their ability to pay attention and exercise executive functions. Children with ADHD are often found to be hyperactive, inattentive or a combination of both. On the other hand, these children often have normal to above average intelligence and can do very well academically if they are equipped with coping mechanisms. Physicians may suggest that children with ADHD be medically treated in order to curb their behaviour and perform better in school. However, these medications may contribute to undesirable side effects and this is the reason why many parents may disagree with having their children with ADHD under any form of medication.*

## INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a developmental disorder which falls under the umbrella of Disruptive Behavioural Disorder (DBD) (Chia, Ng & Kuan, 2010). Chia et al. (2010) classified this disorder as relating to behaviour difficulties that are referred to as disciplinary challenges of neurobiogenic origin with a lack of and/or inadequacy in self-regulation through manifestation of internalising (e.g. anxiety, depression, low mood) and/or externalising (e.g. conduct disorder, oppositional disorder, behavioural difficulties) socio-emotional traits. The defining characteristics or 'core symptoms' of ADHD as cited in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2002), are difficulties with attention and concentration, hyperactivity and impulsivity. Simply, ADHD is diagnostically separated into three

subtypes namely: Predominantly Inattentive (ADHD-I), Hyperactive/Impulsive (ADHD-HI), and Combined (ADHD-C) (Martin et al., 2006). These characteristics may stand alone, that is a child may display only inattention and low concentration span (ADHD-I), or they can exist in combination (ADHD-C) where the child is inattentive, hyperactive and impulsive. These key markers typically manifest as a loss of self-control, poor self-regulation and a deficit in inhibitory control (Taylor, O'Donoghue & Houghton, 2006). Such behaviours can be frustrating, not only for the child, but parents and teachers too. However the 'face' of ADHD is soon to change with the introduction of the DSM-5. The proposed changes to ADHD in the DSM-5 may reduce the stigmatisation towards children with a learning disorder and/or ADHD. The DSM-5 suggested classifying ADHD as a neurodevelopmental disorder, separate from the disruptive behaviour disorder classification which it was conferred in the DSM-IV. This proposal may change pessimistic educational and parental attitudes, as well as restrict considering ADHD as a result of emotional and familial dysfunctional factors. This change may enable more children to receive the necessary therapy (see Al-Yagon et al., 2013 for a review of the expected impact).

Cook (2005) argued that through genetic and brain imaging studies, it had been found that ADHD is a brain disorder, not a disorder caused by parenting or other environmental factors. ADHD clearly runs in families, with heritability estimates ranging from 0.55 to 0.92. On average, 25% of immediate family members of children with ADHD are likely to have the disorder. Additionally, twin studies have been crucial in identifying ADHD within familial ties as well as causes of co-morbidity (Martin et al., 2006). It was also identified in this research that there is a strong association of genetic heritability between reading disability and the inattentive subtype (ADHD-I), and between the hyperactive/impulsive subtype (ADHD-HI) and Conduct Disorder (CD) as well as Oppositional Defiant Disorder (ODD). ADHD may present as co-morbid with other DBD such as CD or ODD. Up to 65% of children with ADHD are likely to have ODD and children with CD may also exhibit traits of ADHD. Further, children with ADHD are at risk of developing co-morbid psychiatric disorders, such as anxiety and depression, substance abuse as well as learning disabilities (Cook, 2005).

Children with ADHD are at risk of learning disorders such as reading disability or dyslexia. Hence, they are likely to struggle in school, display poor or negative academic performance and have low academic self-esteem. However,

*“...children with ADHD may display difficulties controlling their emotions or anger as there are issues of anger management and social-emotional behaviour relating to ADHD.”*



ADHD is not a learning disability but an associated disorder as it does not impact on the brain's ability to learn although it can interfere with the child's availability for learning (Silver, 2001). Furthermore, children with ADHD may display difficulties controlling their emotions or anger as there are issues of anger management and social-emotional behaviour relating to ADHD. They may show social impairment due to their tendency for offensive impulsive remarks or misinterpreting social cues. For instance, children with ADHD with/without other DBD are more likely to assume hostile intent when bumped in line by a peer than children without ADHD. These children may then react aggressively towards peers which could get them into trouble with teachers. They may also exhibit bullying tendencies towards peers, can be rowdy, emotionally immature and lack insight regarding their behaviours and feelings. They tend to have an external locus of control, and can blame teachers, parents or peers for their misbehaviour or academic failure.

ADHD is a condition of early onset usually identified in children as young as preschool ages. It is believed that children with ADHD will outgrow their disorder. However, studies have revealed that although they seem to outgrow their hyperactivity and impulsivity symptoms, which begin to dissipate around the age of 11 and 13 respectively, a significant portion of these children continue to manifest clinically significant levels of inattention into adolescence and young adulthood. As ADHD seems to be a lifelong condition only appearing to be dissipated with maturity, self-regulation or behaviour modification, some clinicians have suggested medication for children with ADHD in order to curb their disruptive tendencies so as to function more acceptably in school.

In their study, Wegrzyn, Herrington, Martin and Randolph (2012) stated that many of the medications available for the treatment of ADHD are of the stimulant variety. Brain research and theory indicated that ADHD is caused by a dysfunction in the prefrontal cortex (Barkley, 1997) where important neurotransmitters, dopamine and norepinephrine are typically in short supply in children with ADHD. As a result, children with ADHD do not perform as well as controls in tests of their executive functions, which are the mental processes that control thinking, emotions, and behaviour. Therefore, ADHD medication activates these neurotransmitters to stimulate the prefrontal cortex (Szegedy-Maszak, 2002). Not surprisingly, there have been positive reports from children who have been medicated who experience improved behaviour which consequently reduced 'trouble-making' incidents, and made them more able to concentrate on schoolwork (Travell & Visser, 2006). Unfortunately, 20% of childhood ADHD patients do not respond to stimulant medication (Fox, Tharp & Fox, 2005) and thus, may continue to display challenging behaviours in the classroom. Moreover, not all parents of children with ADHD are advocates of pharmacological medication for fear of side effects such as suppression of appetite and sleeplessness, depression and head or stomach aches. Most have opted for alternative treatment as a solution such as social skills

training, behaviour modification, anger management training or problem-solving skills training. Indeed the process of diagnosing children with ADHD and treating them with medication such as methylphenidate hydrochloride (e.g. Ritalin) continues to be controversial (Travell & Visser, 2006).

The challenging behaviours exhibited by children with ADHD have often been misconstrued as bad attitudes and any behaviour deemed to have resulted from it may lead to punishment either by parents or teachers. However, it is important to distinguish between these two terms so that children with ADHD are not wrongfully judged for their actions or behaviour. According to Chia et al. (2010), "behaviour" refers to an act or function done by a person in a particular way while "attitude" refers to the way of thinking or perception which in turn, effects the way a person behaves. Hence, any bad attitude can result in bad behaviour which can become challenging for parents or teachers. However, not all bad behaviours stem from bad attitudes. Borba (2004) noted that behaviours are more reactive and impulsive but attitudes are longer term. Therefore, a child 'behaving badly' may not necessarily have the intention to do so.

Reid, Wagner and Marder (2006) stated that ADHD is a chronic condition that is thought to affect 3 - 5% of children. The clinical definition of ADHD in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) expects a general impairment in behaviour and academic performance in school and/or at home. It is the most common type of co-morbidity that occurs with dyslexia in schools. A student may not be diagnosed with ADHD but they may show symptoms or traits that are commonly associated with it. Hence, it is pertinent that teachers be aware of the symptoms and traits of ADHD and how this condition impacts on children's academic and social performance, peers' learning in the classroom as well as teachers delivery of lessons.

Children with ADHD have been found to perform below their academic ability. In their longitudinal study, Galéra et al. (2009) found that the results corroborated with previous research findings which presented a significant relationship between ADHD and poor academic achievement. This was identified by Loe and Feldman (2007) who stated that there is a significant link between ADHD and negative academic and educational outcomes. In particular, children with ADHD were found to display poor academic functioning with poor reading and mathematics test scores (Biederman et al., 1996; Barry et al., 2002), increased rates of being retained at grade level in school (Barkley et al., 1990), and low rates of secondary graduation as well as post-secondary education (Mannuzza et al., 1993).

Besides being co-morbid with dyslexia, ADHD can sometimes co-exist with other DBD such as Oppositional defiant disorder (ODD). The high rate of association between ADHD and ODD, at 65%, is worth noting as children with ADHD may not

only present with inattentive, hyperactive or impulsive symptoms but also those symptoms that are linked with ODD such as being naughty, playing tricks on others, flouting class rules or throwing temper tantrums (O'Regan, 2006). Hence, teachers must exercise acute awareness and care when dealing with such students in order to garner their cooperation in the classroom which will lead to effective learning for these children.

## **CHARACTERISTICS OF ADHD**

As mentioned earlier, the core characteristics of ADHD can be categorised by three subtypes namely, Predominantly Inattentive (ADHD-I), Hyperactive/Impulsive (ADHD-HI), and Combined (ADHD-C), which can be further identified according to specific traits manifested by the children's actions. Chia et al. (2010) listed these traits as commonly related to ADHD:

- ◆ failure to give close attention to details
- ◆ commit careless mistakes in written work or other activities
- ◆ has difficulty sustaining attention in tasks or play
- ◆ does not seem to listen when spoken to
- ◆ does not follow through instructions
- ◆ failure to complete school work or duties
- ◆ avoid or/and dislike or reluctant to engage in tasks that require sustained mental effort
- ◆ easily distracted
- ◆ display forgetfulness when performing daily activities
- ◆ fidget a lot with hands or feet, or squirm in seat
- ◆ often leave seat during lessons
- ◆ often run about or climb excessively
- ◆ talk excessively
- ◆ often blurt out answers before questions are complete
- ◆ failure to observe turn taking and often interrupt or intrude on others

Any child with ADHD will present some of these characteristics. Moreover, many children with dyslexia will also present with similar symptoms, mainly because they experience difficulty in completing their work satisfactorily. It will undoubtedly be challenging and frustrating for parents and teachers to work with children who constantly display such behaviours at home or in the classroom. However, support and understanding can transform interactions with the child.

## PROFILE OF THE CHILD

Edwin (not his real name) was diagnosed with dyslexia at a very early age when his mother noticed that he was unable to read and spell despite repeated teaching of the words. At the age of six, Edwin was still unsure of the alphabet and struggled when learning phonics. He also found it difficult to learn Chinese as he was confused by the hanyu pinyin. Additionally, Edwin showed difficulty writing within given spaces or on lines, made letter reversal errors with his words unevenly spaced as well as confusion with the alphabet upper and lower case.

Edwin's childcare centre teachers also provided similar feedback to his parents and added that Edwin was not learning at the same pace as his peers. Moreover, there is a family history of reading and spelling difficulties with Edwin's cousins experiencing the same challenges. Due to parental concerns, Edwin was subsequently referred to the Dyslexia Association of Singapore (DAS) and was assessed by a DAS psychologist. The assessment found Edwin to have an uneven cognitive profile. He had an above average to high cognitive ability but relative weaknesses in reproducing visual-spatial details and expressive language. He exhibited average literacy skills but had exceptionally high listening comprehension skills. While he could use phonological rules to read unfamiliar words, he showed some difficulties in his phonological processing.

The discrepancy between Edwin's cognitive ability and his reading skills, coupled with his difficulties in phonological processing, are suggestive of dyslexia. Edwin joined the DAS remediation programme when he was in Primary 1. He was observed by his teacher to need more help with reading and spelling, as well as presenting weak ability to grasp concepts and comprehend passages. His handwriting was also an issue and hence, Edwin was taught cursive handwriting to help him improve these skills.

Research indicated that children with dyslexia sometimes have problems with handwriting as decoding the patterns of letters in words on paper can be troubling for them (Berninger et al., 2008). As a result, they frequently fail to develop the automatic flow of writing which helps them to express themselves clearly and easily in writing. Therefore, the continuous cursive handwriting style is best recommended for these children as each letter is formed without taking the pencil off the paper and consequently, each word is formed in one, flowing movement.

At Primary 2, Edwin was observed to be extremely hyperactive and impulsive in class by his new teacher who found working with Edwin rather challenging. Edwin's impulsivity can sometimes disrupt the flow of lessons and distract his teacher from delivering a smooth lesson. Although he was able to pass his English tests in school, Edwin was struggling with Mathematics which he had been failing since

Primary 1. He was not able to comprehend Chinese and kept failing this subject too - due to his constant failure, Edwin was granted exemption from Mother Tongue at Primary 5. Edwin loved Science but was only marginally passing this subject. Edwin's teacher wondered if his under-performance could be the result of his hyperactivity and lack of interest towards task completion as he frequently observed that Edwin's enthusiasm frittered away as the class progressed. It was suggested to Edwin's mother that he should be assessed for ADHD. By the end of Primary 2, Edwin was diagnosed with ADHD [Conners' Continuous Performance Test II (CPT II)]. His report concluded that Edwin had a significant attention problem coupled with impulsivity and low perseveration.

As a result, Edwin's teacher had to consult a DAS educational advisor for the most suitable form of support for Edwin so that his learning potential could be met in school. It was suggested that Edwin be placed in a small class in order for his teacher to provide more guided assistance to Edwin. The author began working with Edwin when he was in Primary 5. As with most children with ADHD, Edwin was easily distracted, had a very short attention span on tasks, avoided and sometimes showed reluctance to engage in tasks that require sustained mental effort, was fond of fidgeting with his hands and rocked in his seat excessively, could hardly sit still while doing work in the classroom, enjoyed walking around the classroom while the lesson was going on, often blurted out answers and failed to take turns to speak or interrupted others.

Besides the behavioural challenges that Edwin displayed in class, his literacy development was a concern too. He tended to misread, omit words or skip a line when reading. He had difficulty understanding passages that he read and thus, questions had to be posted to establish meaning for him. Edwin disliked writing activities and he would find ways and means to avoid undertaking this task. His verbal ability was not commensurate with his written expression ability as his writing was brief though he had many ideas to share. The grammar and technicalities of sentence construction were usually ignored. He often showed reversals of 'b' and 'd' and had a poor sense of capitalisation and punctuation in sentences. Edwin continued to produce messy handwriting, depicting poor spatial awareness, letter formation and an inability to write within the given line and space.

During this time, Edwin was also seeing an Occupational Therapist at a children's hospital to address his difficulty in visual-motor integration as well as consulting an optometrist who assessed Edwin as having Amblyopia (lazy eye), Meares-Irlen Syndrome (visual stress) and visual tracking issues. It was also suspected that Edwin was suffering from perceptual distortion when he read certain font types. Subsequently, Edwin was recommended to use a tinted overlay to aid him in reading as this would help him to focus better.

## INTERVENTIONS AND REMEDIATION

While stimulant medication can be one intervention technique used on children with ADHD, its effects are not similar for every child. Due to this, some parents may not advocate the use of medication on their child with ADHD. Moreover, pharmacological treatment is rarely sufficient in addressing the multitude of chronic difficulties faced by children with ADHD. Hence, alternative intervention techniques or strategies must be employed in order to help children with ADHD cope with their disorder.

Preference-based teaching is one approach that can be employed by educators when working with these children. The essence of preference-based teaching involves identifying student preferences and then designing teaching programs in consideration of those preferences. Items and activities students prefer are incorporated within the teaching process. In addition, activities or events that students dislike are removed from the process where possible (Reid & Green, 2006). This approach can be used with any typical teaching programme for students with disabilities and in the case of this student profile, a child with dyslexia and ADHD. According to Reid and Green (2006), preference-based teaching involves setting the occasion for an enjoyable teaching session, identifying students' preferences and using the preferred ABC model where *A* refers to *antecedent* which pertains to what is done to promote student performance of a skill being taught, typically through prompting, *B* refers to the *target behaviour* that the teacher desires the student to demonstrate and *C* refers to *consequences* of the student's target behaviour applied by the teacher to reinforce or correct performance.

This approach requires the teacher to: build rapport with students by spending time to interact with them so that their enjoyment in participating in the teaching sessions are enhanced as they enjoy interacting with the teacher; identify which activities, items or environment the students like or dislike and to become familiar with them, thus incorporating those activities that the students like into the lesson and omitting those they dislike; and finally via the ABC model, establish what can be done to get students to demonstrate skills which they have been taught and what then are the consequences for their performance.

Besides preference-based teaching, other effective classroom intervention strategies for children with ADHD that have been researched consist of behaviour intervention, self-regulation intervention, academic intervention, home-school communication programmes, interventions addressing social relationship difficulties and collaborative consultation (DuPaul, Weyandt & Janusis, 2011). According to Barkley (2006), impaired delayed responding to the environment is the putative core deficit underlying ADHD. Hence, behavioural interventions that include antecedent and consequence-based strategies which may involve modifying the

environment are used to directly address this impairment. Examples of antecedent-based strategies are classroom rules, task choices and task reduction. As antecedent-based strategies aim to trigger the occurrence of a specific behaviour, children with ADHD should be given structure so that the required behaviour can be obtained from them. Thus, they should be informed of classroom rules that they have to adhere to or be told of options and/or reduction in tasks that they have to complete before they get a reward. Reducing the length of an assignment to match students' attention spans, may reduce off-task, disruptive behaviour (DuPaul & Stoner, 2003) where as Dunlap et al. (1994) found that when students were provided with assignment choices, they showed higher rates of task engagement and lower frequency of disruptive behaviour relative to class sessions when teachers chose the specific assignments.

On the other hand, consequence-based strategies involve manipulating environmental events following a specific behaviour to alter the frequency of that behaviour. Examples of consequence-based strategies are contingent positive reinforcement, response cost and self-management interventions (DuPaul & Weyandt, 2006). The most popular among these are contingent positive reinforcement and response cost where a desired behaviour from the student would earn him a reward which can be in the form of praise, a token or point reinforcement, but misbehaviour may result in token or point reinforcements being removed contingent on disruptive, off-task behaviour. DuPaul et al. indicated that several studies (e.g., DuPaul, Guevremont, & Barkley, 1992) have presented significant improvements in task-related attention, as well as productivity and accuracy of class work, when the combination of token reinforcement and response cost is used.

As children with ADHD mature, they can be taught self-regulation strategies to monitor, evaluate and/or reinforce their own behaviour. This is usually achieved in conjunction with or following the successful application of teacher-mediated behavioural approaches. Self-monitoring has been used successfully to promote on-task behaviours and class work completion. It has been widely established that children with ADHD usually face challenges in the academic front. Therefore, academic intervention is another strategy to help children with ADHD cope better in school. Sometimes students misbehave in the classroom because they are not able to grasp what is being taught due to a learning disability such as dyslexia. Academic interventions can be in the form of teacher-mediated direct instruction in relevant skills that require remediation such as note-taking which can improve their test performance, using computer technology and employing classroom peers to enhance task engagement and test performance. The combination of both academic and self-regulation interventions have shown to be beneficial for children with ADHD.

Home-school communication programmes are also pertinent since children with ADHD experience difficulties across settings. For example, a daily report card provides students and parents with feedback on class performance as well as target behaviours that need to be achieved or have been achieved by the student. Teacher ratings in the form of a Likert scale can be incorporated for ease of understanding. Based on this feedback, parents can employ home-based reinforcements so that the children will continue to work on target behaviours since children with ADHD have been known to improve in structured environments.

Besides parents and family members, peers also play a part in helping children with ADHD improve in their social skills as these children often experience difficulties making and keeping friends due to their inability to respond to situations in a non-aggressive manner. Hence, interventions that target social behaviours such as social skills training are designed to address peer relations and must be implemented for a sufficient duration to counteract the high risk for problematic outcome. Finally, collaborative consultation with school personnel can also improve the academic outcome of children with ADHD where these personnel will identify the areas needing improvement and work together to help the children with ADHD achieve this target.

In Edwin's case, most of the strategies mentioned above were employed. When preparing a lesson for Edwin, the author took his interests into consideration. For example, Edwin likes animals and technology and loves working with his hands. Therefore, the author would find passages on animals or technology for Comprehension or Cloze Passage exercises and based on the exercises, get him to form something using scrap material upon completion of the worksheets. Before the lesson began, Edwin got 5 minutes of 'chat time' where he would chat with the author, play a game on his phone or find scrap material to create something. Edwin was informed of what his 'reward' might be if he were to complete any tasks within the time given. He was also given 2 short breaks (5 and 7 minutes) in the 2-hour class. Besides this, the author would also bring Edwin out for a 10 minute exercise of walks or jogs around the school compound. Due to Edwin's difficulty with handwriting, he was allowed to use the iPad or Word Processor when doing Composition. This also encouraged him to attempt the activity which he liked the least. As Edwin was a young student, he needed to be constantly reminded to self-regulate his behaviour especially since he enjoyed walking around the classroom and attempting to create something with scrap materials. If he wished to do so, the ABC model was employed where he was expected to accomplish a required task before being allowed to have his way. Although the DAS did not have a daily report card programme, the author communicated with Edwin's mother via email to give her feedback on Edwin and how she could reinforce this approach with him at home. One particular collaboration between the author and Edwin's mother was the conversion of points to cash - points that Edwin earned in class were converted to



cash by his mother. This spurred Edwin on to be more cooperative and accomplish more tasks when he attended lesson at the DAS. Additionally, Edwin's mother would share feedback given by his school special education teacher with the author so that she could also work on the same areas with Edwin. Indeed, the author found collaborating with Edwin's mother and his special education teacher beneficial in providing Edwin with structure that would assist him in doing better at school work and tests.

