DYSLEXIA ASSOCIATION OF SINGAPORE

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DAS HANDBOOK 2015

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, e.g. his/her, this is used purely for the sake of convenience by the author.

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INTRODUCTION

Welcome Message

Lee Siang
Chief Executive Officer
Dyslexia Association of Singapore

This is the second issue of the annual DAS Handbook and I am delighted by another outstanding effort by Professor Emeritus Angela Fawcett and the Dyslexia Association of Singapore (DAS) Team for putting together this excellent collection of articles. Once again, the breadth and scope of this Handbook reflects the many areas that the organisation and the community as a whole must continue to look into in support of people with dyslexia. The International Perspectives section also reminds us that dyslexia impacts different countries and languages and the global community must join hands to address this learning difference.

The MOE-aided DAS Literacy Programme (MAP) saw enrolment cross 3,000 primary and secondary school students for the first time in October 2015. This compliments the MOE (Ministry of Education) School Dyslexia Remediation Programme which will be expanded to all primary schools in 2016. This is an indication of the significant number of school-age children whom we still have to reach out to identify and help. Beyond enrolment numbers, MAP has also continued to improve curriculum and delivery.

In line with our efforts to introduce technology into our classrooms, digital Curriculum Based Assessments were introduced for the first time to guide Educational Therapists (EdTs) on the strengths and weaknesses of their students as well as to measure the progress made by students on MAP. To recognise the wonderful efforts and the widening scope of their teaching, DAS presented a MAP Educational Therapist of the Year Award for the first time this year.

> "...dyslexia impacts different countries and languages and the global community must join hands to address this learning difference."

The DAS Specialised Education Services (SES) saw

enrolment cross 1,000 students for the first time in August 2015. This is led by the Preschool and Maths programmes with almost 300 students each. The English Exam Skills and Chinese programmes also saw enrolment rise above 100 students. The Exam Skills Team opened their programme to Primary Three and Four students for the first time and the Speech and Drama programme provided Drama, Music and Movement to pre-schoolers for the first time.

The increasing demand for the various programmes of SES is again an indication of the varied challenges children with dyslexia face across subjects in schools and the importance of providing a wide range of programmes for them. To acknowledge the significant improvements made by students on our various SES programmes, we presented SES Student Special Achievement Awards for the first time during the annual Student Graduation and Awards Ceremony.

DAS continues to invest in the professionalism of our staff to ensure that the programmes we deliver are of quality and for the first time, we have colleagues pursuing Masters degrees in Mathematics and Chinese.

Another interesting development has been the shift of referral ages. Up to fairly recently, the majority of students referred to DAS were from Primary Four to Six. In 2015, we observed a significant shift with the majority of parents bringing their children to DAS for screening and psychological assessments while they are in the second year of Kindergarten, Primary One and Two. This trend suggests the importance of outreach efforts which has resulted in greater awareness of dyslexia, its associated learning differences and parent awareness of the importance of early intervention.

The training arm of the DAS, DAS Academy, has also seen a significant increase in the number of schools requesting teacher workshops. These schools include primary, secondary and international schools and the topics requested were wide ranging. In 2015, the DAS Academy presented certificates to students completing the Postgraduate Diploma in Special Educational Needs (SEN) for the first time and expect to see students completing the full MA SEN next year.

In terms of research and publications, again through the excellent guidance of Professor Angela Fawcett, two issues of the Asia Pacific Journal of Developmental Differences with a total of 14 research articles was published. For the first time, DAS staff have a paper published in the British Journal of Special Education.

The DAS Publicity and Publications Team also published a one of its kind book titled "Embrace a Different Kind of Mind – Personal Stories of Dyslexia" which contains 57 personal stories from people who have followed their passion and are succeeding

despite educational struggles they have encountered. These stories aim to instil in young students of DAS the desire to strive for equal if not greater success in their future careers.

The above achievements of course are not exhaustive but they do reflect on what DAS is all about .... an organisation regularly breaking new ground and pioneering efforts in programme and curriculum development, professional training and development as well as research and outreach.