## EDUCATIONAL IMPLICATIONS

Barkley (2006) stated that deficits in executive functions among children with ADHD have been well documented (Toplak et al., 2009). In their paper, Johnson and Reid (2011) indicated that executive functions refers to cognitive processes necessary for complex goal-directed behaviour (Loring, 1999) which include metacognitive knowledge regarding strategies and tasks, attention and memory systems that support these processes such as the working memory, and self-regulatory processes such as planning and self-monitoring (Meltzer, 2007). Executive functions involve planning, organising, maintaining effort, and monitoring activities, all of which are necessary for academic success. Therefore, not surprisingly, executive functions deficit can negatively affect academic performance (Clark, Prior, & Kinsella, 2002).

Students with ADHD often experience serious academic difficulty (Johnson & Reid, 2011) and this is partly due to their poor executive functions. They often have school-related difficulties that affect learning, such as problems with organisation, attending class unprepared, writing down assignments, completing assignments at home, turning in class assignments on time (Gureasko-Moore, DuPaul, & White, 2007), and are inconsistent and careless in their schoolwork (Hinshaw, 2002). Students with ADHD are often referred to special education services and around 50% of them are deemed qualified for support (Barkley, 2006; Reid, Maag, Vasa, & Wright, 1994).

Typically, Edwin too experienced poor executive functions control, particularly in maintaining effort on tasks. He was also forgetful at times, leaving his possessions in the classroom when rushing off upon dismissal. At DAS, the author had employed the strategies mentioned above in order to get Edwin to be more task-focused so as to complete

*“Typically, Edwin too experienced poor executive functions control, particularly in maintaining effort on tasks. He was also forgetful at times, leaving his possessions in the classroom when rushing off upon dismissal.”*

worksheets and exercises in good time. In a 2-hour class setting, Edwin was able to follow the structure that had been set for him rather successfully. In school, Edwin was coached not only by his teacher, but also the special education teacher to improve on his test performances. Needless to say, Edwin's parents played a vital role in providing him with the necessary support and guidance that he needed, such as coaching him on school subjects as well as allowing him to do activities that he liked as a form of reward.

## REFLECTIONS

Children with ADHD can be a challenge. In the case of children with dyslexia and ADHD, what do we tackle first? Is it the behaviour that is impeding their progress in educational attainment or is it the difficulty that they face with academic demands that contributes to their negative behaviour? The situation is akin to that of the chicken and the egg. It is indeed problematic to determine which factor contributes more to a child's learning if an educational therapist does not know the child under his or her charge well.

Before Edwin came under the author's charge, she had the opportunity to read through his psychological reports as well as reports from his previous educational therapists. It was also fortunate that the author was acquainted with Edwin and had seen and interacted with him at the centre. Verbal feedback from his previous teachers prepared the author for what to expect from Edwin. Much has been said about working with children with ADHD or any form of DBD and how they can affect classroom teaching and teacher welfare such as affecting the learning of other students (Dodge & Pettit, 2003), exhibiting aggression (Frick et al., 1991), and their behaviour taking a toll on teachers as well as increasing teacher's level of frustrations and stress which may lead to burn out (Kokkinos, 2007). Therefore, it was fortunate that in this particular class, Edwin's class was kept small with no more than two students.

Edwin was a challenge but in a good way. The most critical factor for the author was to alter her expectations of him despite his high cognitive intelligence. The author's lesson objective had to be clear and thus, worksheet activities had to be minimised. Nevertheless, academic expectations were not reduced but it was important to keep expectations high whilst realising that these could be met in a different way. In this case, the amount of worksheets done did not equate to the amount of learning that took place in the classroom. Edwin's learning and behavioural difficulties allowed the author to explore various ways to engage him during lessons and to work with him through a different paradigm. Tapping into his interest, the author developed her lessons in ways that would encourage Edwin to attempt as well as sustain his interest in completing them. Although his handwriting

continued to be an issue, Edwin was getting better at his spelling. He was also reading more carefully and accurately despite not using the tinted overlay or his spectacles (Edwin refused to use them after trying them a few times).

Edwin's ADHD behaviour was considered in his learning in many ways. For instance, even though the mainstream curriculum does not allow students to use a word processor in examinations, letting Edwin use his iPad for writing activities was a way to encourage him to embark on an activity that he would otherwise avoid. Moreover, the author's objective was to get Edwin to sustain his attention to attempt and complete the activity - a product focused approach - how it was done was of secondary importance. For someone like Edwin who could hardly be seated for 20 minutes, completing a piece of writing activity on his iPad was commendable. As writing activities are time consuming, Edwin was granted the occasional walk-about but he should immediately return to his seat to continue with task completion when specific instructions were given such as "Get back to your seat once you've done that" or "I give you 2 minutes to do it and then you've to continue your work". The timed break sessions as well as a short 'exercise' routine that were inserted in Edwin's two hour lesson helped him to focus better as the class progressed.

Another critical factor was the amount of parental support that Edwin received. Edwin's mother was tireless in her efforts to provide as much educational assistance to him as possible. She also encouraged him to explore his area of interests and supported them such as his interest in animals and keeping aquatic pets. Her spontaneous suggestion to convert the point system that the author implemented with Edwin into cash was a surprise but it was a positive motivating factor for Edwin to accomplish more tasks as well as behave better in the classroom. In this respect, he was more conscientious in his attempts and always tried his best.

Recently Edwin sat for the Primary School Leaving Examination (PSLE). This examination is important for all Primary 6 students as the result will determine if they could go to a secondary school and the level they would be eligible for. Edwin received his PSLE results with startling achievements - scoring a distinction for Mathematics, a subject he had been struggling with since Primary 1 and getting to the Express stream in secondary school. This would not have been possible if Edwin had lacked parental and school support as well as the protective factors that he possessed.

Edwin's difficulty with reading and spelling in his younger years as well as the academic demands when he began formal schooling, handwriting issues and dealing with ADHD could easily present him with many risk factors that were mentioned above. However, his determination, high-spirited personality and high cognitive ability were crucial protective factors that contribute to his success today.

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# Emotional and Behavioural Challenges in Children Diagnosed with Learning Difficulties

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## ABSTRACT

*Children who display emotional and behavioural difficulties may be viewed as being deviant and may warrant special intervention services. Deviance among children is most often defined and described as differences in aspects of behaviour, with subsequent assumptions about their associated cognitive and emotional capacities. When children also have a diagnosis of dyslexia and ADHD, it can be difficult to differentiate the causes and effects of their frustration. In this case study, a contract is used to stabilise the behaviour of an eight year old girl, and recommendations made for successful implementation in the educational setting*

## INTRODUCTION

This article seeks to define and discuss some aspects of emotional and behavioural disorder (EBD), a condition that affects children, and apply these in education. It is important to state that in the field of research, there is little agreement among professionals regarding EBD or other definitions and terminologies that most aptly describe deviant behaviour in children and youth. This is due to different classification systems, the lack of empirical precisions and conflicting theories of how emotional and behavioural problems develop. While our interest lies largely in managing students, as teachers we need to be familiar with some psychiatric and educational terminologies so that we can establish a common ground for working with these individuals. By recognising the numerous social, personal and environmental factors that influence the disorder, we can work towards providing necessary intervention and remediation for our students. This paper includes a case profile of a child diagnosed with specific learning difficulties, namely dyslexia and attention deficit hyperactivity disorder (ADHD). It will discuss some management and remediation processes that helped the child to successfully cope with her emotional and behavioural challenges.

## DEFINING EMOTIONAL AND BEHAVIOURAL DISORDER (EBD)

Children with EBD have issues and differences manifested in behaviour, thinking, feelings, interactions and their biophysical structure. These are children whom others may find disturbing because of their differences.

Emotions are said to be 'non-rational and non-linear' (Bower, 1982) hence in reality it is a very elusive and complex concept among professionals who are working with children with EBD. The definition of 'emotional disturbance' specified in the Individuals with Disabilities Education Act (IDEA) in America, which has been adopted in some form by many state departments of education, is described as having five defining characteristics:

- a. an inability to learn that cannot be explained by intellectual, sensory or health factors
- b. an inability to build or maintain satisfactory interpersonal relationships with peers and teachers
- c. inappropriate types of behavior or feelings under normal circumstances
- d. a general pervasive mood of unhappiness or depression, or
- e. a tendency to develop physical symptoms or fears associated with personal or school problems

*(Code of Federal Regulation, title 34, Section 300. 7(b)(9), in the 1997 IDEA reauthorisation)*

As a follow-up and expansion to the definition of emotional disturbance, in the early 90s the Council for Children with Behavioural Disorders (CCBD) together with the National School Board Association (NSBA) proposed for EBD to be defined as:

- a. A disability characterised by behavioural or emotional responses in school programs that adversely affect educational performance, including academic, social, vocational or personal skills; more than a temporary, expected response to stressful events in the environment (at least one of which school-related), unresponsiveness to direct intervention applied in general education or the condition of child is such that general education interventions would be insufficient.
- b. The term includes other co-existing disabilities such as schizophrenia, affective disorder, anxiety disorder or other sustained disorder of conduct or adjustment, affecting a child if the disorder affects educational performance (as described in the previous paragraph (a)) (Federal Register, February 10, 1993)

It may be seen that children with combined difficulties such as dyslexia and ADHD are likely to fall into the category of those showing EBD based on both a) and b) above. The following section of this paper will look into general characteristics of students with EBD and briefly highlight some research pertaining to the characteristics, before linking these with dyslexia.



## **INTERNALISING AND EXTERNALISING BEHAVIOURS**

A useful framework for conceptualising deviant behavior is the notion of internalising versus externalising behaviours, as popularised by Achenbach and Edelbrock (1978; 1983). An internalising profile of EBD is represented as problems of an introverted nature, problems within the self that include worries, fears, somatic complaints and social withdrawal. A profile of this nature has also been called over-controlled, over-inhibited, shy-anxious and personality disorder (Achenbach & Edelbrock, 1978). The externalising profile represents extroversive behaviours including aggression, over-activity, disobedience, temper tantrums and delinquency. The externalising profile is also referred to as under-controlled, aggressive, acting out and conduct disorder (Achenbach & Edelbrock, 1978). In a nutshell, internalisers tend to be more reflective and externalisers more impulsive.

Over the past 35 years, researchers have found three basic behavioural profiles that have been consistently identified among children and adolescents with EBD. Firstly, conduct disorder that is characterised by 'aggressive, hostile and contentious behavior'. Secondly, a personality problem characterised by 'anxious, withdrawn, introverted behaviour' and lastly, a profile described as having inadequacy-immaturity, 'a lack of interest, sluggishness, laziness, day-dreaming and passivity'. Research also supports the notion that students with emotional and behavioural disorders tend to be externalisers (Cullinan & Sabornie, 2004; Tobin & Sugai, 1999).

## **SOCIAL AND BEHAVIOURAL CHARACTERISTICS**

Students labelled EBD often exhibit problems in learning and relationships, misbehaviours, depression and physical symptoms and fears to an elevated extent (Cullinan & Sabornie, 2004). They usually have difficulties getting along with their peers, adults or family members. Their externalising behaviours such as bullying, threatening and disrupting others and internalising behaviours such as an unwillingness to communicate puts them at a greater risk for rejection and isolation (Bullis, Bull, Johnson & Johnson, 1994; Epstein & Cullinan, 1998). The rejection and isolation, in turn, may also trigger further aggression and/or withdrawal from social interaction. Students with EBD typically exhibit elevated levels of defiance, aggression and destructiveness and are more depressed and anxious (Newcomer, Barenbaum & Pearson, 1995).

As these students get older, they were found to be at risk for anti-social behaviour and delinquency. Those with ADHD seem particularly at risk especially if they use drugs or alcohol and were aggressive at a young age. For instance, in a sample of 91 adolescents confined to a Kansas juvenile detention facility who had a disability, 61% had been labelled EBD and many also had learning disabilities (LD). Research

has also shown that youth with EBD typically have a long history of emotional problems resulting in problem behaviours that affect social, academic and community functioning for much of their lives (Friedman et al., 1996).

## **INTELLECTUAL AND ACADEMIC FUNCTIONING**

Over the past 25 years, researchers have not found average IQ scores for students with EBD that were 100 or higher. Although no causal links between emotional problems and intelligence have been established, it appears that, as a group, students labelled EBD do score lower on intelligence measures and therefore would be expected to experience some degree of academic difficulty. When compared to expected achievement based on intelligence functioning or IQ, the majority of students show academic deficits usually a year or more below grade level (Kauffman, 2005). In a meta-analysis of the academic status of students with EBD, Reid and his colleagues found that there is a moderate to large overall difference in the academic performance of students with EBD as compared to students without EBD (Reid et al., 2004). Students with both EBD and learning disabilities (LD) are particularly at risk for academic deficits, as LD often co-exists with emotional or behavioural disorders in a reciprocal relationship (Walker, Ramsey & Gresham, 2004). Nevertheless, wide variations continue to exist among students with EBD in terms of their IQ and achievement measures given that findings are not always consistent across all investigations.

Children who suffer from both dyslexia and EBD can be at heightened risk of failure, particularly when this is compounded by ADHD. In the section that follows, some of the literature on the emotional and behavioural issues, which have been associated with dyslexia, will be discussed.

## **EBD AND DYSLEXIA**

Individuals with dyslexia may exhibit more frequent emotional and behavioural difficulties than those without reading problems (Maughan & Carroll, 2006). In fact, the link between dyslexia and disruptive behaviour disorders is well documented in both epidemiological and clinical samples (Arnold et al., 2005; Carroll, Maughan, Goodman, & Meltzer, 2005; Hinshaw, 1992), but little has been studied on the association with emotional difficulties such as anxiety and depression (Beitchman & Young, 1997). Samples of children with conduct disorder or delinquency suggested higher rates of specific reading problems and general academic failure (Frick et al., 1991) while children with reading difficulties are nearly five times more likely to exhibit anti-social behavior than children in the general population (Rutter & Yule, 1970).

Interestingly, an area of particular concern is the co-morbidity of dyslexia and attention deficit hyperactivity disorder (ADHD), which is said to be the most common psychiatric concomitant of reading disabilities (Maughan & Carroll, 2006). Conduct problems may be associated with comorbid ADHD rather than reading and academic underperformance (Maughan, Pickles, Hagell, Rutter, & Yule, 1996). On the other hand, research also indicates that reading achievement may have a negative impact on self-esteem and self-concept, which directly contribute to anti-social behavior rather than the symptoms of ADHD (Pisecco, Wristers, Swank, Silva, & Baker, 2001).

*“Children who suffer from both dyslexia and EBD can be at heightened risk of failure, particularly when this is compounded by ADHD.”*

Studies have reported low measures of self-esteem in reading disabled populations, with children and young people reporting lower global self-worth, lower perceived competence in academic domains and more depressive symptomology than normal achievers (Snowling, Muter & Carrol, 2007). Nevertheless, this is not always the case as research has suggested that children who attend specialist remediation are less likely to report low levels of self-esteem and behavioural issues than children with dyslexia in mainstream schools (Humphrey, 2002).

## CASE PROFILE OF CHILD

\*Hannah is a 10-year-old fourth grader. When she was six, a comprehensive psycho-educational assessment ascertained that she had difficulties consistent with dyslexia. Her parents consulted a private psychiatrist for her difficulties in focus and concentration and were advised that she was also likely to be suffering from ADHD. She is currently receiving specialist literacy remediation for her dyslexia and getting additional help from a supporting teacher after school, for her difficulties in Mathematics.

When Hannah was in pre-school, her teacher raised concerns that she had concentration and inattention issues and was often unable to finish her schoolwork. She was reported to be the ‘slowest’ in class for reading, spelling and for learning the Chinese language. Using the Wechsler Preschool and Primary Scale of Intelligence – 3rd Edition (WPPSI-III), she was found to have low average verbal ability and average non-verbal cognitive ability. Given her average cognitive ability, her parents were advised to proceed with her enrolment for primary school and recommended for her to be placed in the Learning Support Programme (LSP) in

*\* Name has been changed to protect identity of child*

school. Her LSP teacher in school was concerned about her acquisition of basic literacy skills. Despite the extensive support given during the LSP, Hannah still had difficulties reading, blending and decoding. Her short attention span affected her learning and had an impact on her self-esteem. Her parents also reported that she experiences a difficult time in school, coping with lessons, gives up easily and is not motivated to complete her school assignments.

Hannah started literacy remediation sessions for her dyslexia when she was seven. She was observed to have good verbal and communication skills and was able to engage confidently in a conversation with her educational therapist during her first lesson. She was generally cooperative and responsive to the tasks carried out in class. However as weeks progressed Hannah became noticeably frustrated when working on literacy tasks. Whenever she had difficulties in her work, she would express her frustration by crumpling up her paper or tearing the page off her book and needed coaxing and guidance to use the strategies taught previously. When she became aware that her classmates, both of whom were boys, could spell better than she did, Hannah started commenting that she hated being in a class with boys and preferred to have only girls in the class. She was unable to engage in positive interaction with her peers because her feedback on what they had to say and share, was always negative. Apart from that, Hannah was inclined to use profanities on her classmates. On two occasions, she reached over and tore her classmate's worksheet, drew deep dark lines across her paper and broke a pencil during her bouts of frustration.

Her mother had been consistently updated on her progress during the literacy sessions and the misbehavior she demonstrated in class was also made known to her. However, Hannah's mother did not regard the issues brought up to be a concern that warranted immediate attention. Her educational therapist spoke about getting help for Hannah's anger management issues given her tendency to get easily provoked and triggered by comments that her friends make even though they have no intention of directing it at her. Her mother also shared that Hannah had difficulty getting along with her own sibling and peers her age. She would get very upset whenever she loses in a game during playtime and would start acting up by refusing to continue.

Despite her loud and excessive behavior (externalising behavior), Hannah showed signs of low self-esteem. She commented a few times that it was unfair that her sibling was not dyslexic and that she 'did not deserve' to be attending DAS classes because she 'is not stupid'. She also constantly tried to mask her difficulties of not being able to spell and read some words accurately by saying that it was actually easy but she 'just forgot'. She showed impulsivity in her actions, digressed into unrelated topics as and when she wanted to, very loudly, even as the lesson was going on, oblivious to her classmates who were paying attention. She did not

respond to the teacher's facial cues and repeated reminders to be on task. Hannah became easily restless ten minutes into the lesson (owing to her ADHD condition) and often did not complete the tasks assigned to her. She would attempt a few questions and then flip to an empty page to draw and doodle.

The progress of the literacy class was affected because Hannah needed repeated reminders to lower her voice and to stop interrupting her classmates. When she was told to stop, firmly or with gentle coaxing, she started laughing hysterically or would put on funny facial expressions.

The description of Hannah's profile, closely matches the characteristics of a child with EBD that has been discussed earlier. The following sections of this paper will explain the remediation process and outcomes that the educational therapist experienced while working with her.

## **REMEDIATION PROCESS**

To ensure that learning was maximised for all the students attending the literacy remediation class, a request was made to place Hannah under the Individualised Educational Programme (IEP). The main objectives of the IEP was to offer her strategies to manage her emotions, enabling her to condition and regulate her own behaviour, and at the same time give her a boost of self-esteem. More emphasis was placed on her social and emotional learning given her lack of motivation and low self-concepts, which were hindering her ability to learn and cope in a classroom setting. After a term of being on direct one-to-one teaching during the IEP, Hannah was placed into a class of two students in the hope that she would be able transfer the skills and strategies taught. At the same time, close communication was forged among her parents and teachers at the DAS and the student care centre, where she spends most of her time at after school hours.

Firstly, there was a need to manage the educational therapist's expectations towards Hannah's behaviour and academic skills. As mentioned earlier, apart from the emphasis on improving her literacy skills, what she needed was help in coping with her emotions and behavior. Therefore, during her weekly sessions, five to ten minutes were allocated at the start of each session for her to share and voice her thoughts and feelings for that day. She could talk about a 'high' and/or a 'low' moment that she experienced that day or for that week. On days where she did not feel like talking about her 'highs' and 'lows' she could choose to draw or write about the events which happened that day, in her notebook. Hannah enjoys Art and has a flair for drawing comic cartoons, so this was used as a positive reinforcement to make her realise that she has a talent not everyone has. She is calm, composed and focused when drawing, which makes her appear completely

different from her usual self when engaged in a piece of written work.

### **Behavioural contract**

Two weeks into the IEP, Hannah had a discussion with her educational therapist on drawing up a behavioural contract and its rationale, of helping her overcome her difficulties, was made explicit to her in a very positive way. There were only three things in the contract, which she had agreed to observe and abide by: 'bad' words are not allowed in the classroom, when feeling angry take a time-out in the corner and only give positive responses for classmates and the educational therapist. The contract was simple: if she was able to fulfill one of the terms in the contract, she was allowed to redeem one token. Three tokens would mean she was allowed to exchange them for stickers. Hannah has a personal collection of stickers therefore it was purposefully selected as a positive reinforcer towards achieving the objectives of the behavioural contract.

### **Self-talk and self-monitoring**

Hannah was introduced to the 'Stop, Think, Do' method in helping her cope with anger and impulsivity. This method ties in closely with the second term in the contract that she should take a time-out whenever she felt the need to externalise and express her anger or frustration. It helps her regulate and manage her impulsivity especially when she feels overwhelmed about a matter and it triggers very strong emotions within her. One of the social stories that were selected for shared reading was entitled: *When I Feel Angry* (from Scholastic's Series of *The Way I Feel*). The book in brief discusses; what makes a person angry, how it feels to be angry (makes us want to hit, yell, say something mean) and most importantly what one can do to cool down: walk away from the person, take deep breaths, engage in a favourite activity, cool down, talk to someone, rest or cry. There was concentrated effort from the part of the educational therapist to emphasise the need to for her to calm down and not express anger towards others because it will only hurt them and make them not want to come close.

### **Communication between parents and teachers**

An open and flexible communication style was established with Hannah's parents and teachers through phone calls, text messages and email. When the request to place her on the IEP was approved by the learning centres management, her parents were informed of the objectives and rationale from the educational therapist's perspective. Hannah's parents were supportive and appreciative of the efforts to target their child's social and emotional well-being because they were getting worried over the complaints and calls they were getting from teachers in her school. To ensure that the terms in the behavioural contract were reinforced in all

settings, her parents and student care teachers were also informed so that everyone can consistently provide support by reminding her of the appropriate ways to behave and respond.

## **REMEDIATION OUTCOMES**

Objectives that target specific areas to work on, during each session, made it more manageable for the educational therapist. There are many strategies available in the literature, but what mattered was selecting those which were practical and workable given the constraints of time spent with the student. Clearly, the time allocated for Hannah to share her thoughts and feelings openly made her feel that the classroom was a safe place as the educational therapist was willing to listen. Furthermore, there were no peers (during the IEP period) who would judge her for what she had to say and this was important for a child who has so many insecurities about her own weaknesses and such a negative outlook about many things around her.

The contract, which was typed by her and printed to put into her folder, gave her a sense of ownership even though she was then just eight years old. When Hannah joined her classmates again after a term, there was an observable effort to keep to the contract. She was less impulsive, showed willingness to share and interacted more positively with her peers. Nevertheless, there were a couple of instances when she was not able to manage her impulsivities and these were triggered by events which took place at school, the student care centre or at home such as being reprimanded by her parents, scolded by a teacher or having a squabble with her sister or friends earlier in the day.

Children with EBD need concentrated, consistent and repeated efforts to condition the way they express themselves and how they respond to their surroundings. In Hannah's case, there was also a need to manage not only her emotional and behavioral disruptiveness but her hyperactivity as well. Forging a rapport with her parents and teachers was a crucial factor to ensure that Hannah was keeping up her behaviour in school, at home or in public. She needed to understand and be aware that the social expectations and the norm, with regards to emotions and behavior, are consistent in most settings. For instance, nobody will be willing to tolerate your yelling and screaming when you are upset. Instead, you should calm down and speak to someone about the problem so that the person can understand and empathise with you and find ways to help resolve the issue. Also, Hannah is constantly encouraged to be mindful of the comments she makes about others so as not to offend them. When these levels of social expectations were made clear to her, and impressed upon her every now and then, it gradually made her understand the idea of social acceptance and the awareness that in order to be

accepted, she needs to conform to a certain kind of behavior- like those stated in her contract.

## **EDUCATIONAL IMPLICATIONS**

The behavioural contract proved to be a useful tool for eliminating undesirable and inappropriate behaviours in a classroom. It provided an opportunity for the child to work towards a change and made her realise that her willingness to change will bring about positive response from her teacher and peers. It is difficult for a teacher to identify a behaviour for which the child is willing to change, especially when it is one that has been a successful tool for her in the past. For instance, prior to intervention, Hannah may have achieved what she wanted by throwing a tantrum. However, she had to understand that it is inappropriate and unacceptable for a grown-up child to display tantrums. Instead, she had to learn how to articulate and express what she needs. These concepts of what is considered appropriate and unacceptable have to be explained and rationalised to all children. A successful and effective contract involves meaningful rewards, reasonable expectations and consistency in its implementation.

It is important to make students with EBD understand the idea that even adults have daily expectations to fulfill on a day-to-day basis and occasionally we too need to modify our attitudes and behaviour so that we get to accomplish our duties and responsibilities at work.

Helping our students to manage and overcome their EBD and its accompanying issues may take months or even years. An added challenge to that would be to provide support for their intellectual and academic functioning. Teachers should therefore ensure that any form of academic instruction and materials matches the child's ability. To sustain their focus and concentration, the tasks should be interesting and involve a meaningful payoff with constant positive feedback. Hannah's profile is a good example to portray how a student with traits of EBD and a diagnosis of LDs (dyslexia and ADHD), needs a structured classroom environment to support her learning. Reinforcement systems and rewards can also be implemented for academic learning as a way to reward them for their efforts and condition them to remember new concepts and topics taught in class. Rewards systems that are fair, consistent and immediate indirectly promote positive self-concepts among students.

There is certainly no one-way strategy or an intervention programme, which would work effectively for all children with EBD. Hence, as educators of children with special needs, we need to continue seeking new perspectives regarding learning issues, speak to our counterparts- psychologists, psychiatrists and other educators in our 'quest' to develop an appropriate repertoire of interventions for the unique profiles of students that come through our classroom doors.



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# Understanding Cognitive and Literacy Profiles to Enhance Literacy Interventions

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## **ABSTRACT**

*This article highlights three differing cognitive and literacy profiles and suggests ways to understand and use test scores to enhance literacy interventions. Although the cases are not real, they reflect the various possible types of reading problems that typically occur in students.*

## **ARTICLE**

As Ralph Waldo Emerson said, "In the highest civilization, the book is still the highest delight. He who has once known its satisfactions is provided with a resource against calamity".

Yet, there are many individuals who do not have the opportunity to experience this delight even though they are able to read words as, being an effective reader requires so much more than word decoding and recognition. For a child to finally make meaning of written text requires various stages of development such as phonological awareness, phonological decoding, as well as reading fluency and accuracy.

However, although a child may be able to read words off a page, the inability to make sense of the words and passages would either lead to frustration in the reader or make them view the process of reading as a fruitless endeavour. Thus comprehension skills are also a vital part of reading. An article by Nation and Snowling (2004), also stated that in addition to phonological skills, a child's oral language proficiency also influences the course of reading development as, when a child tries to decode a word using letter - sound correspondence, they also use

their knowledge of word meanings and sentence context to help them in the process. The results of their study also found that children's oral language skills make an important contribution to the development of their sight vocabulary, as well as their reading comprehension.

When a child is struggling in reading, awareness of the specific areas he is faltering in would therefore be crucial in providing the necessary intervention as, it would then be targeted and personalised to the needs of the child. Fortunately, standardised achievement tests, such as the *Wechsler Individual Achievement Test - Third Edition (WIAT - III)*, as well as tests for phonological awareness, such as the *Comprehensive Test of Phonological Processing - Second Edition (CTOPP - 2)*, break up each component required in reading into individual parts. This allows the assessor to identify where the gaps are when a child struggles to read.

As such, understanding the child's literacy profile in relation to the strengths and weaknesses in his cognitive ability would be essential in tailoring an effective intervention programme to meet the child's needs.

The following case studies aim to look at the cognitive and literacy profiles of children with reading difficulties and recommend areas of intervention to support them in their reading.

### **CASE STUDY 1 - JIE WEI**

*Jie Wei is a 12 year old boy from a Mandarin speaking family. He is currently obtaining average grades in school (60s - 70s) for most of his subjects, with the exception of English, which he is failing (30s - 40s). He was referred for an assessment as his teachers felt that he is showing difficulties with reading. Although he does well for his spelling test when he is provided a word list, he often has spelling errors in his composition which are at times homophone of the intended word such as spelling "rain" for "reign". Jie Wei also often does poorly in the comprehension segment of his test, where he is noted to copy large portions of the passage in his answers. Results of the Cognitive assessment showed that Jie Wei has weak Verbal ability, good Non-Verbal Reasoning abilities and good Spatial abilities. His visual and auditory memory was also noted to be adequate. From the scores on his Achievement assessment, it was noted that he has adequate reading comprehension, adequate passage reading rate but poor passage reading accuracy, listening comprehension, spelling and single word reading. He also has very poor phonological decoding and phonological awareness. His poor score on passage reading accuracy was noted to be largely contributed by his frequent substitution and omission of words when reading.*

We can see from Jie Wei's profile that he is actually a reasonably bright boy with adequate memory which he uses to help him recall his spelling list. However, his poor phonological awareness indicates that he might have had little or no exposure to phonics at an early age and might be reading words based on his memory and contextual cues. This hypothesis is further supported by his poor phonological decoding and single word reading but an adequate score in Reading Comprehension.

The limited exposure to a wide variety of English words, given his Mandarin speaking background, also limits the bank of words from which he can draw when he sees an unfamiliar word. This also affects his spelling as he might not be familiar with the spelling of an alternative homophone with a different meaning. Although he showed poor reading accuracy where he substitutes or omits words when reading passages, his adequate reading rate and comprehension score shows that he is able to read fast enough and still understand the meaning of the passage.

A summary of Jie Wei's strengths and weaknesses are tabled below.

### Strengths

Subtest/Index/ Composite	Area assessed	Descriptive range
Non Verbal Reasoning Ability	Ability to identify visual and numerical patterns	Above Average
Spatial Ability	Ability to identify spatial relationships among figures and designs	Above Average
Memory	Ability to remember what he sees and hears	Average
Reading Comprehension	Ability to understand passages read	Average
Reading Rate	Ability to read passages quickly	Average

**Weaknesses**

Subtest/Index/ Composite	Area assessed	Descriptive range
Verbal Ability	Measure of acquired verbal concepts and knowledge	Below Average
Phonological Awareness	Ability to identify individual component in words	Low
Phonological Decoding	Ability to decode non words	Low
Single-word Reading	Ability to read single words	Below Average
Reading Accuracy	Ability to read a passage accurately	Below Average
Listening Comprehension	Ability to comprehend a passage heard	Below Average
Spelling	Ability to spell words	Below Average

In order to help a child like Jie Wei, two main areas need to be worked on. Firstly, Jie Wei would need exposure to a wide range of vocabulary words in order to build his bank of words. This can be done in categories such as learning all the synonyms and antonyms of the word "happy". Improving his bank of words would also help him understand better in his reading comprehension in school and aid him in spelling the correct word.

Secondly, Jie Wei would benefit from learning phonetic rules to aid him in his ability to decode new words and to spell. Learning to decode words alone without learning new vocabulary would not necessarily aid comprehension as he might know how to read a word without knowing what it means.

In summary, limited exposure to the English Language due to a non English speaking home environment at an early age would have some impact on a child's phonological awareness and decoding ability if these were not explicitly taught.

Thus teaching phonetic rules would help in spelling words and decoding unfamiliar words. Expanding the child's vocabulary would aid in comprehension and accuracy in spelling for a child from a non English speaking home environment.

## CASE STUDY 2 - AISHA

*Aisha is a seven year old, Primary 2 student whose family speaks both Malay and English. She was referred for an assessment as her parents are very concerned about her difficulties with reading. Although she has attended intensive reading classes in preschool and in Primary 1, she still struggles with reading and confuses simple words. In addition, she has trouble recognising high frequency sight words quickly and takes a long time to complete her schoolwork. Aisha's mother added that although she is a hardworking girl, her efforts are not commensurate with her results in school. Results from her cognitive assessment show weak Verbal ability and Non-Verbal Reasoning ability and Average Spatial abilities. Her verbal memory and visual memory were notably weak as well. Scores from her achievement assessment show that she has very weak reading comprehension but adequate listening comprehension skills. In addition, her single word reading ability was adequate as was her phonological awareness and decoding skills. However, although her reading accuracy was adequate, her reading rate was very weak. Aisha also obtained an adequate score for spelling but was noted to take a long time to sound out and spell each word.*

From Aisha's profile, we can see that intensive remediation has allowed Aisha to learn the necessary skills to decode words and gain phonological awareness. However, Aisha's weak language skills and lack of fluency when reading likely affects her reading comprehension. Although she is able to read words, doing so seems very effortful for her, leaving her with little energy to understand, let alone enjoy a written passage or story. When the demands of reading are taken away, Aisha is able to adequately comprehend information which she hears. Aisha would likely be demonstrating a similar pattern when spelling, where she takes a long time to decode individual sounds in words to spell them instead of writing them out.

### Strengths

Subtest/Index/Composite	Area assessed	Descriptive range
Spatial Ability	Ability to identify spatial relationships among figures and designs	Average
Phonological Awareness	Ability to identify individual component in words	Average
Phonological Decoding	Ability to decode non words	Average
Single word reading	Ability to read single words	Average
Reading accuracy	Ability to read a passage accurately	Average
Spelling	Ability to spell words	Average
Listening Comprehension	Ability to comprehend a passage read	Average

## Weaknesses

Subtest/Index/ Composite	Area assessed	Descriptive range
Spatial Ability	Ability to identify spatial relationships among figures and designs	Average
Phonological Awareness	Ability to identify individual component in words	Average
Phonological Decoding	Ability to decode non words	Average
Single word reading	Ability to read single words	Average
Reading accuracy	Ability to read a passage accurately	Average
Spelling	Ability to spell words	Average
Listening Comprehension	Ability to comprehend a passage read	Average

For Aisha to improve in her literacy abilities, she would need to improve her reading fluency, word recognition ability as well as her spelling. The first step to improving reading fluency, would be to increase Aisha's knowledge of high frequency words and sight words. This can be done using flashcard drills or increasing the frequency where Aisha sees the word, such as placing the words up on word walls.

Frequent paired reading of text can also increase the exposure to words. Fluency can also be improved through Aisha's opportunity to hear text such as having a teacher or parent read to her frequently, having the class do choral reading or echo reading or listening to audio books. This is to give Aisha the opportunity to hear good, fluent reading as a model in order to learn from it. Phrasing and intonation should also be taught directly to demonstrate how the stress on certain words in a sentence changes the meaning of the sentence.

In addition, rereading familiar text would also help improve fluency and rate of reading. Finally, it is important to note that Aisha should be prompted and not corrected while she is reading as she would not be able to develop the appropriate strategy to read if the word is always provided. As indicated by the International Reading Association, "The goal in fluency instruction is not fast reading, although that happens to be a by product of the instruction, but fluent meaning - filled reading".



Thus, we can see that for this case, improving fluency would be the next step for a struggling reader who has learnt to decode words. Adequate single word reading, passage reading accuracy and decoding skills need not necessarily mean fluent reading as is seen from this example.

### CASE STUDY 3 - PETER

*Peter is a 14 year old boy. He has been having tuition for most of his subjects since primary school. His parents reported that he is currently coping in school with the exception of his English language in which he is obtaining borderline passes. He is able to read reasonably well and is able to cope with the grammar and comprehension segments in his school English examination. However, he finds difficulty with scoring well for compositions and felt that he can never think of good ideas or write in an interesting way. Peter shared that he does not enjoy reading as he feels that reading is a waste of time. His parents added that Peter resists reading and finds books boring. Assessment of Peter's cognitive ability showed well developed Verbal and Non Verbal Reasoning abilities and adequate Spatial abilities. His Achievement assessment showed adequate reading and listening comprehension, single word reading, decoding and spelling abilities. In addition, his passage reading rate and accuracy was also adequate.*

#### Strengths

Subtest/Index/ Composite	Area assessed	Descriptive range
Verbal ability	Measure of acquired verbal concepts and knowledge	Above Average
Non Verbal Reasoning Ability	Ability to identify visual and numerical patterns	Above Average
Spatial Ability	Ability to identify spatial relationships among figures and designs	Average
Listening Comprehension	Ability to comprehend a passage read	Average
Phonological Awareness	Ability to identify individual component in words	Average
Phonological Decoding	Ability to decode non words	Average
Single word Reading	Ability to read single words	Average
Reading fluency	Ability to read a passage accurately within a given time limit	Average
Spelling	Ability to spell words	Average
Reading Comprehension	Ability to understand passages read	Average

## **Weaknesses**

Peter's key weakness is in his lack of ideas for composition as well as his dislike for books.

Peter appears to have benefited from educational support and has adequate reading comprehension and fluency. However, his reluctance to read could be due to his difficulty in finding books and text that interest him or which he finds enjoyable. This could in turn limit his exposure to a wider range of vocabulary as well as ideas when writing compositions.

Helping Peter find books which he enjoys in order to increase his reading could possibly help him improve his compositions. In addition, direct instruction on how to sequence ideas using different books as examples would also benefit Peter. As a start, selecting books that are thin with short chapters would encourage Peter to pick up the book and start reading. As books with too much text in a page would also be difficult for a start, it would be important to select books with wide margins and open font so that reading would not be taxing. Books that include illustrations, especially that of the characters would also help in visualising the text. Genres that appeal to Peter could include mysteries and humour and it would also be important for the plot to begin early in the story. It would also be important for Peter to be able to relate to the main character in the story, so books with characters the same age as the reader or up to two years older would be most suitable. In addition, stories that use "real language" and teach the reader about making tough decisions would also appeal more to Peter.

Therefore, for reluctant readers, selection of books is key to getting a child to be interested in reading. It is important to make it relatable and accessible to the reader so that the enjoyment of reading is maximised.

## **DISCUSSION**

From the varied strengths and weaknesses of the cases discussed, we can see that many different factors work together to make a competent reader. These varying influences also support the postulation that different pathways (phonological and semantic) exist in the development of reading (Nation and Snowling, 2004). As the semantic pathway consists of the mappings between semantic, phonological and orthographic representation, a greater exposure to language as well as vocabulary would logically suggest an improvement in reading rate and fluency. Findings in a study by Carroll, Mundy and Cunningham (2014), also supported the view that language ability was a good predictor of reading accuracy and comprehension. Hence, it is therefore important to develop a rich vocabulary and syntactic skills

through increased exposure to good quality books, spoken language and stories alongside intervention to promote phonological awareness when helping a struggling reader.

## CONCLUSION

Overall, as school grades may not always give specific information on which skills are underdeveloped and underlying issues may be further masked if children use compensatory strategies to cope; understanding how reading is acquired and how to use assessment scores to provide valuable information on the underlying skills that may be contributing to the difficulties that children face in learning, would be important in developing an intervention plan. Thus it is helpful to consider assessment scores so that particular skills can be targeted in intervention to boost overall performance.

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## ABOUT THE AUTHOR



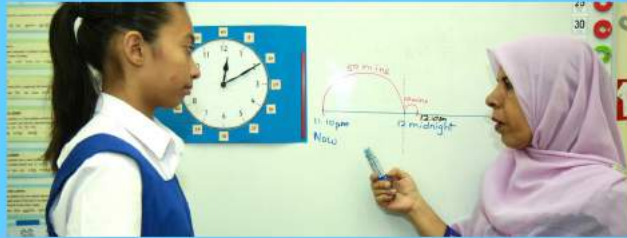
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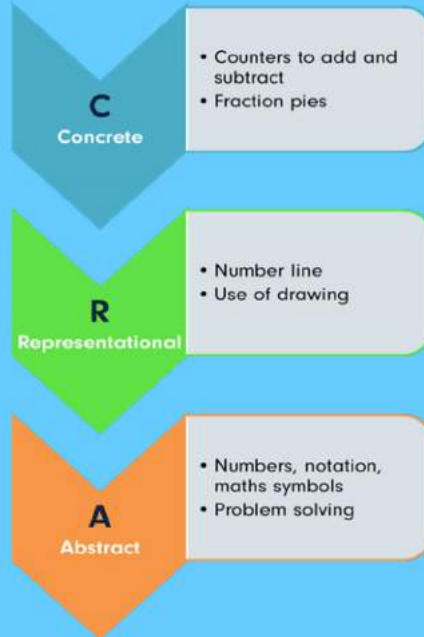
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# Working with a Child with Mathematical Difficulties: A Case Study

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## ABSTRACT

*There is very little research in Singapore that examines children with mathematical issues, (Bunn, 2014). This chapter aims to provide an understanding of a Primary Two child who has been failing in his mathematics tests. His scores were often below twenty percent. In order to help the child, the education therapist looked into the child's error patterns in computation. In addition, this chapter also highlighted the therapist's attempts to use multi-sensory methods of teaching as well as Math Journaling in order to help the child in learning his mathematical concepts.*

## INTRODUCTION

Singapore students have an excellent reputation in Mathematics, however, there are still many children who have a difficult time with Mathematics in school. The challenges that they face include math anxiety, math language, word problems, and math vocabulary (Chinn, 2004). To make matters worse, teachers invariably mislabel them as either very slow or simply showing no interest in the subject at all. Parents' comments include lack of motivation, stupidity or they have already given up hope for their children. Geary (2005) argued that amongst these groups of students, 5-8% of the students have genuine mathematical issues. In addition, some students have either reading issues or they display visual spatial difficulties.

The Educator's Diagnostic Manual of Disabilities and Disorders (2007) examine the mathematical issues by looking into the following challenges:

1. processing i.e. problems reading and comprehending arithmetic symbols
2. arithmetic facts i.e. problems in learning, automatic recall of arithmetic facts

3. arithmetical procedures i.e. difficulties in calculating or estimation
4. understanding and explaining math vocabulary
5. writing in numerals rather than in words
6. telling the time, keeping track of time and estimating time
7. visual spatial motor organisation used in math.