The efforts of DAS in 2015 as well as the DAS Handbook also reflects the breadth and complexity of the needs of our clients with dyslexia and associated learning differences. At the same time, they demonstrate the vibrancy and energy of DAS staff in responding to these needs.

With the above in mind, the DAS strategy in the coming years is clear – To build and deliver a comprehensive and holistic range of programmes and services for our dyslexic clients. I am confident the essays in this second issue of the DAS Handbook will encourage government and private teachers, parents and all stakeholders to further explore the various topics discussed.

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 and has recently been elected as chairman of the 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
Research Consultant
Dyslexia Association of Singapore

It is a very great pleasure to share with you the second of our annual Dyslexia Association of Singapore (DAS) Handbooks, edited by myself and with Managing Editor, Deborah Hewes. It is now several years since I started working with DAS, and I have been truly impressed by the progress I have seen over this time period in terms of research output. As Research Consultant to DAS, I have been able to work with the staff to help them with formal evaluation of their work, and we have now started to work with local universities to obtain independent evaluations. We are now on our fifth issue of the Asia Pacific Journal of Developmental Differences, and our editorial board is becoming stronger with every issue. We have published a Handbook of Early Intervention linked to the visit of Professor Hugh Catts from Florida, an international authority on early screening, we have launched an Embrace Dyslexia campaign linked to the visit to Thomas West, and Deborah has worked intensively to launch a book of more than 50 successful dyslexics titled :"Embrace a Different Kind of Mind–Personal Stories of Dyslexia" to coincide with the 50th anniversary of Singapore.

We have now started to develop a series of booklets for parents on how to help their children with dyslexia, and the first booklet will be launched in 2016. It may be seen that we have made substantial progress on the publishing front, and I am proud of what we have been able to achieve working together.

In this DAS Handbook 2015, we return to the format adopted last year, with the first sections an in depth report on the DAS programmes including those funded by the Ministry of Education and the Specialised Educational Services programmes

"It may be seen that we have made substantial progress on the publishing front, and I am proud of what we have been able to achieve working together."

covering a broad range of topics associated with dyslexia. It may be seen from these reports that DAS continues to grow and expand, with an ever-increasing number of children benefitting from the support we are able to provide.

As with last year's handbook, we present a section on Embrace Dyslexia, Deborah has selected a number of representative cases of successful dyslexics, published in the "Embrace a Different Kind of Mind" to illustrate this area. I present an update on the progress of my son Matthew, whose dyslexia led to my involvement in the field, moving from housewife to international expert over the years.

In the next section we move on to consider international perspectives. Here we start with two articles from myself as editor, considering the impact of bilingualism and co-morbidity in dyslexia, both key areas for current research. Mary Mountstephen presents an article on the importance of movement for the wellbeing of the developing child. I present another article which considers the literature on early school intervention in the UK and USA, with my comparative review of the effectiveness of a range of interventions, drawn from the National Reading Panel, Brooks and Singleton's reviews and the What Works clearinghouse. Aziz Hassan, from Persatuan Dyslexia Malaysia, considers the impact of intervention in Malaysia and the need for a targeted approach to dyslexia. Dr Kristiantini Dewi and colleagues from Indonesia, highlights the need for screening and support for young children at risk of learning difficulties. A new computer program designed to evaluate base lines and progress in this age group is presented, and a justification provided for the use of this approach. June Siew, Head of DAS Academy, presents a review of the importance of executive function in dyslexia, an area that is receiving greater recognition currently. Finally, Dr Margaret Meehan, from Swansea University, presents a series of quotes from dyslexic students in University in the UK, relating to their school experiences and whether or not they received help.