## **CASE PROFILE OF BOY J**

Boy J had a psychologist assessment with the Dyslexia Association of Singapore. According to the psychologist, his ability to read and spell words were age appropriate. His areas for improvement lie in phonological awareness, listening and reading comprehension skills. When his assessment results are read in line with his educational history, he shows signs of Dyslexia. The psychologist recommended boy J receive remediation in his foundation literacy as well as have additional support in mathematics.

## **WORK SAMPLES FROM THE CHILD**

### **1. Assessing Math Attitude:**

Math anxiety can have a huge impact on any math learner. There are many studies that have linked to increased worries about math failure (Richard & Woolfolk, 1980), to task avoidance related to math and numerical tasks (Krinzinger, Kaumann & Willmes, 2009).

An informal assessment on mathematics attitude was conducted on Boy J. The assessment was conducted in a very informal way. The aim of the attitude assessment was to gather an understanding of Boy J's attitudes and dispositions toward mathematics. It is believed that by interacting with the child with several open ended questions and drawing tasks, it will assist the teacher to devise meaningful ways to support the child with mathematics skills that, hopefully, will help him to get on with his life.

Based on the findings, it seemed that math is something boring and there is a choice not to use math in Boy J's everyday activities. His opinions include math as only pen and paper activity and is solely about numbers. He expressed his weakness in this subject and further elaborated by stating that a day without math is enjoyable. This short activity has revealed Boy J's low self-perception of his ability to process numbers. With such a low level of subject enthusiasm, it is not surprising that Boy J was very slow to warm up whenever any math activities were given to him.

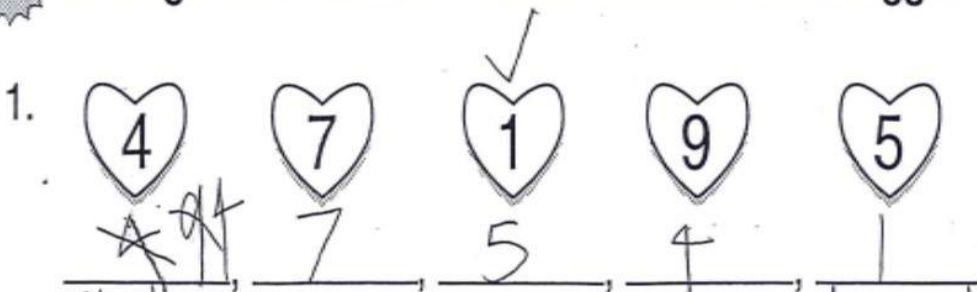
Questions posed to the child	Answers from the Boy J <i>(Answers were taken directly from his written replies)</i>
I use math every day	<i>I do not</i>
Math is boring	<i>Yes</i>
Math is useful	<i>Will help you</i>
You need paper and pencil to do math	<i>Yes</i>
You are either good in math or you are not	<i>A little bit</i>
To do math, you need to memorise a lot of rules	<i>Yes</i>
Math is only about numbers	<i>Yes</i>
I am good in math	<i>No</i>
Please complete these sentences: A day without math ... I learn math best when ...	<i>A day without math is happy</i> <i>I learn math best when play games</i>

*(Adapted from Allyn and Bacon, 2005)*

## 2. Concept of small and big numbers

Boy J's understanding of one to one correspondence in counting surfaced when he was asked to arrange numbers 4, 7, 1, 9, 5 from the smallest to the biggest. Of the

**A** Arrange the numbers from the smallest to the biggest.

1. 

given numbers, he put 4 as the smallest; he changed his mind to 9 but after some questioning for certainty, he changed his mind to 4. The next smallest from the list was 7 which is also erroneous. He chose 1 as the biggest number among the whole list of given numbers. This has certainly affected his number processing ability.

## **IMPACT OF REMEDIATION ON BOY J'S LEARNING JOURNEY**

### **Multi-sensory method of teaching**

In view of Boy J's weakness in grasping the very basic core mathematical concepts, multi-sensory ways of learning formed the main diet of his remediation process. The use of different manipulatives enabled Boy J to understand concepts via the visual, auditory, kinesthetic and tactile movements.

### **Learning to Count**


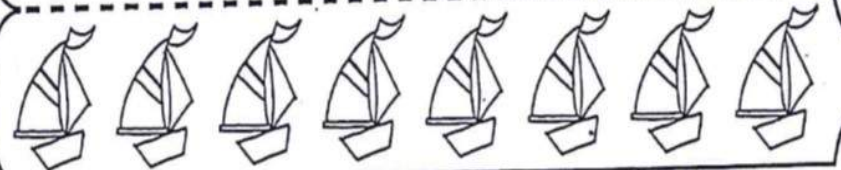


Boy J's counting skills were built over a period of time and enhanced by use in a variety of real and engaging situations. For instance, link cubes served as hands on items in order to get the child to understand one to one correspondence, gain the ideas of the relative magnitudes of numbers i.e. 6 is more than 1. From the set of concrete materials, boy J moved on to pictorial symbols where he counted the number of ships and yachts' (pictured right), wrote the numerical symbols and verbalised the larger quantity.

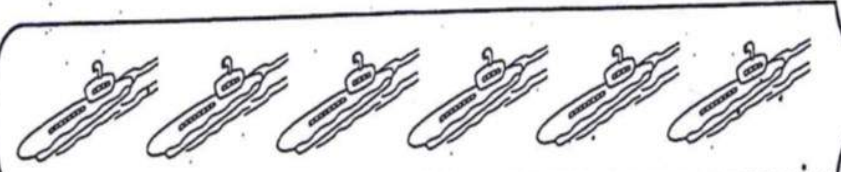
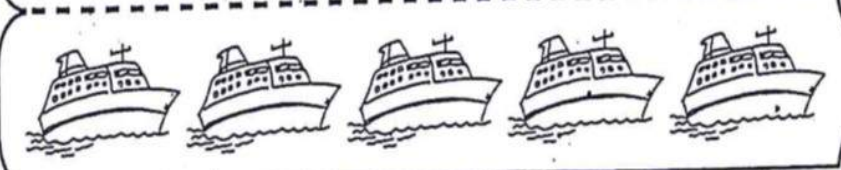
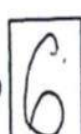
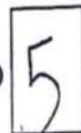
### **Using Math Journaling as a remediation tool**

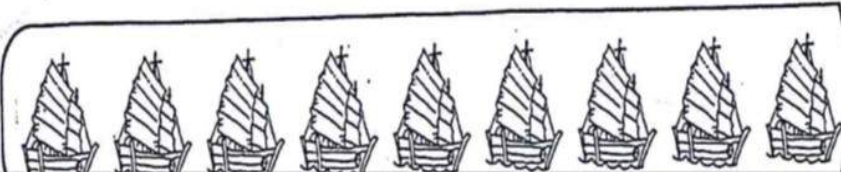
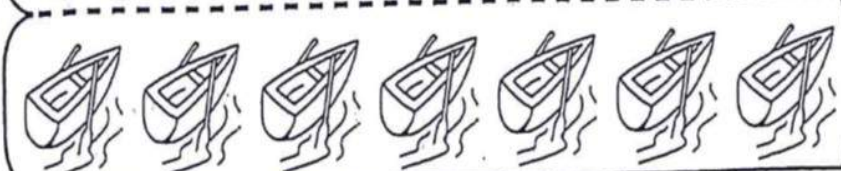
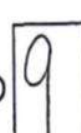

During English classes, students are required to write for someone. Teachers have a heavy responsibility to get students to acquire writing skills so as to be able to communicate in a legible and understandable fashion. However, when it comes to mathematics, there are very few opportunities to use writing as a means to communicate ideas and concepts clearly to the reader. Most of the students doing mathematics are taught to think about the workings and how they arrive at an answer.

Combining doing mathematics with writing offers them a log book which consists not only of the types of questions asked but helps to track their mental thoughts as they document the various questions asked by the teacher. This method of learning results in opening lines of communication whereby the student learns more about his/her attitude towards mathematics and understanding of mathematical concepts.



1.    

2.    

3.    

In addition, journaling gives students chances to question or clarify their own thinking. Hence, it really gets the child to look deeply into the presented piece of work. The following are pieces of journaling work supplied by Boy J and facilitated by the teacher. Notice the written reflections (i.e. journals) written down by the boy.

Sample A

Mrs Lim bought 12 apples. Her children ate 5 of them. How many apples were left?

take away

Mrs Lim bought 12 apples. Her children ate 5 of them. How many apples were left?

12 12

5 5

$$\begin{array}{r} 12 \\ + 5 \\ \hline 17 \end{array}$$

~~take away~~

Mrs Lim had 17 apples

12 A 12

5 M

1st attempt: Mrs Lim had 17 apples why is this a minus question?

2nd attempt: ate 5 of them because add all of them

take away

( $\Rightarrow$  that is why we take away...)

12 12

~~12~~

$12 + 5 = 17$

7 were left

Sample B:

Jennifer watched 5 movies last month. Jamie watched 7 movies last month. How many movies did Jennifer and Jamie watch last month?

Jennifer watched 5 movies last month. Jamie watched 7 movies last month. How many movies did Jennifer and Jamie watch last month?

\*  
 J [ 5 ]  
 J [ 7 ]

$$\begin{array}{r} 7 \\ + 5 \\ \hline 12 \end{array}$$

$$5 + 7 = 12$$

last month Jennifer and Jamie watch } All done by myself  
 12 movies } very good

1. You can do this all by yourself. How did you do it?  
 Well done

I learn 2. What did you learn?  
 step model to do work problem

What are the steps for the word problem?  
 model statement working

Sample C:

My father bought a tray of 10 eggs. 2 eggs were rotten and the rest were good.  
How many eggs were good?

Which words tell you it is a minus question

1st attempt :-

2  
191

My father bought a tray of 10 eggs. 2 eggs were rotten and the rest were good. How many eggs were good?

Facilitated his concept and understands the question...

no good  
cannot eq  
take away  
10 take away 2

6 | f

7 | M

$$10 - 2 = 8$$

$$\begin{array}{r} 10 \\ - 2 \\ \hline 8 \end{array}$$

Math journal

- it help me  
- Alot  
- Jaqus is happ

My father bought 8 eggs



1/2  
7/4

---

## REFLECTIONS

Manipulative materials enable Boy J to see, verbalising his thoughts, to touch and handle. The learning tools are a means to appeal to his many senses. These tools enable Boy J to either physically or mentally play with them and thus find out solutions to presenting problems. Boy J operates at a level where he is not equal to the rest of his peers on the same learning trajectory. Hence, several modalities of presenting will need to be incorporated into the math remediation process. Such multi-sensory materials formed part of Boy J's remediation and will continue to be used until he is ready to match his understanding of basic math concepts to more challenging mathematical concepts. With this hands-on mode of teaching, Boy J can be helped to learn in a way which is fun and which also expedites his developmental processes for learning mathematics as a subject.

The process of journal writing is far more important than the actual outcome, the answer of a mathematical question. Writing math journal is another useful approach in remediating children with learning difficulties. This experience has given valuable insights into the way numeracy students learn and perceive mathematics. Based on their documented answers and the questions they raise, it has skewed my lesson planning to another perspective that makes me change my way of teaching so as to make them understand better.

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- *Dyscalculia and Dysgraphia*
- *Attention Deficit (Hyperactivity) Disorder*
- *Asperger's Syndrome*
- *Psychological and Behavioural concerns*
- *Childhood development issues*
- *Autism Spectrum Disorders*
- *Non-Verbal difficulties*
- *Auditory and Sensory issues*

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Assessments usually consist of 1-3 sessions with the psychologist working with the child. What is done and how much is needed depends on the age of the child, the purposes of the assessment and the kinds of strengths and weaknesses the child has. The psychologist will do the most appropriate set of tests to make clear what background skills and abilities the child is bringing to their learning. They will also do a range of tests and activities to measure and analyse the literacy skills of the child.

#### *Reports*

Psychologists try to provide advice about the best curriculum options and then about how teachers, tutors and parents and others can help the child most effectively. The psychologist can help to set future learning goals which can then be monitored to see if progress is at the expected rate.

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# Speech and Language Impairment: A Case Study

## Ho Shuet Lian

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### **ABSTRACT**

Boy C was 8 years and 4 months when he was diagnosed with significant language impairment with mild articulation disorder. He commenced speech and language therapy (SLT) in individual as well as a small group setting of two students three months later. Boy C was discharged from SLT after twenty weeks of 2 hours per week of intervention. He made good progress. At the end of the twenty weeks of intervention, it was observed that boy C was more confident in expressing himself and he sounded more fluent in English. Boy C also showed good improvement in his mid-year examinations at school.

The purpose of this case study is to provide educators and parents an understanding on:

- ◆ What is language impairment and the degree of severity
- ◆ What is articulation disorder and the degree of severity
- ◆ How do language impairment and articulation disorder affect a child's learning at school
- ◆ The intervention goals set for a child with significant language impairment
- ◆ Some of the intervention activities carried out by the Speech and Language Therapist to improve the child's speech and language abilities
- ◆ Some teaching strategies and fun language-based activities that the educators, parents and caregivers can do with the child in the classroom or at home to improve the child's language abilities

## **WHAT IS LANGUAGE IMPAIRMENT?**

Language impairment (LI) can be an impaired ability to understand spoken language and/or the impaired ability to use spoken and/or written language. This impairment may involve the content, form and/or function of language in communication. (American Speech-Language-Hearing Association ASHA, 2003)

Bishop (2006), stated that specific language impairment (SLI) is diagnosed when a child's language development is deficient for no obvious reason. Children with language impairment are usually as healthy and competent as their peers in all ways but they have difficulties in the understanding and use of language. According to Law J, Garrett Z and Nye C., it is thought that approximately 6% of children have speech and language difficulties of which the majority will not have any other significant developmental difficulties.

Language impairment has a broad category. Some children have mild difficulties that are easily treated with short-term intervention. Others have significant and persistent difficulties with both understanding and talking that need long-term intervention to become more competent in communication. These children do not 'outgrow' language impairment but they are likely to improve their speech, language and communication when they receive appropriate help from the Speech and Language Therapist. Children with language impairment are all very individual. Hence, there is no "one size fits all" intervention programme for children with language impairment.

## **WHAT IS ARTICULATION DISORDER?**

Articulation disorder is an impairment of the production of sounds to form words for communication. Dr Caroline Bowen, an Australian Speech-Language Pathologist said that most children who are said to have 'articulation disorders' have nothing wrong with their articulators (tongue, lips, palate, etc.). Instead, they have a functional difficulty at the phonetic level that makes it difficult for them to say the sounds they need in speech. Dr Bowen's examples of speech errors children (and adults) with articulation disorders make:

- ◆ The word 'super' pronounced as 'thooper'.
- ◆ The word 'zebra' pronounced as 'thebra'.
- ◆ The word 'rivers' pronounced as 'wivvers'.
- ◆ The word 'leave' pronounced as 'weave'.
- ◆ The word 'thing' pronounced as 'fing'.
- ◆ The word 'those' pronounced as 'vose'.

NOTE: Some of these sound changes are acceptable in a number of English dialects



A child with mild articulation disorder produces speech that is generally intelligible and you are able to understand what the child is saying without much difficulty. On the contrary, a child with severe articulation disorder produces unintelligible speech that is hard to understand. You will need time to get use to the child's speech and most of the time, you may not decipher what the child is saying. You are likely to rely on context clues to guess what the child has said.

## **CASE PRESENTATION**

### **Case profile of Boy C**

Boy C is the second of four children in a bilingual speaking family. He was 8 years and 4 months when he was diagnosed with significant language impairment with mild articulation disorder. He spent his weekdays at the children's home. Boy C spoke English at the children's home and in school. When he spent time with his parents, he spoke a mixture of Malay and English. It was reported that boy C was more fluent in Malay. His birth and early development history were unremarkable. Due to a difficult family situation, boy C missed school on several occasions when he was in primary 1 and he changed schools on a few occasions.

Boy C was diagnosed with dyslexia in August 2012. Boy C demonstrated below average single-word reading and spelling accuracy with low phonological decoding as well as very low phonological processing abilities for his age. The Psychologist from the Dyslexia Association of Singapore (DAS) referred him for a speech and language assessment as his language IQ score was below average. Boy C's caseworker was concerned about his very poor academic performance at school, his poor communication skills as well as some articulation difficulties.

The Clinical Evaluation of Language Fundamentals 4th Edition UK (CELF-4UK) was used to get an overview of boy C's ability to understand and use spoken language. The standardised language assessment revealed that he had significant language impairment. His core language score placed him below the 1st percentile with more than 99 out of 100 children his age doing better than him. The development of language skills can be affected by ESL (English as Second Language) as well as situational factors such as 'missing school and/or changing school. Taking this into account with regard to boy C's case history, there is sufficient evidence to suggest that boy C presents with significant language impairment.

This means that any skills such as listening, speaking, reading and writing which depend on language can be severely impaired and such impairment is likely to prevent boy C from showing his true level of intelligence. His speech was occasionally unclear during the assessment as a result of numerous sound

substitution errors (e.g. window ->/bindo/ 'bindow'). However, his speech was generally intelligible. Nonetheless, the level and inconsistency of speech sound substitution errors were indicative of an articulation disorder.

### **How could language impairment and articulation disorder affect boy C's learning at school?**

Due to his poor understanding of language-based concepts, boy C could have problems understanding what he had been told to do even if he appeared to have understood and was seen working in the classroom. He might also struggle in working through Math problem sums and Science because they require boy C to grasp and apply many different language-based concepts to problem solve.

When boy C failed to pay good attention (he might look like he was daydreaming) in the classroom, it might be due to him losing track of information that was delivered in a highly auditory-verbal environment.

His extremely poor knowledge of grammar rules would hinder his academic performance as his oral and written work were likely to be heavily penalised for grammatical errors.

In addition to the decoding difficulties identified as part of his dyslexia, boy C might not understand age-appropriate story books as they often use syntactically complex sentences.

Boy C's mispronunciation of words might affect his ability to spell words correctly. For example, he might spell 'trunk' as "twng", according to the way he said it.

### **INTERVENTIONS FOR BOY C**

An individual intervention plan was drawn up based on the profile of the child obtained from the speech and language assessment.

The long term intervention goal set for boy C was to be able to effectively use his speech and language skills in a functional manner.

The short term intervention goals were set to address the 5 aspects of communication namely,

- ◆ Speech – the ability to produce the sounds in words
- ◆ Phonological awareness - the ability to hear and 'play' with the sounds that make up the words in spoken language

- ◆ Receptive language - the ability to understand spoken language
- ◆ Expressive language - the ability to use spoken language
- ◆ Vocabulary - a set of words that a person knows and uses daily

## Speech

Whenever boy C was observed substituting sound/s in a word, attention was drawn to the Speech and Language Therapist's mouth and he was reminded to do good listening and good looking while the right way of saying the word was modeled. Boy C practised until he could pronounce the word clearly. If boy C had difficulties imitating the sound production, the spoken word would be presented to him in the written form so he could relate the speech sound/s he needed to produce to the written letters.

When teaching boy C to say long (multisyllabic) words, he was shown how to break the word into syllables (e.g. con / den / sa / tion) and point to each syllable as he listened to the slow articulation of the word with exaggerated pauses between syllables. This would facilitate him in remembering all the sounds in the word. Boy C would repeat the word a few times aiming to help retain it in his memory.

## Phonological Awareness

Phonological awareness forms the basis for developing good articulation, reading and spelling skills. A child needs to recognise sounds in words and learn the skills of 'playing' with the sounds in words to read and spell well. Children with SLI have often been noted to have phonological processing deficits (Catts, 1993; Snowling, Bishop, & Stothard, 2000). Hence, phonological awareness was included in boy C's intervention plan.


The short term goals set to improve boy C's phonological awareness were:

- ◆ To identify first and last sound in monosyllabic words with 80% accuracy in a structured activity in therapy setting
- ◆ To identify the number of syllables (up to 5 syllables) in a spoken word with 80% accuracy in a structured activity in therapy setting
- ◆ To blend and segment \*C\*VC words followed by CCVC words and CVCC words with 80% accuracy in a structured activity in therapy setting  
*\*C represents consonant and V represents vowel*

Phonological awareness skills were taught using a variety of fun physical activities such as board game, clapping hands and dartboard game.

## Receptive Language

The short term goals set to improve boy C's ability to understand spoken language in the classroom were

- ◆ To develop understanding of position concepts (prepositions) of 'in', 'on', 'under', 'in front', 'behind', 'over', 'above', 'below', 'beside', 'between', 'through', 'along' and 'across'. Examples of activities carried out were 'place an object in the position requested' and 'use a pencil and paper to draw out spoken directions containing prepositions'.
- ◆ To develop understanding of sequential concepts of 'first', 'second', 'third'...'last'. Manipulatives including toy vehicles (car racing game) and activity sheets were used to get boy C to follow 1-step simple spoken directions containing sequential concepts.
- ◆ To develop understanding and the ability to answer wh-questions. Activities carried out were 'get the child to draw the semantic (meaning) association to each wh-question word (e.g. 'when' refers to 'time' 

## Expressive Language

The short term goals set to improve boy C's expressive language skills were

- ◆ To formulate grammatically and semantically acceptable sentences with the use of Colourful Semantics Programme as visual prompts. The following is an example of the visual prompt used:



More information about the Colourful Semantics Programme can be found at:  
[www.londonspeechtherapy.co.uk/wp-content/plugins/downloads-manager/upload/Colourful%20Semantics%20Programme.pdf](http://www.londonspeechtherapy.co.uk/wp-content/plugins/downloads-manager/upload/Colourful%20Semantics%20Programme.pdf)

In the sentence formulation task, boy C would pick a picture card and formulate a sentence to describe the picture using the target sentence structure. Board games such as 'snakes and ladders', ipad apps as well as a scoring system were used to convert the sentence formulation task into a game.

- ◆ To develop the ability in producing a simple narrative using sentence starters 'first', 'next', 'then' and 'last'. Boy C was told to sequence three picture cards and guess what would happen in the last picture card (predict the outcome). As boy C loved to draw, he was allowed to present his ideas (outcome) through drawing and described what he had drawn using the appropriate sentence starter. The Colourful Semantics Programme chart was used as a visual prompt whenever he demonstrated difficulties in stringing words to form a grammatical and informative sentence.

## Vocabulary

One of the ways to teach vocabulary was to sort, group and name manipulatives or picture cards.

- ◆ Pretend play. For example, set up the theme of "At the supermarket" to teach vocabulary related to fruits and vegetables. First, boy C acted as the store assistant who was asked to sort the manipulatives into the respective group 'fruits' and 'vegetables'. He was taught the name of the objects which he did not know. Next, boy C switched roles with his classmate and pretended to be the customer. He had to tell the store assistant what he wanted to buy. When he had everything in his shopping bag, he moved to the check-out counter to make payment.
- ◆ Boy C was told to sort a stack of picture cards into the respective word categories. For example, sort animal cards into 'farm animals' and 'jungle animals'. When boy C did not know the name of the animals, phonemic cuing was sometimes used to prompt the child. For example, to retrieve the word 'crocodile', boy C would be prompted with "croco" and then he would say "crocodile".

## Teaching strategies for the educators, parents and caregivers to make understanding easier for boy C

- ◆ Use simple words which are accompanied by pictures to explain concepts. For example,



- ◆ Teach boy C new concepts through experiential learning. For example, to explain the concept of condensation, let boy C feel the outside of a glass which is dry. Put some cold water and ice cubes into the glass. Leave the glass at room temperature. After a while, get boy C to look at and feel the outside of the glass which should be wet. The use of this experiment, together with the use of simple 1-syllable equivalent term 'rain' for 'condensation' helps boy C to grasp and retain concepts meaningfully.

### Teaching strategies for the educators, parents and caregivers to develop boy C's expressive language skills

- ◆ Recast (quick correction)  
When an adult spots an error-utterance produced by boy C during conversation, repeat the error-utterance back to him with the error corrected. For example:

**Boy C:** Children *is* playing game.

**Adult:** The children **are** playing a game.

- ◆ *(use your voice to give a little extra emphasis on the word—'are')*

- ◆ Sentence expansion  
Repeat Boy C's sentences and add on them. Then, get him to repeat them. For example:

**Boy C:** Brother is playing.

**Adult:** **My** brother is playing **Minecraft at home.** *(stress the words in bold).*

**Boy C:** My brother is playing Minecraft at home.

### Fun activities for the educators, parents and caregivers to do with Boy C to build his vocabulary

- ◆ "I spy with my little eye" is a guessing game. One player will identify an object that all other players can see. The player will provide clues about the object until someone is able to guess the object correctly. For example, one player will say "I spy something that is thin and long; the tip is sharp; it is made of wood; it is for writing" to describe a pencil. This game allows boy C to make meaningful associations to a word, organise the information he heard into logical chunks and retrieve the word that matches well with the given attributes. At the

- same time, it also trains boy C to differentiate critical from unimportant attributes of a word as well as using language to describe an object.
- ◆ Engage boy C in practical everyday activities such as shopping, cooking and PE lessons as a way of teaching him vocabulary. For example, give boy C a shopping list and assign him to pick the items at the supermarket; give boy C a recipe and get him to prepare the ingredients or teach him action verbs in a dynamic way during PE lesson.

## CONCLUSION

After forty hours of SLT and indirect intervention via the advice given to the educators and the caregiver, boy C achieved 85% of his therapy targets. Boy C seemed to learn better in small group, ability based teaching with maximal use of visual, demonstration and self-practice. Engaging boy C in multi-sensory learning activities that he enjoyed doing such as drawing, playing games and pretend play helped him to focus and retain language-based information.

At end of the twenty weeks of intervention, it was observed that boy C was more confident in expressing himself. He spoke English with fewer hesitations and pauses. Boy C also showed an increase in the length and complexity of his utterances as he was able to join two ideas in a sentence using a connector more readily in conversations. For example, boy C said "When I go to school, my friend play with me. I am happy". Boy C's caregiver noticed that he was more confident in using English to communicate at the children's home and he would share with her what he did during SLT. His caregiver also mentioned that he had shown good improvement in his mid-year examinations at school. Boy C felt that his English was much better after he had attended SLT and he had enjoyed attending the classes at the DAS.

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## ABOUT THE AUTHOR



### **SHUET LIAN HO**

*Senior Specialist Speech and Language Therapist*

*Ho Shuet Lian works at the Dyslexia Association of Singapore (DAS) as a Senior Specialist Speech and Language Therapist. She received her training, an MSc (Speech and Language Pathology) from the National University of Singapore, and has a Master Degree of Business Administration (with Distinction) awarded from the University of Leeds. She is a member of Speech-Language Hearing Association Singapore (SHAS) and is Allied Health Professions Council Registered (AHPC).*

*She provides speech/language/communication assessment and intervention services to children with specific learning differences. Her clinical experience includes working with children between the ages of 5 and 16 years. In addition, she provides advice and clinical support to Educational Therapists and junior Speech and Language Therapists at the DAS. She also gives advice to parents on speech/language/communication issues. She conducts Social Skills workshops as well as give public talks on speech/language/communication difficulties faced by children with specific learning differences.*



# The Impact of Drama on Dyslexia in the United Kingdom: A Case Study

Emeritus Professor Angela Fawcett

*Academic Director*

*Dyslexia Association of Singapore*

This case study is based on adult outcomes for children known to me with a specific interest in drama.

Jenny was originally referred to me at the Dyslexia Research Group at Sheffield University, for assessment and diagnosis at age 8. She continued to work with me for over 10 years. At 8 years old she presented as shy and rather gawky, and she was attending a special school in Sheffield for support with her dyslexia. Although she had been referred for special education on the basis of her problems with reading, she had not previously been formally assessed. Her WISC IQ test showed that she had an IQ in the superior range, but she had barely started with acquiring literacy, with a reading age and spelling age of around 6 years when I started to work with her. Jenny came from a very supportive family and I became friendly with her parents, in particular her mother who was in the legal profession and later became a judge.

When we started to develop our screening tests for dyslexia, it was particularly striking to note that Jenny was severely impaired on tests of postural stability, and she contributed to a demonstration video which I prepared at that time to illustrate the differences between dyslexic and control children in terms of their balancing abilities. On the other hand, when we ran our validation study by age 11 years and 9 months, she was the only member of my panel of children who was no longer at risk on the Dyslexia Screening test. We called Jenny back in for further tests of her reading and writing, and just as the DST screening had shown Jenny was now reading up to her age group. Despite this, of course, she was still dyslexic, and she continued to show mild problems in spelling, and her balance continued to be impaired.

What was the difference between Jenny and the other children in my panel of dyslexic children? These were children who had all failed to improve to a level where they were no longer diagnosable as dyslexic. For me, Jenny's strengths lay in her overarching interest in drama, and in this way she reminded me of my oldest child, our daughter Katy, who had never been formally diagnosed as dyslexic, but showed many of the characteristics of the dyslexic child. Katy was slow to complete her work, made countless spelling errors, was always kept in while at primary school, missing playtime, art and P.E so she could complete her writing. She also showed many of the organisational problems that characterise children with dyslexia, who need to concentrate so hard on their literacy, there are few resources left to deal with anything else.

Like Jenny, Katy was extremely shy, but on stage she became a different person, flamboyant, outgoing and able to tackle a variety of roles, from Brecht to a starring role in 'Our day out' in the main auditorium in the Sheffield Crucible for a 3-week period when she was 14. She adapted this approach for use in her everyday life, dressing up with lace ribbons and black eye liner, in the style of a group called 'Strawberry Switchblade' who were popular at this time. Taking on a different persona gave her courage to deal more proactively with life and to fight for her right to take GCE's rather than the lower level examinations her school suggested, that would have precluded her from attending university.

Katy knew that she was just as good as the other children who were in the higher set, and she did not rest until was acknowledged by her school. On the day of her drama GCE, Katy had lost all the materials she had painstakingly constructed for submission for the examination. She set off late for the practical in tears, and we all dreaded the results of this particular exam. However, even without those materials that comprised 30% of the overall mark, and despite her clear level of upset, Katy managed to achieve a first class result for drama.

Based on her continued success in drama, Katy set out to become an actress, leaving school to take a Drama and Performing arts certificate that included Theatre Studies 'A' level, English Literature 'A' level and Dance. Unfortunately, we did not have the funds to send her on to Drama school, which was expensive and not eligible for grants. I was completing my PhD at this stage, and just about to start work on a Leverhulme grant, and that would be my first paid work for many years.

Katy eventually realised that she would spend more time waitressing than acting while she waited to be discovered. After a year living in lodgings in Scarborough, Katy came home, and took a 6-month placement in lieu of employment at a small local theatre, learning stage make-up, lighting, costumes and stage management. In practice she learned much more than this, about the importance of resilience.

She designed and made the marionettes for 'the Firebird' and we went along to watch the performance. Unfortunately, she dropped the Emperor marionette, which crumpled and developed a hunched-back, which could not be fixed for the remainder of the performance. During the interval, Katy ran away and was found sobbing on the steps outside. We were able to persuade her that the most important thing was that 'the show must go on', and she returned to finish the performance to great acclaim.

After this, Katy took an extra 'A level in Psychology' with a view to going to University as a mature student, and completed her degree with a 2.1 in Psychology and Media. Katy wanted to work at the BBC, and made 34 unsuccessful applications, before being appointed as a sub-titler, whose role it was to check for and remove 4 letter swear words. From this inauspicious start, Katy went on to become Network director for BBC1 and BBC2, and continued there very successfully until she left to have our grand-daughter Evangeline in 2011.

My niece Jo who is severely dyslexic with an IQ in the superior range followed a similar path to Katy through school and University. Her dyslexia was not diagnosed until she reached university, despite many years of struggle and a strong family history of dyslexia. Even her dyslexic father thought Jo was lazy and should try harder! Her major strengths lay in drama and dance, and she studied these at university before undertaking teacher training. After training, she worked in a particularly rough secondary school in the North of England, teaching drama and dance. Here, she was able to inspire even the most resistant adolescents and produced a series of outstanding productions in drama and dance. Her struggles here eventually paid off with a recent appointment to one of the best secondary schools in Sheffield to teach drama and dance.

Each time I worked with the children in the dyslexia panel over the years, I spent at least as long talking to the children and later their parents when they came to collect them, as I did testing them. Consequently, the path that Katy had followed became a template for Jenny and her ongoing development in drama. She too joined the Sheffield Youth theatre and took part in a series of productions and had some success as an actress. At this time Jenny presented as a quirky outgoing girl who just lived for her drama, full of confidence and not at all daunted by her dyslexia. We established a strong rapport!

Jenny went on to study English literature and drama at University, and then to teach drama and English at a secondary school in the North of England. Just like Jo, Jenny was able to fire the children's imagination, and to inspire a whole new generation of adolescents to consider the potential for drama in taking you away from hard reality to a realm where you can become a star, no matter how difficult you find learning.

When it is hard to be whom you are, that is a child who is struggling with dyslexia, it can be extraordinarily liberating to become someone else, if even for a few hours.

In drama, dyslexic children can unleash the creativity of their imaginations, and escape from teacher's perceptions that they are lazy or un-cooperative. This is the secret – drama can be a real strength for children with dyslexia! At the Dyslexia association of Singapore, we have an outstanding record in providing just this type of magic to enable children to show their potential in a realm far from the literacy with which they struggle.

# Dyslexia, Drama and the Importance of Success

## Katrina Hewes

*Bachelor of Creative Arts - Performance*

*Graduate Diploma in Primary Education*

*Certificate in Dyslexia Literacy and Teaching*

I looked wearily into Mrs Gardener's eyes as she repeated her question "How do we spell 'was', Katrina?" My heart sank, I didn't know how to spell it. I was concentrating hard not to cry at the injustice of it, because I was absolutely certain she knew I didn't know how to spell 'was' either. "W-O-Z" I replied; it was how I had spelt it in the story I had given her. "No, Katrina" she said as she grabbed my shoulders and lead me to the front of the class. She called the class's attention to the front. All at once I had 30 excited/sympathetic eyes upon me. Once more Mrs Gardener repeated, "How do we spell 'was', Katrina?" In a small voice I replied "W-O-S?" The class erupted into laughter as I was turning into a boiling mess; blood rushing to my face. "Class, how do we spell 'was'?" My teacher cooed out to the rest of the class. In unison the reply was "W-A-S". I returned to my desk. I looked out the window so only the resting magpie could witness my tears. Spelling never was, and arguably still isn't, my strong suit.

This moment stays with me until today as one of the most humiliating experiences of my primary school life. Yet I don't remember going home and flopping myself on my bed and lamenting to my mother the whole ordeal and exclaiming in my drama queen fashion; "I wish I were dead!!!!" No, that story didn't come out till much later. I had much more important things in mind that afternoon. My parents had just signed me up for an afterschool drama class in the local community hall and I was in love.

Drama brought to me my first ever feeling of true success. Before that all I clung to academically was the award I received in first grade that complimented my handwriting. To paint the picture of my drama success, my drama troupe had been working on a performance for our parents. The performance originated from our improvising characters we imagined. We then made a story for our imagined characters. On the night of the performance, our skit was only about 5 minutes long, but my partner and I had the audience in hysterical laughter! I felt good. It felt right. I had finally found something I was good at. And to top it off it wasn't

measured by spelling or numbers or reading!

Drama and I walked hand in hand through the rest of my schooling. It didn't matter how I was doing in other classes because I had drama and I was good at it. What I didn't realise until much later on is how drama helped me in other areas. Early on I learned to socialise well with others, read their body language and emote appropriately. To this day this has been a benefit in my sales career.

I was also winning awards in public speaking. I had a clear, loud and even speaking voice which I had learned to use in performance. My critical thinking was also developed due to drama, which encouraged me to use my imagination. As a result of drama my organisational skills were growing in leaps and bounds (I can see all the parents and teachers of dyslexic children reading this eyes widening with excitement at the prospect). Yes, during high school I had taken interest in the management of theatre. I had to organise the cast members, backstage crew, props and rehearsal space all on my own. I thrived.

Now as a teacher myself I am standing in front of my own classroom. It's been a long hot day. I am tired, my students are tired and tensions are on edge. We are reading a report on sharks and I am desperately trying to teach my students how to format their shark reports. I look down. Two of my students are stabbing their books with pencils, two girls are braiding hair and a pair at the back of the classroom are festering away, glaring at each other over some earlier playground fight. I really don't have their attention. I have to change tactics. I ask students to break into groups and each take a chunk of the report, create a silent play and then we will all take turns sorting the groups into what part of the report their silent play belongs to. Walking around the classroom I could see the cogs ticking in their minds and their eyes lit up with excitement. They were actually working harmoniously together! Drama saves the day again.

### **Dear Parents:**

Allow your children to be involved in Drama... what do you have to lose? Drama has had given me very valuable tools which translate across into other areas of my academic and social life. Firstly, it is important that every child experiences success. Most dyslexic students suffer in school as lessons are based around skills such as writing, reading and spelling. Drama allows students to experience success without heaving weighting in these skills. Remember drama isn't just about reading and analysing a script. It's about interpretations, imagination, improvisation and creativity. Secondly, through this newfound success rears a budding confidence which transverses into their social and academic lives. Drama encourages interaction with others on many levels in a safe and enjoyable environment. Academically, drama may give students confidence to be more willing to put up

their hand or collaborate with peers. This leads to drama as a tool to help children express themselves emotionally and verbally. Drama games and challenges will aid in developing critical and out of the box thinking. We are all individuals, there is no saying that your child will thrive when introduced to drama but with all the positive outcomes that drama offers, what do you have to lose?

### **Dear Teachers:**

Don't be afraid to use drama in your classroom. I talked about my own classroom experience with some trepidation. Any teacher who would walk into my classroom and see 30 students acting like a baboon squad at the zoo would be horrified. I chose to talk about it in the end as I saw it as a lesson that involved drama but also involved students meeting learning outcomes. I ask you to be comfortable letting kids be kids. I have seen students staring down at a worksheet tears welling up, they've been staring at it for some time now and they are too afraid to ask for help, I remember this vividly from my school days. Day after day of this weighs on their emotional well being. Offering drama in the classroom means students can meet outcomes without the additional stress of adhering to lines on a page. Consider it. Take the risk. Don't be afraid.

I hope my own experience sheds an insight on the positive affects of drama on a dyslexic child, student, and teacher. In a country bound by academic results we must remember our duty to culture.

### **ABOUT THE AUTHOR**



#### **KATRINA HEWES**

*University of Wollongong Graduate 2013*

*Australian born, Singapore raised, currently living in the south of Sydney. I was diagnosed with Dyslexia when I was in the 4th grade. Despite the many struggles I have had during my educational journey, I have found my dyslexia to be strength in my life for three reasons. Firstly, dyslexic minds are wired differently and this often gives me a unique perspective in day to day decisions as I have often had to see all sides to a situation. Secondly, I have had to develop many coping strategies to be competitive with my colleagues and peers. Such coping strategies include developing a high attention to detail and being extremely organised. Lastly, I believe it has given me a thirst for success, which is important for my future career. I have a passion for travel and creative outlets such as singing, playing my ukulele and drawing. In the future I see myself building my career in the training and education.*

*Katrinahewes@gmail.com*

# SPEECH AND DRAMA PROGRAMME

The aim of the SES Speech and Drama Programme is to develop literacy, communication and presentation skills and boost the self-esteem of learners with dyslexia. Drama can be a powerful tool to help students with learning differences.

## Our Approach

Using drama activities, students have the opportunity to enhance their persuasiveness and confidence in communication. Students are given the freedom to express themselves freely, using their imagination and creativity. Other vital communication skills that are fostered in the class setting includes listening and concentration. Activities ranging from role-playing to stage performances require students to understand the fundamentals of stage directions, character dialogues, music and light cues. To stage a production, it is necessary for the child to understand, interpret and process the script in detail. This allows them to exercise their working memory and processing speed.

Class sizes are kept to a maximum of 10 students and are conducted once a week in a 1.5 hour session.



## Recommended for

Students with low self-esteem or low self-confidence, students who have difficulties expressing themselves as well as students who enjoy drama.

## Entry Criteria

All primary school students are welcome to enrol.



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# Does Dyslexia Affect Daily Life?

## Emeritus Professor Angela Fawcett

*Academic Director*

*Dyslexia Association of Singapore*

There has been much discussion recently on whether or not dyslexia is a disability that affects daily life, or whether it simply impacts on performance in literacy. I would like to share with you a list that was compiled by a friend, who is highly intelligent with a PhD in Science, but who has not disclosed dyslexia and wishes to remain anonymous. I can confirm that my husband David also shares many of these dyslexia incidents

### **Dyslexia Diary**

1. Difficulty in reading the clock, misreading the 24 hour clock, setting the alarm incorrectly, setting the mobile phone incorrectly selecting - PM instead of AM and/or reading 1500 as 5pm.
2. Getting up earlier than needed so that I can get to work on time but then still being late because I'm not time conscious.
3. Regularly under estimating the time to get to a meeting or the time in which I can complete a task.
4. Regularly print out documents for a meeting and leaving them behind in the office.
5. Can't find the item I need for a meeting because my office is disorganised. Arrive at a meeting with no notepaper and make notes on a piece of paper which I then lose.
6. Often get the time of day or date of a meeting incorrect as well as the place, the building and room number wrong, so turn up late.
7. Get involved in a task and forget time passing.
8. Read slowly as well as compose and write slowly. I take longer to complete written tasks.
9. Difficulty in completing data sheets because I skip columns and reverse data so that the whole becomes inaccurate unless another person checks it with me.
10. Difficult to maintain concentration in meetings that last longer than 1 hour.

11. Regularly lose things: gloves umbrellas, purses and leave lunch or handbag at home.
12. Reverse digits of phone numbers, sometimes I am so slow at copying numbers that the phone times out or on a mobile phone the backlight goes out.
13. Have to put in extra time at work to catch up and this means that personal things which can only be done at certain times have to wait, for example, paying bills shopping etc..
14. Forgetting groceries - forgetting when shops are open.
15. Buy cards for birthdays but forget to send them.
16. Don't do Internet banking because I regularly got the password incorrect and was locked out of my accounts several times.
17. Miss deadlines or have to work late – sometimes through the night and so I am constantly exhausted.
18. I have to pay bills by direct debit because I lose them and I have a fixed rate mortgage so that what I payout does not fluctuate.
19. Try not to write for 'the group' in a meeting because my handwriting is not good and I am conscious of my spelling.
20. When using a car park or similar public machine (lifts, car parking) I'd take longer to read the instructions and people in a queue can become impatient. If machines need a number sequence or writing to be typed in sometimes they time out.
21. When travelling to a new place, particularly when driving, I add an hour or so that I can get lost and hopefully find my way again. I constantly have to check the train times or bus times or the map as well as dates and times and I can still get it wrong.