A series of case studies follows. Samunn Abdul Cafoor contributes and article on support for students studying at Tertiary level. Dr Tim Bunn, a Chartered Educational Psychologist from DAS outlines some of the contentious issues behind the definition of dyslexia, and the impact of recent changes in the WISC tests that dominate dyslexia assessment. Finally, a group of colleagues from DAS, Teo Yizhen Sue-Lynn, Dr Tim Bunn and Tan Swee Ching Amanda, consider an approach designed to tackle the children who do not respond to the traditional Orton Gillingham approach used at the DAS, and evaluates the usefulness of lexical intervention.

In the last section on practical applications, we consider the impact of DAS approaches to outreach and community impact, with an article from Fanny Foo, DAS Director of Learning Centres and Outreach, and information on the impact of bursaries for families who would not be able to access support, in an article from

Quek Gek San, DAS Director of Human Resources and Corporate Services. Dr Adam Oei provides an article on working memory and how we can help children to remember.

A new innovation this year is the introduction of a book review. Here Dr Tim Bunn reviews a controversial approach to dyslexia from Professor Julian Elliott, in a book that claims that dyslexia is a myth. Dr Bunn considers the implications of this approach and finds the conclusions flawed in terms of the ongoing need for support for dyslexia.

ABOUT THE EDITOR

EMERITUS PROFESSOR ANGELA FAWCETT
Research Consultant
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.

Angela has worked with the Dyslexia Association of Singapore for a number of years and is currently a Research Consultant to DAS. She is currently the Editor-in-Chief of the Asia Pacific Journal of Developmental Differences.

EVALUATION OF DAS PROGRAMMES

MAP

MOE-aided DAS Literacy Programme

MAP ADMISSIONS

Where the learner's profile is drawn up and placement into programme is recommended.

- Assessments
- Profiling of students
- Recommendations for intervention

MAP QUALITY ASSURANCE

Where the learner's progress is monitored and abilites furthered through support.

- Progress monitoring
- Placement support
- Quality standards in teaching

MAP INTEGRATED CURRICULUM

Where the learner participates in collaborative learning through the integrated curriculum.

- Group-based individualised intervention
- Use of Technology
- Phonics, vocabulary, reading fluency / comprehension and writing

"We brought our daughter to DAS for a psychological assessment for dyslexia in late 2014. We were referred to Ms Tan Lyn Lee Jae. Ms Tan was not only highly intuitive in her assessment, she was very approachable and affable and went out of her way to address all of our concerns and queries. We are very grateful to Ms Tan for the support she has offered to us as parents who were learning something relatively new about our daughter's learning profile. All in all, we found the level of service offered by DAS beyond satisfactory." - **Parent of a primary school student**

DYSLEXIA ASSOCIATION OF SINGAPORE

HELPING DYSLEXIC PEOPLE ACHIEVE

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MOE-aided DAS Literacy Programme (MAP)

Geetha Shantha Ram[1], Lois Lim[2], Sujatha Nair[3], Serena Tan-Abdullah[4]
1 Director of MOE-aided DAS Literacy Programme & Staff Professional Development
2 Assistant Director, Admissions, MAP
3 Assistant Director, Quality Assurance, MAP
4 Assistant Director, Curriculum Development & Implementation, MAP
Dyslexia Association of Singapore

The MOE-aided DAS Literacy Programme (MAP) is the main literacy programme offered at the Dyslexia Association of Singapore (DAS) and was started in 1993. In 2013, DAS underwent an organisational restructure, and the main literacy programme was renamed to reflect the support it received from Singapore's Ministry of Education.

MAP comprises three main departments: Admissions, Curriculum Development and Enhancement and Quality Assurance. The main roles of the various departments are summarised below:

Admissions

A team of psychologists participate in screening of learners to enable identification of at-risk students. Upon receipt of assessment applications from parents, schools and other professionals supporting learners, specialist and educational psychologists conduct assessments to formally diagnose the needs of the learners, and subsequently, make placement referrals for intervention. A team of administrative staff support the referral process as well as bursary needs of students who may require financial assistance.

Curriculum Development and Enhancement

A team of experienced senior and lead Educational Therapists (EdTs) regularly evaluate the current curriculum and its relevance based on profiles of students and

recommended intervention by the Admissions team. Further development, implementation and enhancement of the curriculum are based on these evaluations and proposals for additional programmes within the curriculum are also considered so that all students equally benefit from MAP.

Quality Assurance

A team of educational advisors conduct needs analysis, and assist with the development and support of educators through broad based support as well as intensive remediation guidance. The evaluation of educator performance and formulation of further training to groom educators further ensures that the educators are able to effectively translate the curriculum to meet the needs of their learners. Additionally, through progress monitoring of students and their graduation, this department keeps its view on the quality of the programme through the learners.

INCREASED STUDENT NUMBERS

As shown in figure 1, Admissions conducted 1110 assessments in 2014. This was a marked increase from 2013, when 905 assessments were conducted.

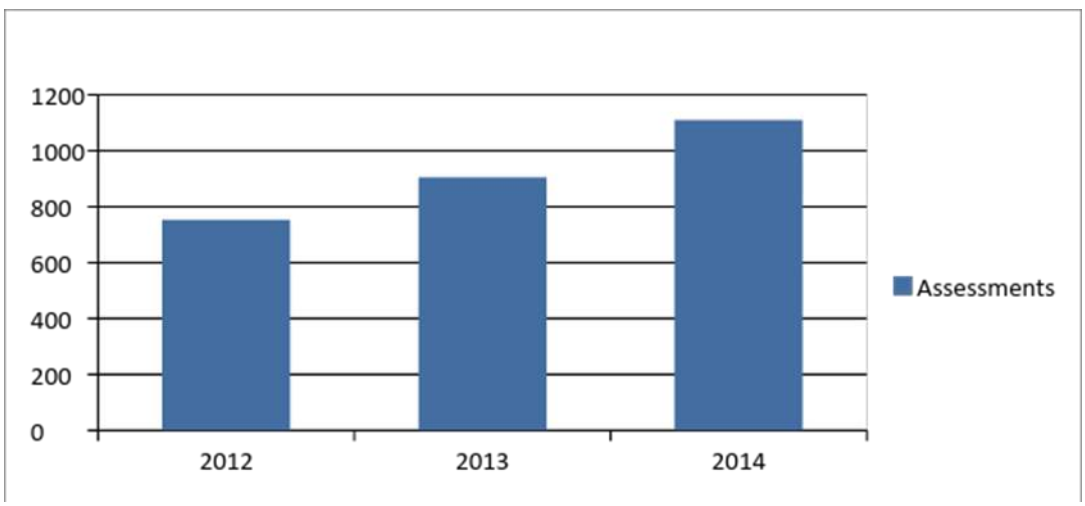

Figure 1: Assessment numbers over 3 years

Similarly, as shown in figure 2, MAP student enrolment too saw an increase. While in 2013, 2602 students attended the programme, in 2014 it rose to 2787.