Since my assessment I am more conscious of the fact that anything that I read, write or say may be incorrect, so I'm constantly on tenterhooks and stress exacerbates dyslexia'.

It may be seen that only number 8, 19 and 20 relate directly to literacy, with a further 18 instances where dyslexia impacts on performance, all related to speed, memory and organisation.

The British Dyslexia Association and the Singapore Dyslexia Association would like to hear from other dyslexics who find that their dyslexia also impacts across their daily life and is not limited to literacy skills.

It is imperative that we build public awareness of these difficulties, including cognitive failure and slips of action, that have been highlighted in Smith-Spark et al., (2004) and that Leather et al., (2011) have identified as impacting on overall job success.

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### FOR MORE INFORMATION ABOUT ADULT DYSLEXIA SUPPORT:

#### **British Dyslexia Association—Adults and Employment**

[www.bdadyslexia.org.uk/about-dyslexia/adults-and-business.html](http://www.bdadyslexia.org.uk/about-dyslexia/adults-and-business.html)

#### **International Dyslexia Association—Adults Self-Assessment Tool**

[www.interdys.org/AreYouDyslexic\\_AdultTest.htm](http://www.interdys.org/AreYouDyslexic_AdultTest.htm)

The Dyslexia Association of Singapore (DAS) is currently working towards a programme that will provide support for Adult Dyslexics, if you need further information we recommend the information on adult dyslexia support from our international dyslexia partners:

International Dyslexia Association: [www.interdys.org](http://www.interdys.org)

British Dyslexia Association: [www.bdadyslexia.org.uk](http://www.bdadyslexia.org.uk)





# PRACTICAL APPLICATIONS



# PRESCHOOL PROGRAMME

The aim of the SES Preschool Programme is to help preschoolers who are potentially at risk of dyslexia, or have developmental delay in early literacy, develop skills and strategies to become confident achievers when they enter primary school.



## Our Approach

The programme helps preschoolers acquire a good foundation in alphabet knowledge and phonograms, leading up to learning sight words essential for reading. These abilities gear them towards reading and spelling readiness. In class, your child will be taught rules, facts and generalisations about the English language, enabling them to read and spell more effectively. They will also be taught strategies to cope with letter reversals. The programme follows a prescribed scope and sequence for systematic, sequential and cumulative teaching.

Components covered in a typical lesson

- Alphabet Knowledge
- Phonograms
- Learnt Word Knowledge (e.g. said)
- Reading
- Spelling

Preschoolers will be advised to go for a Full Aged Psychological Assessment when they turn six. Children diagnosed with dyslexia have the option to continue with the MOE-Assisted DAS Literacy Programme.

## Recommended for

Preschoolers in Kindergarten One and Two who are at risk of dyslexia or having difficulties with reading, spelling and/or writing.



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# Motivation of Teachers of Children with Specific Learning Differences (SpLDs): A Case Study of Teachers from the Dyslexia Association of Singapore

Michelle-Lynn Yap

*Director of Continuing Professional Development  
DAS Academy*

## INTRODUCTION

Payne (2005) acknowledges the complexities behind being a teacher to struggling learners, and that these teachers are valued because of their “commitment to serve a vast dimensional group of children with educational needs” (cited in Feng, 2008, pp. 2). When teachers are motivated, it is likely that they will put in effort to become effective educators that “promote learning and boost performance of all students, including those who are at risk of continued failure” (Sanders & Rivers, 1996, cited in Hynds & McDonald, 2010, pp. 528).

Apart from trying to understand how motivation impacts on a teacher’s practice and the extended environments (e.g. organisation), another reason as highlighted by Chen (2005, in Feng, 2008) is that there is inadequate literature that sheds light on the beliefs and attitudes of teachers of learners with learning differences, and this is especially evident in Singapore.

The premise of exploration was therefore to look into areas such as how motivation is defined and its correlation to job satisfaction and success, the contributing factors of motivation or demotivation, whether these contributing factors are intrinsic or extrinsic, and the impacts these have on the DAS Educational Therapists, the DAS as an institution, and even to the larger field of SpLD. A research of this nature had also never been conducted at the Dyslexia Association of Singapore (DAS).

## THEORY OF MOTIVATION: HERZBERG'S TWO-FACTOR THEORY

Herzberg's Two-Factor Theory (1959; updated in 1966) also known as Motivation-Hygiene Theory challenged the traditional take on motivation (see figures 1. & 2. below)

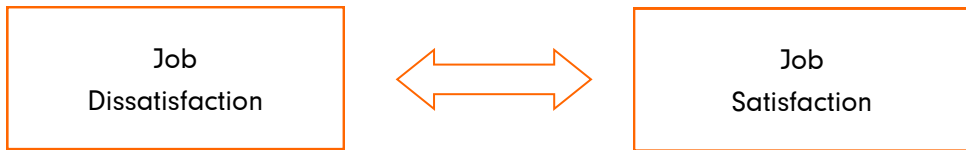


Figure 1. Traditional view of motivation

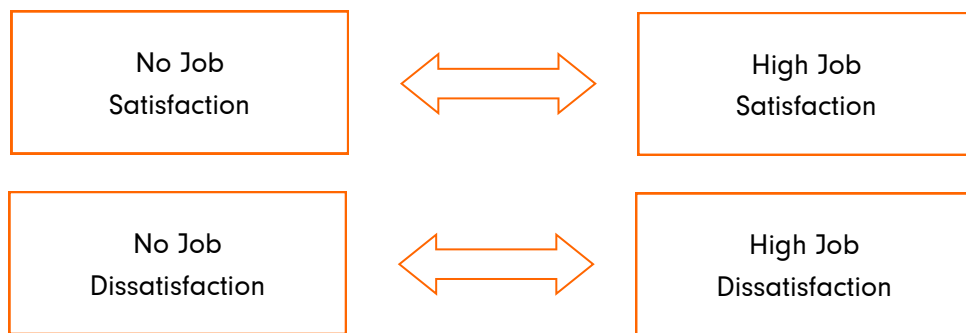


Figure 2. Herzberg's view of motivation

Herzberg also established that intrinsic factors (job content) were known as *motivators* and consisted of five factors, namely "achievement, advancement, the work itself, responsibility, and recognition", while the term *hygiene*, which referred to extrinsic factors (job context), also consisted of five factors, which includes "company policy and administration, technical supervision, working conditions, salary, and interpersonal supervision" (Maidani, 1991, pp. 441-442).

Although there have been criticisms of Herzberg's theory, it is still useful to organisations like DAS as it enables them to separate factors that motivate or demotivate, allowing them to better manage resources (e.g. budgeting for salary), policies, and practices (e.g. appraisals). After reviewing several other Theories of Motivation, which included Maslow's Hierarchy of Needs and Vroom's Expectancy Theory, the Two-Factor Theory was chosen as Herzberg's *motivators* have shown to be relevant to teacher motivation at DAS. This is because the themes that have been derived from the interviews appear aligned to his five motivation factors.



## RESEARCH QUESTIONS / AIMS

1. What are the factors that contribute to a DAS teacher's motivation, and are they mainly intrinsic or extrinsic?
2. Why are these factors important and how do they impact on the individual, the organisation, and the field of SpLD as a whole?

These research questions have been asked in order to establish three aims – a) what motivates and/or maintains motivation in a DAS teacher, b) whether the contributing factors are intrinsic or extrinsic, and c) to understand the value of these factors and their impacts.

## METHODOLOGY

A QUAL-*quan* approach was taken as there was a need to a) understand phenomenon from the participants' perspective, b) describe teacher motivation at DAS in depth through an interpretative stance, and c) see if the results can be generalised to the context of SpLD.

**Phase 1: Mass questionnaire** (all teachers) - 79% return rate (55 out of 70) with 32% (18 out of 55) opting-in. Six cases were selected via maximal variation sampling, so as to develop as many perspectives as possible (Creswell, 2008) from the limited number of non-anonymous responses.

**Phase 2: Semi-structured Interviews** (six cases) – These were recorded and transcribed in order to be coded (*descriptive and in-vivo*) via thematic analysis.  
**Phase 3: Triangulation of data** from interviews (*quan*) and questionnaire (*qual*), as well as member-checking (with two cases).

## FINDINGS

From the interviews conducted with the six cases, the major findings that have emerged out of this study are presented below:

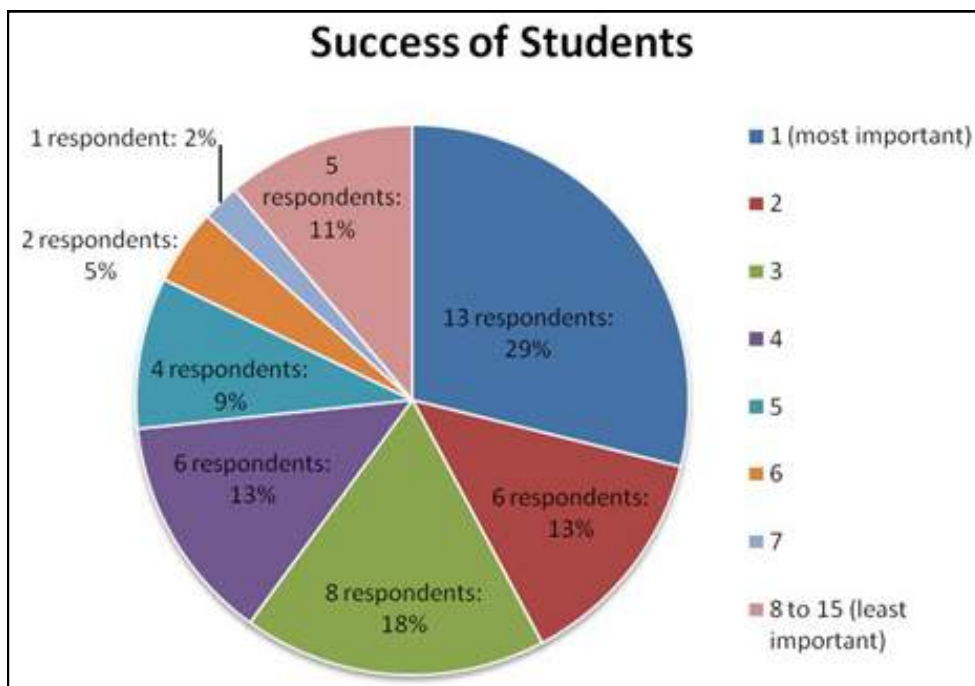
1. Motivation is important to teachers and especially to teachers in the field of SpLD
2. All six cases indicated that they tended to be more intrinsically motivated
3. Cumulating factors contribute to motivating a DAS Educational Therapist - a) working with children, b) sharing with peers, c) recognition of achievements, and d) being empowered

4. A majority of the cases related that having a five-day work week was important to work-life balance
5. All six cases cited that external challenges faced by teachers in the field of SpLD can impact on a DAS teacher’s motivation (e.g. lack of local resources and expertise)

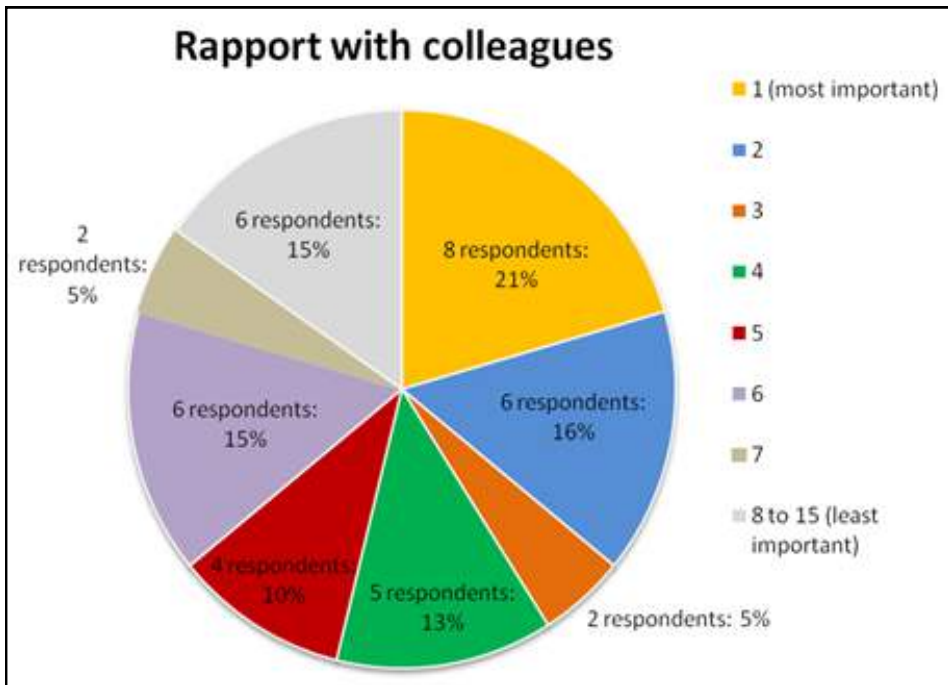
Pie-charts were created from the data gathered via the mass questionnaire (n=49) and used for the purpose of triangulating the information gathered from the semi-structured interviews conducted with the six cases.

Pie-charts are set on a 15-point scale, which is based on the 15 options respondents had for the question “As a DAS teacher, what would motivate you”. When collating the data, the respondents usually stopped ranking after 9, and so the researcher decided to focus on the first seven options selected (first 50% of the options provided).

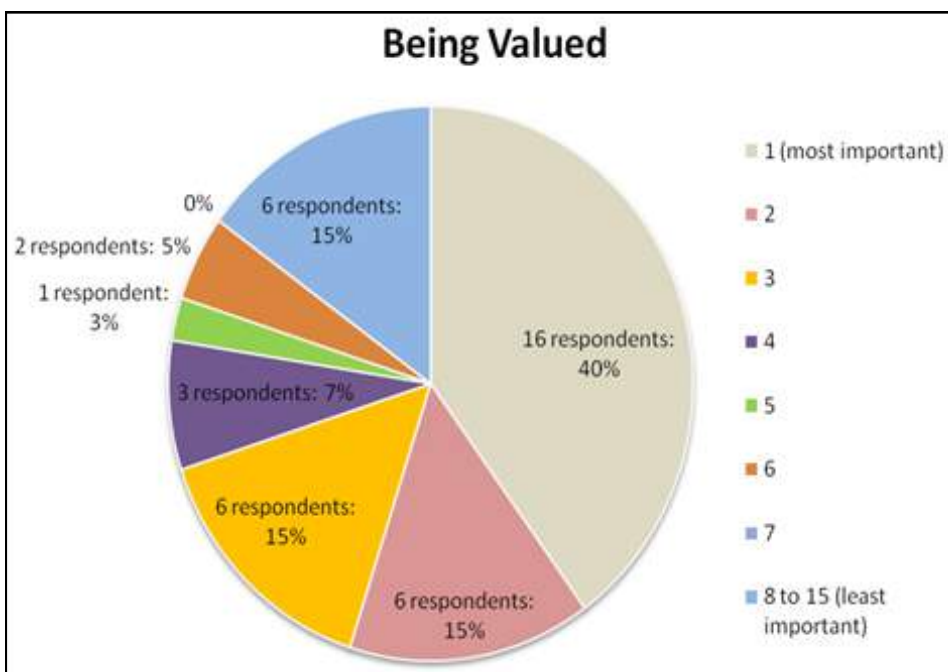
The four pie-charts presented here represent the four main cumulating factors that contribute to what motivates a DAS teacher (Finding 3.)



“As a DAS teacher, what would motivate you?” – Success of Students



“As a DAS teacher, what would motivate you?” – Rapport with colleagues.



“As a DAS teacher, what would motivate you?” – Being Valued



“As a DAS teacher, what would motivate you?”  
 – Training & professional development

**CONCLUSION AND IMPLICATIONS ON PRACTICE**

Herzberg (1966) identified five motivation [intrinsic] factors – Work itself, recognition, responsibility, achievement, and advancement, as well as hygiene [extrinsic] factors like company policies and administration, interpersonal relationships, salary, working conditions and personal life (Kondalkar, 2007). He also believed that the two continua do not affect one another, but results from this study have shown that it is not easy to totally segregate the two.

It is useful however, to see that the factors that motivate the DAS teachers appear to be similar to the five motivation factors highlighted by Herzberg. As such, Herzberg’s theory can help an organisation like DAS to identify factors that aid in motivating a teacher and those that reduce dissatisfaction.

Currently, in her efforts to maintain and raise the motivation of the Educational Therapists, DAS has made several positive changes. Firstly, all Educational Therapists now work on a 5-day work week schedule (four weekdays and a Saturday or Sunday) with two consecutive day-offs where possible, allowing for work-life balance.

Secondly, DAS is looking at working with other like organisations to plan for vocational training exchanges as part of continuing professional development and to expand the support network. For example, attachments with a fellow charity organisation, Rainbow Centre Singapore, have been established.

Thirdly, to build rapport between colleagues and at the same time ensure professional development, the annual 'Teams Teaching Teams' (TTT) event has been scheduled to run for the third time in 2015. An event like this allows peers (from all departments) to share, as well as glean knowledge from one another whether they are new or experienced, individuals or part of a team. At the separate DAS learning centres, termly centre-sharing sessions have also been scheduled to maintain camaraderie between peers on a smaller scale than TTT, which is organisation wide. Specifically for Educational Therapists, it is compulsory that each Educational Therapist fulfills fifty Continuing Professional Development (CPD) hours as part of keeping their knowledge current, while also expanding their toolbox of skills.

Last but not least, there has been an increase in the support provided to the Educational Therapists in terms of scholarships for further education, clearer pathways for training and career progression, and opportunities to contribute to and publish research. Furthermore, as part of recognising contributions and efforts, DAS now uses audits and appraisals to ascertain the quality of work, where differentiated levels of bonuses are awarded to individuals based on their performances.

DAS continues to evolve and a follow up study should be done to analyse the current levels of teacher motivation with the above changes being implemented. It is hoped that adopting such a staff-centred approach will undoubtedly raise and maintain the motivation of not only the Educational Therapists but of all staff at the DAS.

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# The Importance of Vision, Visual Efficiency, and Visual Information Processing in the Management of Students with Dyslexia

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The first part of this article outlines the importance of vision and how vision can impact on our performance of daily activities. In this section, some common vision problems among individuals with learning disabilities will be described. The second section provides an account of some relevant literature and research studies specific to the dyslexic population. This is followed by a description of a 3-Components Model of Vision, defining the components of visual integrity, visual efficiency, and visual information processing. The importance of vision screening and vision interventions which an occupational therapist may use with the dyslexics will be discussed briefly. The article concludes with a discussion on vision screening and using vision therapy for dyslexics having visual deficits.

## **IMPORTANCE OF VISION**

Vision is important to the performance of daily activities such as play, writing, reading, and driving. Occupational therapists are interested in vision as they evaluate and treat clients with high prevalence of vision disorders. Vision problems interfere with daily activities, as well as, learning. Scheiman (2014) highlighted that individuals with learning disorders, attention deficit hyperactivity disorders (ADHD), attention deficit disorders (ADD), and sensory processing disorders may have vision challenges. Since dyslexia is a learning disorder and dyslexic individuals may have overlapping difficulties of ADHD, ADD, dyspraxia, and dyscalculia (Reid, 2011), the likelihood of having visual deficits is even greater.

## LITERATURE REVIEW

Individuals with learning disorders experience vision problems of farsightedness, accommodation, binocular vision, ocular motility, and visual perception (Scheiman, 1994). In Scheiman's research study, he found that 43% of persons with learning disorders had farsightedness, 64% had accommodation challenges, 33% with binocular vision problems, 65% had oculomotor skills deficits, and 50% of them had visual perception challenges. Although there was no report of individuals with dyslexia in his study, it is arguable that dyslexics may also have similar visual challenges since dyslexia is a learning disorder.

Lovegrove (1994) highlighted supporting research studies that evidenced dyslexics who had visual transient processing deficits. The visual transient system is predominantly flicker or motion detecting system transmitting information about stimulus change and general shape (Lovegrove, 1994, p.116). This particular system has an important role of integrating information from successive visual fixations. It begins at the large visual magnocellular ganglion cells in the retina (Shapley, 1990). Visual information is transmitted to the magnocellular layers of the lateral geniculate nucleus and to the superior colliculus, and then via the dorsomedial magnocellular pathway through the visual and prestriate cortices to culminate in the posterior parietal cortex. Stein (1994) hypothesised that the visual transient systems in individuals with dyslexia may be defective, hence causing them to have visual deficits.

In another research study with the dyslexics which Williams & LeCluyse (1990) conducted, the researchers confirmed that the participants had visual deficits. In this study, the researchers found that dyslexics experienced difficulties on several perceptual tasks, which could be due to their affected visual transient systems. Recent research evidence appeared to indicate that individuals with dyslexia have subtle visual deficits linked to rapid processing of visual information of the visual transient system and reduced binocular stability (Fawcett & Nicholson, 1994).