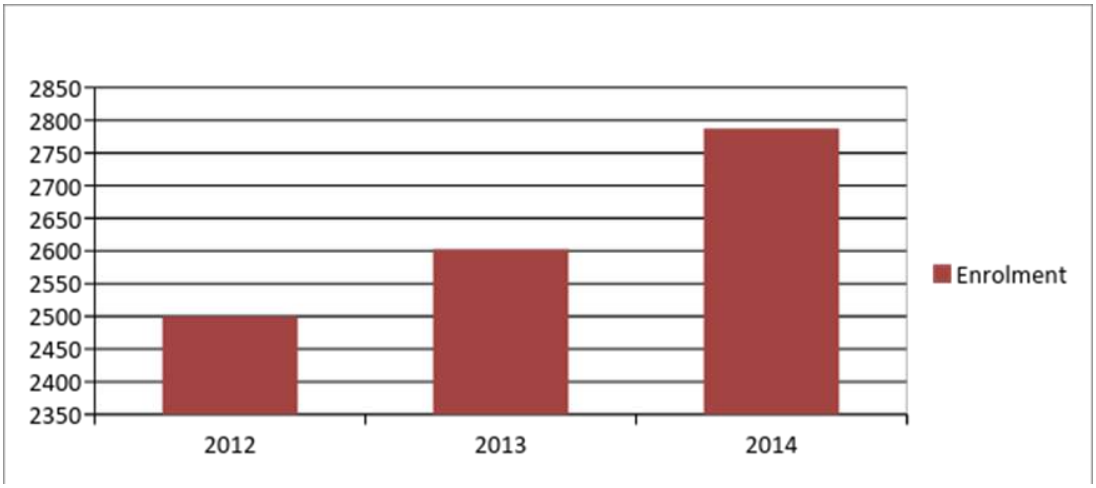

Figure 2: Student enrolment over 3 years

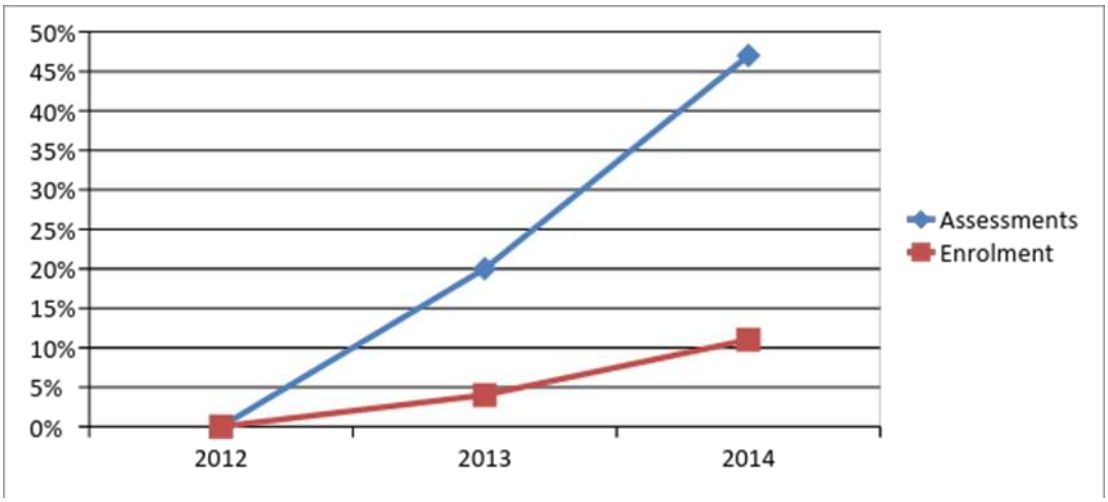

Figure 3: % increase in student numbers since 2012

Overall, in the last 2 years, MAP made significant progress in increasing the number of learners who accessed our assessment and remediation services. This is demonstrated in figure 3.

COMMENTARY ON STUDENT TRENDS

Learning profiles and student banding

In 2013, MAP introduced banding as a way to ensure that:

- Student's learning needs are matched with the level of teaching within the MAP curriculum
- Educational targets are set at the start of the intervention and adjusted as the student progresses through the MAP curriculum.
- 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.
- Programme evaluation can occur and quality assurance standards can be met
- Student's exit from MAP may be based, in part, on his progress from his initial banding

Consequently, a mass banding exercise commenced with the intention of profiling existing MAP students. In grouping existing students, psychologists utilised available information from the students' psychological reports to position them as Band A, B or C students. Within each band, there are three levels of literacy learning, making it nine levels in total.

The reports used in this banding exercise were either original psychological reports submitted when the learner first entered the programme, the oldest of which was completed in 2006 or review assessment reports. This mass banding exercise of 2632 current students allowed us to analyse the learning profiles of our students and revealed that the majority of current MAP students were at the A3 level (figure 4).

In order to establish the majority profile of students entering the programme in 2014, new students were banded from entry and this was separately analysed. Interestingly, a review of the 841 new students entering the programme also had a majority profile of Band A3 (figure 4). This revealed that there has been no significant shift over the years in the student learning profiles.