Children with reading difficulties seemed to have unstable visual perceptions that are probably caused by unstable visual motor control (Stein, 1994). Children with dyslexia have both phonological and visual skills deficits that might be the result of a generalised abnormality of the magnocellular system of neurones in the central nervous system which affect their rapid signal processing. Stein (1994) hypothesised that dyslexics may have defective rapid signal processing that is genetically based.

There were also reports of dyslexic children who perceived letters that move around the page, letters hovered over the page, and perceived letters seem to overlap each other (e.g. letter 'c' overlapping letter 'e' which makes the letter appear like

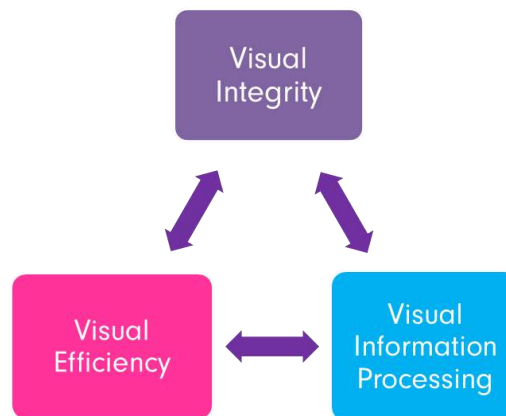


'r') (Stein, 1994). Such symptoms could be caused by unstable visual perceptions resulting from uncontrolled eye movements. Uncontrolled eye movements in children could be indicative of poor binocular control. A research study by Stein (1994) further supported this hypothesis, as he found a very high proportion of dyslexic children with unstable binocular control using the Dunlop test.

The strong correlation between phonological and visual skills in many of Stein's research studies seemed to indicate that both skills share a common neurological mechanism. Stein (1994) confirmed that individuals with dyslexia suffer both phonological and visual deficits, as both disabilities appeared to coexist, due to a common defect in the magnocellular system of neurones in the central nervous system. In addition to the coexistence of phonological and visual deficits in dyslexics, Stein also obtained research evidence, showing the substantial proportion of the variance in reading ability that could be caused by the visual skill of binocular stability.

### 3 COMPONENTS MODEL OF VISION

In order to better understand the three components of vision, visual efficiency, and visual information processing, the following 3 Components Model of Vision is presented below:-



**Visual integrity** refers to visual acuity, refractive error, and eye health. Visual acuity is the measure of the resolving power of the eye (Scheiman, 2014). Visual acuity tests are most commonly administered by ophthalmologists, optometrists, as well as, nurses to determine if an individual has short-sightedness (i.e. myopia). Visual acuity disorder is usually not an isolated problem. According to Scheiman (2014), a visual acuity issue is usually linked to another vision anomaly such as vision problems or eye disease. Nevertheless, reduced visual acuity would have a

significant impact on the performance of daily activities of an individual such as reading and writing.

The measure of refractive errors is the evaluation of the optical system of the eye. Some examples of refractive errors include myopia, hyperopia, and astigmatism. Some of the symptoms caused by myopia are blurred vision at far, the lack of interest in the environment, the need to move closer to objects of interest, and squinting. Hyperopia is long-sightedness. This type of refractive error causes blurred vision at near, discomfort when reading, tearing, headaches resulting from reading, avoiding close work, and moving objects away from eyes to read. Astigmatism, however, causes blurred vision at distance and near, discomfort when reading, tearing, headaches associated with reading, avoiding close work, and moving objects away from eyes to read.

Ocular health of an individual is evaluated by an ophthalmologist using sophisticated instrumentation and diagnostic drugs. Ocular health evaluation involves diagnosing eye diseases, diseases of lens, optical nerve, retina, visual pathway, and visual field defects.

**Visual efficiency** refers the effectiveness of the visual system to clearly and efficiently allow an individual to gather visual information (Scheiman, 2014). Visual efficiency includes accommodation, binocular vision, and eye movements. Accommodation disorders are more common in physically, mentally, and developmentally delayed children, learning disabled children, and those with acquired brain injury.

Accommodation disorders can be classified into accommodative insufficiency and accommodative excess. The former may have symptoms of blurred vision, headaches, eyestrain, reading problems, fatigue and sleepiness, loss of comprehension over time, a pulling sensation around the eyes, movement of the print, and avoidance of reading and other close work. It is also interesting to note that some of the dyslexics have similar symptoms of accommodative insufficiency.

Accommodative excess, on the other hand, has symptoms of worsen blurred vision after reading, headaches, eyestrain, difficulty focusing from far to near, sensitivity to light, and difficulty with daily activities requiring sustained close work.

Binocular vision refers to the ability to fuse visual information from the right eye and left eye to form one image with both eyes aligned. A hallmark symptom of binocular vision disorder is diplopia or what is commonly known as double vision. According to Scheiman (2014), the prevalence of binocular vision disorders is about 15% of the children or adults in the clinical population. Binocular vision disorder is the next most common vision problem other than refractive errors. Binocular vision

disorders may cause blurred vision, headaches, eyestrain, reading problems, fatigue and sleepiness, loss of comprehension over time, a pulling sensation around the eyes, avoidance of reading and other close work.

Eye movements can be classified into fixation, saccades, and pursuits. In a reading activity, a combination of healthy saccades, fixations, and regressions of both eyes are required. Saccades are eye movements from one stationary object to another stationary object. Fixation refers to stillness of the eyes on an object, while regressions are right to left eye movements. It has been reported that students with learning disorders are likely to have high prevalence of eye movement disorders. Some types of eye movement disorders include fixation disorders, saccadic dysfunction, and pursuit dysfunction.

Eye movement disorder may be a primary factor interfering with the individual's ability to read quickly, comfortably, and with adequate comprehension. Therefore, it is suggested that students with dyslexia should be evaluated for possible eye movement disorders, so that appropriate types of interventions may be provided to alleviate the visual motility challenges.

**Visual information processing** skills refer to a group of visual cognitive skills that extract and organise visual information from the environment (Scheiman, 2014). The visual information from the environment is then integrated with other sensory modalities and higher cognitive functions, and hence making a motor response. Visual information processing skills can be classified into visual spatial, visual analysis, and visual motor integration skills.

Visual spatial skills enable an individual to develop internal and external spatial concepts, develop concepts of left, right, up, down, front, and back. These skills are important for the development of motor coordination, balance, and directional senses when reading and writing. Visual spatial skills are pertinent for the development of bilateral integration, laterality, and directionality. For an individual with visual spatial challenges, it is likely that the person may experience difficulty with athletic performance, rhythmic activities, coordination and balance, difficulty learning left and right, and writing letters and numbers in the correct orientation.

Visual analysis skills enable an individual to analyse and discriminate visually presented information. Visual analysis enables one to determine the whole without seeing all the parts and using visual imagery to recollect past visual information. This skill involves being aware of distinctive features of visual forms such as shape, size, colour, and orientation. According to Scheiman (2014), visual analysis disorders may display symptoms such as learning basic Mathematical concepts, difficulty in learning alphabet, confuses words with similar beginnings, inability to recognise same word repeated on a page, and difficulty in distinguishing between

main idea and insignificant details.

Visual motor skills involve the integration of visual information processing skills with fine motor movement. A student with visual motor dysfunction may experience difficulty in copying from the board in class, sloppy drawing or writing, erases excessively, able to respond verbally but not produce answers in writing, and difficulty in completing written assignments within allocated time. Students with dyslexia often experience these visual motor challenges.

It is, therefore, paramount to evaluate visual information processing ability for all children with developmental delays or learning problems (Scheiman, 2014). The overall impact of visual information processing challenges can be very significant and if uncorrected may interfere with the performance of daily activities and the progress in occupational therapy.

## **VISION SCREENING AND VISION THERAPY**

Vision screening is strongly recommended for students with learning disorders which includes those with ADHD, ADD, dyslexia, and sensory processing challenges. The vision screening process may include an assessment of the visual acuity, near point of convergence, accommodative amplitude, binocular vision, ocular motility, and visual information processing. Vision screening should not be a substitute for a comprehensive examination by an optometrist. However, this screening provides useful visual information to establish a need for a more comprehensive vision examination undertaken by an optometrist.

Vision therapy, as an intervention, has extensive scientific evidence for accommodative and binocular vision challenges, as well as, those with visual processing difficulties (Scheiman et al, 2008). According to the American Optometric Association, vision therapy is a sequence of activities individually prescribed and monitored by the doctor to develop efficient visual skills. This type of intervention is prescribed after eye examination, indicating that vision therapy is an appropriate treatment option. Currently, there are no specific formal training programmes for vision therapy. Occupational therapists who work with individuals having visual deficits such as binocular vision problems, ocular motility problems, and visual information processing challenges may provide vision therapy. Vision therapy is effective for individuals above the age of 5 years. However, prescriptive lenses and prisms by an optometrist would be more suitable for children below 5 years old.

Vision therapy in the occupational therapy clinic may include ocular motor activities involving saccadic eye movements and visual pursuits. In visual analysis skills intervention, it is recommended that the treatment follows the sequence of visual

discrimination, visual figure ground, visual closure, visual memory, and visualisation, in view of the increasing complexity of the visual perceptual skills. For visual motor integration skills remediation, visual fine motor integration pencil-paper tasks may be given.

## **DISCUSSION**

A review of the literature evidenced both visual and phonological deficits in the dyslexics. Although there are fewer research studies in visual deficits as compared to phonological deficits, current research evidence seemed to point to binocular instability, inefficient ocular motor control, and visual transient processing challenges as the main visual problems. Current remediation for individuals with dyslexia tends to focus mainly on addressing phonological challenges. On the other hand, little attention is given to addressing visual deficits in the routine management of dyslexia.

Individuals with dyslexia may also have coexisting diagnosis of ADHD, ADD, sensory processing disorders, dyscalculia, dyspraxia, and other learning disorders. It is known that non-dyslexic individuals with these conditions have visual deficits. It is debatable that the comorbid issue increases the chances of the dyslexics to have visual problems. In view of these findings, it is highly recommended that vision screening should be administered to investigate for any visual anomalies and then followed up with vision therapy to address ocular motor control, binocular vision, and visual information processing challenges. It is also recommended that more research studies on visual deficits and visual interventions should be conducted in the future to determine the effectiveness of such interventions.

The 3-Components Model of Vision is a suitable practice model that can be applied in the management of dyslexics (Scheiman, 2011). Visual integrity, visual efficiency, and visual information processing are essential components that should be addressed in managing visual deficits for this population. The inter-connections between these components show the inter-dependence of each component on the rest. For instance, a student with dyslexia having accommodative insufficiency disorder may also have refractive errors (visual integrity) and visual motor integration (visual information processing) issues at the same time, since the components are inter-related.

## **CONCLUSION**

This article has explained the importance of vision and the need to determine the vision status of individuals with dyslexia. Individuals with dyslexia are known to

suffer from both phonological and visual deficits. The former is well-researched, whereas the latter is a fairly new area that has yet to be rigorously investigated, even though some studies have shown the prevalence of visual deficits among those with dyslexia. The 3-Components Model of Vision, an appropriate practice model for the management of visual deficits, has been discussed extensively within the body of this article (Scheiman, 2011).

In conclusion, addressing visual deficits is an important part in the management of dyslexia and it should not be neglected or overlooked. Vision screening is strongly recommended for individuals diagnosed with dyslexia. This may be followed by vision therapy that may remediate inefficient ocular motor control, binocular stability, and visual transient processing skills. Referral to an optometrist for a more comprehensive vision assessment would be required if severe visual problems are identified at the screening. It is also highly recommended that more rigorous research efforts would be needed to determine the effectiveness of visual interventions and to create greater awareness of visual deficits in the dyslexics among stakeholders.

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# Does Singlish Hurt Spelling? The Impact of Colloquial English on the Literacy Abilities of Singaporean Students with Dyslexia

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## **ABSTRACT**

*In multicultural Singapore, there exists a colloquial form of English, known as Singlish that is heavily influenced by other Asian languages. This unique language situation has made teaching English language a challenge. Research has shown that teaching systematic phonics is an effective approach for students with dyslexia, a specific learning difficulty commonly associated with weaknesses in phonological processing. However, little is known about colloquial English and its impact on dyslexia. This case study aims to identify the relationship between Singlish and the spelling abilities of 15 elementary and secondary students with dyslexia who have received at least a year of phonics intervention. The students are from different socio-economic backgrounds and have varying language proficiencies. A range of tasks was administered to assess their listening and spelling abilities. A miscue analysis was later done to identify the types of errors made such as vowel substitutions and omission of ending consonants. Results showed that when Standard English was used as the medium, spelling accuracies improved when contextual sentences were provided as opposed to spelling words in isolation. This study has implications for English language teachers worldwide as the findings demonstrate the challenges faced by students with dyslexia in the learning of English using a phonics approach in a multilingual society.*

**Keywords:** Singlish, dyslexia, phonological processing

## INTRODUCTION

Dyslexia is often defined as a specific learning difficulty that affects the ability to read accurately and fluently which is unexpected despite the exposure to adequate instruction and cognitive abilities. Although the symptoms of dyslexia may vary from child to child, experts agree there are certain similarities and the most commonly associated causal factor is a phonological processing deficit, i.e. impairment in the representation, storage and/or retrieval of speech sounds. Hence, the remediation of dyslexia has always included the teaching of explicit phonic strategies. Kibel and Miles (1994), analysed the spelling errors of dyslexic children who had undergone remediation and found that despite mastery of phonic skills, spelling errors still occurred. They found patterns in those spelling mistakes and concluded that it was not due to a general phonological weakness or lack of grapheme-phoneme correspondence, but rather a difficulty in the fine discrimination of speech sounds that matter in spelling.

Research has shown that phonology plays an important role in spelling (Kibel & Miles, 1994), but there has not been conclusive results on the influence of phonological differences between dialects on spelling performance. It has been suggested that if children are taught to pronounce English correctly, they will have less difficulty with spelling, implying that an actual dialect of English is more accurately represented in the spelling system than any other (Bregelman, 1970). Treiman and her colleagues (1997), compared the spellings of young speakers of General American English and Southern British English and found the differences in spellings to be reflective of the dialects spoken by the children. Similarly, Kligman, Cronnell and Verna (1972), analysed the spellings of children who spoke the Black English dialect and found pronunciation difference in Black English to be significantly related to the spelling output.

There is no existing research on the impact of the Singaporean dialect on children's spelling performance or assessments on Singapore phonology for children.

Furthermore, previous research on the influence of dialects has largely focused on young children. The main purpose of this study is to investigate the speech-based errors in the Singaporean dialect, and how these affect dyslexic learners in multilingual Singapore.

*“There is no existing research on the impact of the Singaporean dialect on children’s spelling performance or assessments on Singapore phonology for children.”*



## ENGLISH LANGUAGE IN SINGAPORE

### Singapore English

All English-speaking communities are diverse and the way English is spoken depends on the social situation (Gupta, 1994a). As a former British colony, English has been the dominant language of education since the 1950s and became the main medium of instruction in schools from 1987 (Gupta, 1994b). Bilingual education was made compulsory from the 1960s and students learn a Mother Tongue according to their race in addition to English.

Language and culture are inextricably linked and linguistic evidence suggests that Singapore English reflects the multicultural character of the Singapore society (Wierzbicka, 2003). While English is the lingua franca in Singapore, according to the Singapore Census of Population 2010, only 30% of the population aged 5 and above speak a form of English at home. The rest speak mainly Mandarin, other Chinese dialects, Malay and Tamil as their first languages (Department of Statistics, Ministry of Trade and Development, 2010).

In multicultural Singapore, there exists an informal form of spoken English, Singapore Colloquial English (SCE), commonly referred to as Singlish. Singlish differs from the standard or formal variety of English spoken in Singapore, such as that in local English news broadcasts. The standard variety is no different from the Standard English used in the rest of the English-speaking world (Gupta, 1994b). Nearly all Singaporeans who are proficient in English are able to codeswitch between Standard English and SCE in different social settings (Gupta, 1994a). For the purpose of this research, Singapore English will be referred to as Singlish and not the formal variety.

Singlish is characterised by a mixture of local expressions, for example, the phrase “catch no ball” translates to “failed to understand”. Singlish is also peppered with grammatical structures and speech acts that originated from Chinese dialects and Malay, for example “you see me no up” means “you look down on me” in Mandarin (Hoon, 2003).

Singlish has been referred to as a “sinification of English” (Forbes, 1993) and the Singapore government is concerned with the proliferation of Singlish in education and in 2000 started a “Speak Good English Movement” (SGEM) in a bid to counter the ill effects of Singlish. Former Prime Minister Goh Chok Tong was of the belief that Singlish “could hinder our children’s competence in English” (Goh, 2000).

## **Vowel sounds in Singapore Colloquial English**

One of the key differences between SCE and other English systems lies in the pronunciation of the vowels (Hung, 1996). In general, there are no distinctive differences between the short vowel and long vowel sounds, example, bit and beat, ship and sheep. This conflation of vowel sounds results in more words becoming homophonous in SCE than in Anglo English.

### **Non-rhotic dialect**

For most parts, Singaporean accents seem non-rhotic unlike general American accents. Rhotic dialects are those with the occurrence of /r/ in syllable rimes. Non-rhotic dialects like the Southern British dialect do not allow /r/ in syllable rimes (Treiman, et al., 1997).

### **Devoicing and omission of final consonants**

Many word-final consonant clusters are reduced in Singapore English and most speakers will only put the plosives back when spoken in isolation. Also, the contrast between voiced and voiceless fricatives and plosives is hardly distinguishable in the final position (Gupta, 1994a). For example, 'believe' would sound like 'bilif', 'fist' sounds like 'fis' and 'looked' as 'lūk' (Hung, 1996).

### **Stressed and unstressed syllables**

Singapore English speakers tend to give equal stress to each syllable, making it difficult for native speakers to understand the rapid speech of Singapore English. This is in contrast to Anglo English, for example, British English where vowels in unstressed syllables tend to be reduced to /ə/ or 'schwa' (Gupta, 1994a).

## **DYSLEXIA**

### **Phonological processing deficit**

Dyslexia is a specific learning difficulty, which primarily affects reading and spelling development. Phonological processing impairment has been identified as one of the underlying core deficits. Several studies have shown that there is a co-relation between poor spelling and poor phonological awareness. It was found that the severity of a child's phonological processing deficit affects other language processes and it predicts differences in reading and spelling (Nation & Snowling, 1998). The ability to process and hear the differences in sounds in spoken language is crucial to discovering letter-sound correspondence. There is a tendency

for individuals with dyslexia to mishear and mispronounce words that are often reflected in their responses. For example, a child may inadvertently reply “No!” that he does not have a “cold” because he had misheard his mother’s question “Have you got a coat?” (Eide & Eide, 2006).

## **Spelling**

Spelling often occurs in stages and children begin to understand connections between spellings and pronunciations as they progress from the logographic to internalised orthographic stage (Critten & Pine, 2009). Both visual skills and phonological skills are necessary for spelling development, however, individual differences in spelling could be attributed to dialect (Treiman & Barry, 2000). Treiman and colleagues conducted research on schoolchildren to study dialect interference in spelling and found that less advanced spellers made more dialect-related errors than children with higher levels of spelling skill. However, certain kinds of dialect-related misspellings occurred in both groups. For example, young American children misspelled ‘hurt’ as ‘hrt’ while British children who do not have a /r/ misspelled it as ‘hut’ (Treiman, et al., 1997).

## **METHOD**

### **SETTING**

#### **Dyslexia Association of Singapore**

The Dyslexia Association of Singapore (DAS) is a social enterprise that is partly funded by the Ministry of Education, to provide educational therapy services for children with dyslexia and/or related specific learning differences. The main literacy programme is developed based on the Orton-Gillingham (OG) approach of intervention for dyslexic learners. The OG approach is a language-based, multisensory method of teaching phonics in a structured, sequential and cumulative manner.

#### **Teachers**

Two teachers were involved in this study. They have been trained in systematic phonics based on the OG approach and have at least five years of experience providing English remediation to students with dyslexia.

#### **Participants**

A total of fifteen Chinese students between the ages of 10 to 14 years took part in the study. Younger students were not chosen as their spelling abilities tend to be less stable. The students were selected from varying socio-economic backgrounds as a person's English proficiency is likely to be related to factors including level of education, home language background as well as reading and television viewing preferences (Kligman, Cronnell & Verna, 1972). All students met the selection criteria of having attended DAS for at least a year and their reading ages and spelling ages were approximately 2 years behind their chronological ages.

## **ASSESSMENTS**

Four different types of tests were carried out to determine phonological awareness and sensitivity of accent differences. These tests were designed to investigate the participants' sensitivity to sounds in spoken words and their ability to 'codeswitch' between Standard English and SCE.

### **Listening Tests**

Two different types of listening tests were administered. In the first listening activity, students had to tune in to minimal differences between pairs of words (such as 'plow'/'blow') spoken by a native British speaker and decide if they sounded the same.

In the second listening activity, the students were asked to circle the word they heard read by a native British speaker and a local Singaporean speaker with no sentence context given. For example, students had to choose between real words like 'lark' and 'luck'.

### **Spelling Tests**

The students were tasked to spell 15 words on two separate occasions, with the words to spell being read aloud by a British voice in the first week and in the following week, the students were asked to spell the same set of words dictated in a Singlish accent. A mixture of one-syllable and two-syllable words was chosen, based on differences in Singaporean and British pronunciation. During each spelling activity, the words were read in isolation first before being repeated in a sentence context. While the use of non-words would determine the students' phonology skills, it was decided that non-words would not be tested as the focus was on the different accents.

## **RESULTS**

## LISTENING

### Same or different

The students performed relatively well in the first listening activity that sought to measure their phonological awareness, with two students obtaining perfect scores and the lowest scoring 15 out of 20. The majority scored within the range of 17 to 19 marks and the mistakes made were of similar nature. The students could not hear the difference in 'raw'/'war', 'rode'/'rote', and 'rig'/'rick'. Table 1 shows a summary of common mistakes made in the listening activity.

Table 1: Results of Listening Activity from 15 students

Word 1	Word 2	No. correct	Classification	Position
wick	weak	15	ē / ĩ	medial
end	and	12	ǎ / ě	beginning
ties	vice	15	t / v	beginning
raw	war	5	au / ǒ	ending
hall	halt	11	l / t	ending
rode	rote	8	t / d	ending
rig	rick	6	g / k	ending
kin	gin	15	g / k	beginning
bed	bad	15	ǎ / ě	medial
metal	medal	15	t / d	medial

### Singapore accent vs. British accent

When the students were asked to listen out for words spoken in a Singaporean accent, they made more errors as compared to when the test was repeated in a British accent. For example, /th/ is a difficult sound for Singaporeans thus in words like ‘thin’ and ‘this’, [th] is realised as plosive /t/ and /d/ respectively. Hence when words like ‘thin’ and ‘tin’ are spoken in isolation, Singaporeans have a 50% chance of getting the word correct (Goh, 2000).

Table 2: Singapore accent vs. British accent

Singaporean Accent			British Accent			Classification	Position
Target Word	Contrast Word	No. correct	Target Word	Contrast Word	No. correct		
lark	luck	7	bark	buck	13	ar / ŭ	medial
seat	sit	6	neat	knit	11	ē / ĭ	medial
thin	tin	3	thick	tick	12	th / t	beginning
cot	caught	3	bot	bought	3	ö / au	medial
polka	poker	13	marina	mariner	13	schwa ə / er	ending
bead	beat	3	fraud	fraught	5	t / d	ending
cattle	kettle	1	mantle	mental	3	ä / ě	medial
feeling	filling	10	sleeper	slipper	8	ē / ĭ	medial

**SPELLING**

In general, the students performed better when the words to spell were dictated in a male British voice with clear enunciation of letters and no reduction of word-final consonant clusters. For the word 'thrash', none of the students spelled correctly in the first attempt when read by a Singaporean due to the realisation of /th/ as /t/. In the second attempt, when the word was given in a sentence context, 6 students managed to get it right. In contrast, students could hear the /th/ in 'thrash' when read by a British speaker but made vowel errors, substituting short /ă/ with /ě/ instead. Table 3 summarises the results of the two spelling tests conducted.

Table 3: Results of Spelling Tests

**DISCUSSION**

Word	Singaporean Accent			British Accent			Classification
	1st try isolation	2nd try context	Didn't get correct	1st try isolation	2nd try context	Didn't get correct	
corrupt	6	2	7	4	11	0	schwa ə
support	7	3	5	9	1	5	schwa ə
bleak	0	1	14	2	4	9	ē
wick	0	0	15	0	4	11	ĩ
mend	0	14	1	12	2	1	ě, ending
bend	8	7	0	2	3	0	ě, ending
pad	3	11	1	3	11	1	ě, ending
film	9	4	2	10	3	2	cvcc
thrash	0	6	9	3	3	9	th, cccvcc
thrift	3	5	7	8	1	6	th, cccvcc
deemed	0	0	15	1	0	14	ē
seemed	10	0	5	12	3	0	ē
prompt	0	2	13	2	2	11	ccvccc

This study was designed to investigate the effect of Singlish on the phonological awareness of students with dyslexia.

## **DIALECT AND PHONOLOGY**

From the first listening activity, it was evident that Singlish dyslexic learners were able to distinguish between the long /ē/ and the short /ĭ/ sounds. They can hear the difference between the stops /k/ and /g/ when they are in the beginning of the word or syllable. However, when the ability to pick out ending stop sounds is weakened as most students thought rig and rick sounded the same despite being pronounced by a British speaker.

The inability to differentiate long and short vowel sounds in Singapore dyslexic children could be influenced by the effects of colloquial Singapore English speakers' habit of pronouncing short and long vowels as the same as explained by Hung (1996).

The results lend support to existing research that spelling is a linguistic process that draws on children's knowledge about spoken language and phonological and orthographic knowledge interact during the course of spelling development.

The word 'film' is notoriously known to be mispronounced in Singapore and when the word was read by a Singaporean speaker, the weaker students spelled 'flim', linking each phoneme to a unique spelling as compared to the more advanced spellers who spelled correctly despite hearing film. When the word was said in the British manner, the weaker students managed to sound it out and spell correctly as /f/-/ĭ/-/l/-/m/. This lends support to Treiman et al.'s research that the phonological route takes priority over the visual route during the early stages of spelling development (Treiman, et al., 1997).

Having received phonics instruction and specialist intervention for at least a year, the children have learned that all syllables must contain a vowel in their spelling and their spellings reflect an interplay between the phonological knowledge and orthographical knowledge.

In addition, as Singapore English is a non-rhotic dialect, the students did not include additional /r/ in their spellings and could distinguish between /ar/ and /ŭ/ when spoken by the British voice.

## **VOCABULARY AND FREQUENCY OF WORDS**



When the students were tasked to spell 'wick', all of them gave the spelling 'weak'. Even when the sound they heard was a short /i/ and the context was given as a 'candle wick', they could not sound it out as /w/-/i/-/k/.

Similarly when they were asked to spell 'thriff', some used letter-sound correspondence and spelled 'triff'. The students who spelled thriff correctly without using any contextual clues, said they knew of the words 'thrifty' and 'spendthriff'. These students used vocabulary as an auxiliary measure. In other words, even when they do not hear the /th/, students with more vocabulary knowledge could rely on that to spell as opposed to sounding the letters out. When the word was given in a British accent, the students made more accurate approximations even when they did not know the word. For example, 'thriff' was spelled as 'frith', 'frif' as /th/ and /f/ are commonly confused because they are both fricatives that are produced in the same manner but differ by the place of production in the mouth and tongue.

Also, the influence of vocabulary knowledge became apparent when the students were asked to spell the word 'bend'. About half of the students were able to spell the word accurately when the word was spoken in a Singaporean accent without context. In a Singaporean accent the final consonant is omitted and the word is pronounced as /bɛn/. Most of the students knew what they had to spell even though the word was mispronounced because the target word existed in their vocabulary bank and in everyday speech they have experienced reciprocal response to the word 'ben'. A few students even commented that they would not be asked to spell the name 'Ben' and tried to verify the word by asking for context. On the other hand, older students made other deductions about the target word. Their responses included the word ban as they did not hear the final plosive /t/. Since Singaporeans tend to merge their vowel sounds, the older students had more than one way to spell the word and they needed context to spell the word accurately. This is an indication of their expanded vocabulary knowledge as well as their ability to assimilate new words and link them to the local pronunciation.

During the listening activity, despite proper enunciation, the majority of the students chose 'kettle' instead of 'cattle', 'mental' rather than 'mantel'. While it can be argued that pronunciation differences between the words are very small, the researchers believed vocabulary played a bigger role as the target words were of low frequency to them.

It was pointed out by Gupta (1994b), that Singapore English, like Chinese and Malay, is pragmatically rich and has many context-sensitive features that require the cooperation of speaker and listener. Like Forbes (1993) mentioned, without context it will be difficult to distinguish between a 'pet' and a 'pen'. Therefore,

understanding context is more important in Singapore than having perfect articulation.

## **SAYING IT RIGHT**

During the spelling activity, a few students actually requested for the spelling word to be spoken correctly. The students had in mind what was the 'correct pronunciation' of the words. For example, when the word 'corrupt' was pronounced in the standard British way as /kə/-/rupt/, the students asked if the word was 'corrupt' and questioned the teacher why it was not pronounced that way. Similarly, when the word 'support' was given as /sar/-/pŏt/, the students knew the word as support. This issue of 'correctness' from the students' point of view suggests the belief that when there are more than one variant of the same word, only one of them can be correct (Milroy, 2001). While some of them were able to codeswitch, using standard English for more formal settings such as an oral picture test, they were of the belief that English language should be standardised (Milroy, 2001). Their unwillingness to accept alternative pronunciations gives strength to former Prime Minister Lee Kuan Yew's belief that only the better educated can learn two or three varieties of English and effectively codeswitch between them (Lee, 1999).

Confusion and frustration increased the cognitive demands of spelling as the students struggle to codeswitch, spell and access vocabulary. The weaker students requested the teachers to pronounce the spelling words in Standard English to aid them in spelling.

## **IMPLICATIONS**

### **Is it Singlish or Dyslexia?**

The results from this study suggest that Singapore dyslexic students may be at a disadvantage if they are not exposed to sufficient Standard English. As pointed out by Hung (1996), the majority of educated Singaporean speakers are able to hear the difference between 'sit' and 'seat' and may even be able to mimic these pronunciations but in everyday spontaneous speech, both words will be pronounced as /sit/ with no clear distinction made in vowel sounds.

As the English language is not 100% phonetic, research has not proven that a certain dialect would fit the spelling system better than any other (Bregelman, 1970; Treiman & Barry, 2000). Therefore, while giving full value to vowels can help some Singapore dyslexic children spell better, it may not work for all Singaporean children. The students did not spell 'support' as 'suppot', without the /r/, possibly

because they could have some morphological knowledge that port is a root that means 'carry'.

The findings also suggest that Singlish has an impact on both spelling and listening, therefore as urged by the Singapore government, speaking good English is beneficial as it can aid intelligibility.

### **Which accent to teach phonics?**

While loss of intelligibility and spelling confusion may occur due to accent differences (Brown, 1998), the issue of choosing an ideal pronunciation for the teaching of phonics in Singapore is two-fold. Firstly, while adopting a British phonic system can bring a certain degree of clarity to spelling, it may not be well accepted by Singaporeans as it would mean a loss of national identity. Community acceptance is more important as the focus is on communication and not correctness (Gupta, 1994b).

Singapore English is viewed as a bridge to Standard English and even schoolteachers are favourable to using Singlish and students do not think of Singlish as bad English (Tan & Tan, 2008). Thus it is not possible to persist in officially maintaining a Singlish-free school environment and subsequently teaching only American or British phonics. The curriculum should recognise the familiar starting point of Singlish and the explanation of evolution of English language as well as the multilingual context of Singapore to ensure a more likely success for dyslexics.

### **LIMITATIONS**

A limitation is the brevity of this study, which was conducted over three weeks. While the researchers tried to select students from varying socioeconomic backgrounds, the sample size was not large enough to permit a comprehensive study of racial-related differences, i.e. the impact of Malay and Tamil on Singaporean Malay dyslexic students and Indian dyslexic students. To better tease out the effects of Singlish on spelling, it would also be beneficial to have a spelling-age matched control group.

As this was an exploratory study, the researchers did not want to dwell too much into the field of linguistics and phonetics. To expand this study,

*“The findings also suggest that Singlish has an impact on both spelling and listening, therefore as urged by the Singapore government, speaking good English is beneficial as it can aid intelligibility.”*

speech and language therapists will be consulted to determine the choice of words according to speech production.

## **FUTURE RESEARCH**

English is a universal language of communication but the manner of instruction varies from country to country. This research can be further expanded to other Asian regions as it has allowed the researchers to gain insight into the difficulties faced by children with dyslexia in Singapore which are characteristic of the Singapore multilingual environment.

## **CONCLUSION**

While the present study cannot conclude specifically the extent of pronunciation effects on spelling instruction that would help Singaporean dyslexic children, it is highly recommended that modified instructional materials or procedures be developed that would help these children better understand the relationships between Singlish and English spelling. As Brengelman (1970) proposed, it has not been demonstrated that any dialect fits the spelling system better than any other such that educators should go all out to teach that dialect. For example, dialects which do not make a difference in /w/ and /hw/, rendering the words which and witch to be homophones, the students must be taught to associate the use of 'w' and 'wh' with words rather than sounds. For educators of dyslexic students especially, this means having to spend more time on teaching grammatical and semantic contexts on top of the usual phonological knowledge.

This study also highlighted the need for a localised phonological awareness test to suit the multilingual Singapore context as dialects can influence the English phonology.

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## Specialised Educational Services

UNLOCKING POTENTIAL

*Specialised Educational Services  
is a division of the  
Dyslexia Association of Singapore*



### Our Vision

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

### Our Mission

Unlocking the potential of individuals with learning differences.



The Specialised Educational 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.

We are a dedicated team of professionals who are committed to delivering a quality service focusing on the needs of the individual and striving to bring out their very best.

- Bridging Programme
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- Exam and Study Skills Programme
- Essential Maths Programme
- Preschool Programme
- Specialist Tuition
- Speech and Drama Arts Programme

- Occupational Therapy
- Play Therapy
- Speech and Language Therapy

Programmes

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# ABOUT DAS 2013-2014



## Our Journey

In 1993, the DAS had one learning centre, one teacher and 12 dyslexic students. Today, the DAS employs over 240 staff, who jointly support over 3,000 school students in 13 centres through the MOE-aided DAS Literacy Programme (MAP).

What's more, the enhanced MAP curriculum appreciates local requirements, bringing us closer than ever to achieving our mission. And all our MAP Educational Therapists are graduates with a Specialist Diploma in Special Education to ensure that learners with dyslexia receive quality assistance.

What seemed like an incredible task two decades ago has quickly become a reality as an appreciation of the dyslexic difficulties and their unique gifts is now prevalent in Singapore. There is much they can achieve, when given the right support which is our MAP to success.

With an estimated 23,000 dyslexic children in local pre-schools, primary and secondary schools, efforts to reach these children must and will continue. In the words of Camus "every achievement is a servitude. It compels us to a higher achievement." And so MAP will continue in its mission, with you by our side.

*We reflected on our past, prepared for our future* by looking at our profiling and placement of students as well student progress monitoring mechanisms. In recognition of the increasingly sophisticated needs of dyslexic learners, a MAP Curriculum Matrix was designed to assist in the identification of what components work best with each unique learner. The Matrix contains the full range of the MAP curriculum, is based on the student profile and banding, and assists educational therapists to define the needs of the learners by targeting specific knowledge and skills. And by doing so, it also encourages educational therapists to be mindful of the subsequent stages for the child and to be more aware of the progress (or the lack of) that the students make.

*Enhanced & developed the MAP curriculum* so that it now offers individualised group lessons modified in view of local requirements. In accordance to MOE's Professional Practice Guidelines, the Rose Report and the National Reading Panel, an appropriate literacy programme should include phonemic awareness, phonics,

fluency, vocabulary and comprehension. And so, the MAP integrated curriculum follows Singaporean, US and UK guidelines for good practice. Based on the Orton-Gillingham approach, the MAP integrated curriculum also makes reference to a range of programmes and strategies in order to support the development and improvement of each learner.

*Increased awareness* of the dyslexic needs and strengths through a variety of efforts such as awareness talks in schools, free mass computerised screening efforts as well as open house events. Through these means, we are confident of increased awareness resulting in an increase in support to dyslexics.

*Upgraded facilities* by increasing the number of learning centres as well as updating the classrooms by adding smart boards and projectors.

*Increased use of technology* can facilitate students with specific learning differences to learn and lead productive lives. MAP therefore invests in equipment and software to add to the learning experience in our classes and infuses assistive technology into the lessons as a complementary teaching approach to enhance students' academic success and independence as well as to personalise lessons and skills enhancement to each learner.

*Specialised Educational Services (SES)*, a division DAS, was created with the aim to uncover the true strengths of individuals with learning differences and empowering them with the necessary skills and strategies to succeed. We are a team of professionals who are committed to delivering a quality service focusing on the needs of the individual, at a price which is competitive. All of our professionals are highly qualified and specially trained to help persons with learning differences who may be struggling in the different areas of their lives. We have a good understanding of the curriculum and the demands that today's education systems place on a person and strive to bring out the best in every individual that we see.

## 2013-2014: A year of *firsts* and more...

- ◆ Admissions recommended over 1335 students for placement and all of the 426 referrals received from MOE were recommended for placement in MAP.
- ◆ 170 students graduated from the programme, a number that has grown incrementally year by year.
- ◆ Teams Teaching Teams, a 2-day collaborative learning carnival, was organised for the first time with 27 one hour sessions.
- ◆ To guarantee quality of instruction, an annual quality assurance audit of instruction in MAP has been initiated
- ◆ Successful launch of the Asia-Pacific Journal of Developmental Differences, showcasing increased emphasis on local research

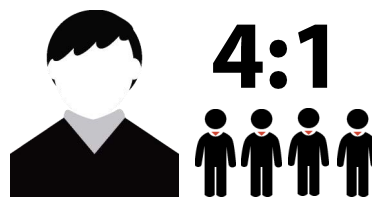


Learning  
Centres



240

Strength



DAS Student Teacher Ratio

Teaching hours / month  
**6,870 hrs**





Bursaries given  
**1,150**



Awareness reached

**7,000**  
people



Awareness talks

**70**



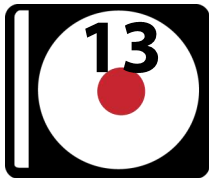
FREE Computerised  
screenings

**1,275**



DAS website

**12,200** views



DAS resources



Facebook hits

for graduation

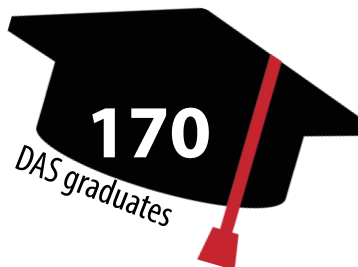


DAS  
Alumni

**455**



**805** Referrals made



**170**

DAS graduates

## DAS Learning Centres



- |          |   |                  |
|----------|---|------------------|
| <b>1</b> | <b>Ang Mo Kio</b><br>Anderson Primary School<br>6 Ang Mo Kio Ave 2, Singapore 569948                  | <b>6451 5582</b> |
| <b>2</b> | <b>Bedok</b><br>Fengshan Primary School, Indoor Sports Hall<br>307 Bedok North Road, Singapore 469680 | <b>6444 6910</b> |
| <b>3</b> | <b>Bishan</b><br>9 Bishan Place, #06-03<br>Bishan Junction 8, Singapore 579837                        | <b>6250 0526</b> |
| <b>4</b> | <b>DAS Assessment Services</b><br>133 New Bridge Road, #04-01<br>Chinatown Point, Singapore 059413    | <b>6538 1658</b> |

- |           |   |                    |
|-----------|---|--------------------|
| <b>4</b>  | <b>Chinatown Point</b><br>133 New Bridge Road, #04-01<br>Chinatown Point, Singapore 059413    | <b>6538 1658</b>   |
| <b>5</b>  | <b>Chua Chu Kang</b><br>Blk 17 Teck Whye Lane, #01-167<br>Singapore 680017                    | <b>6464 8609</b>   |
| <b>6</b>  | <b>Jurong Point</b><br>1 Jurong West Central 2, #05-01<br>Jurong Point, Singapore 648886      | <b>6594 0331/2</b> |
| <b>7</b>  | <b>Parkway Parade</b><br>80 Marine Parade Road, #22-01/02<br>Parkway Parade, Singapore 449269 | <b>6440 0716</b>   |
| <b>8</b>  | <b>Queenstown</b><br>Queenstown Primary School<br>310 Margaret Drive, Singapore 149303        | <b>6475 9535</b>   |
| <b>9</b>  | <b>Rex House</b><br>73 Bukit Timah Road, #05-01<br>Rex House, Singapore 229832                | <b>6643 9600/1</b> |
| <b>10</b> | <b>Sengkang</b><br>Blk 257C Compassvale Road, #01-545<br>Singapore 543257                     | <b>6881 2072</b>   |
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# EMBRACE DYSLEXIA

## Commitment

1. Raise awareness for Embrace Dyslexia by:
  - Sharing information about dyslexia in the workplace
  - Inviting DAS to conduct Awareness Talks
  - Including information about dyslexia in the staff handbook
2. Explore opportunities to work with the Dyslexia Association of Singapore:
  - Workplace Giving or Volunteering initiatives
  - Mentoring DAS Alumni for internships or work experience
3. Champion dyslexic individuals:
  - Recognising their strengths and understand their weaknesses
  - Providing appropriate support and encouragement
4. Donate to DAS Programmes to help low-income families with bursaries
5. Advocate for Embrace Dyslexia by signing this commitment





*Students with dyslexia struggle in the education system each and every day. DAS believes that each student is unique in their own way and have strengths that will see them through their education and into a successful career.*

*At the Dyslexia Association of Singapore we EMBRACE DYSLEXIA and know that every child will unlock their potential to succeed.*





DYSLEXIA ASSOCIATION OF SINGAPORE

# DAS HANDBOOK 2014

*A collection of articles, essays, research, case studies and practical information for people with dyslexia, their families and for the professionals who work with them to help them embrace dyslexia.*

Students with dyslexia struggle in the education system each and every day. DAS believes that each student is unique in their own way and have strengths that will see them through their education and into a successful career. At the Dyslexia Association of Singapore we EMBRACE DYSLEXIA and know that every child will unlock their potential to succeed.



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