Interestingly, there appears to be a shift towards an increase in Band A type learners, as opposed to Band B type learners, which reflects what may be described as the typical dyslexic profile. 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. They often show emergent literacy skills, such as having some awareness of the alphabet, how letters are formed, how

text goes across the page from left to right and being able to read and spell basic words. These students need support in boosting their listening and speaking skills while improving on their literacy foundations. Band B, on the other hand, 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). They may have some reading and spelling skills of familiar words but struggle with understanding and applying letter-sound correspondence rules in reading and spelling new words (pseudoword decoding skills less than 80). They also have reading fluency, reading comprehension and paragraph writing difficulties (scores on various measures less than 80).

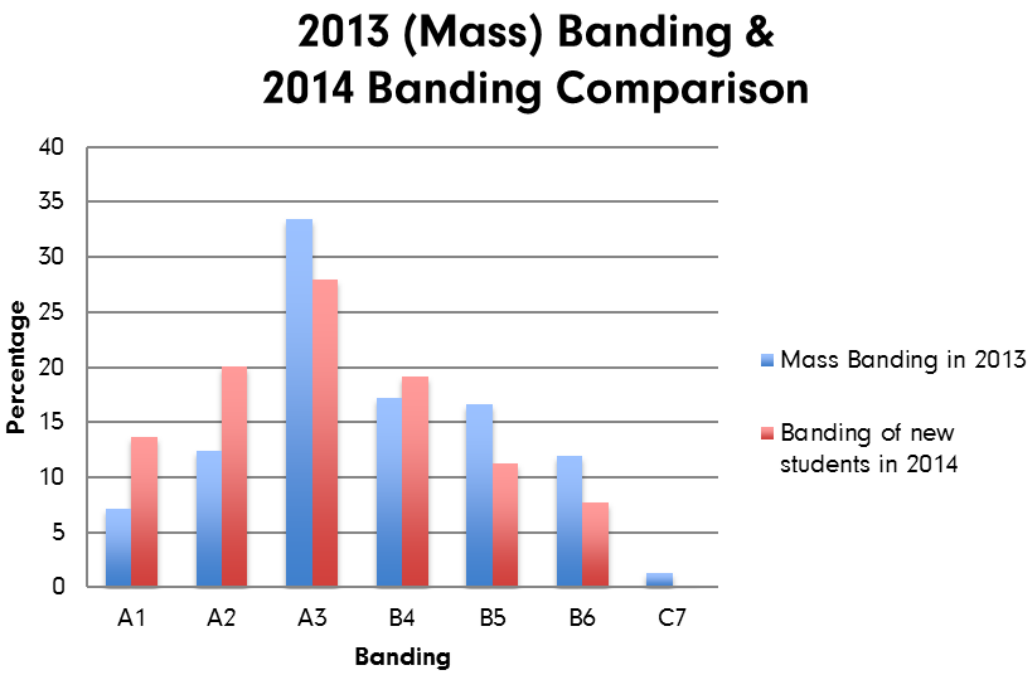

Figure 4: Student profiles through banding

Since the mass banding was based on reports that were potentially older and didn't capture the progress that the students had made, the datedness of some reports was an area of concern in accurately reflecting the current profiles of students. We aim to investigate this further through the bi-annual progress monitoring exercise.

GENDER

There has been a lot of interest on gender implications with dyslexia. For instance, in DAS, the ratio of boys to girls currently stands at around 2.5 to 1. Sally Shaywitz put forward that this was a result of behaviour or more specifically, a selection bias based on behaviour, which caused boys to stand out more prominently as a reflection of their learning difficulties. With that, the statement on dyslexia was that there was no significant difference in its pervasiveness.

Since then, there have been other interesting suggestions. A 2004 study by Dr. Michael Rutter and colleagues claimed that there is indeed a prevalence of dyslexia in boys (18-22% in boys compared to 8-13% in girls), and while not conclusive, a range of reasons have been offered including differences in brain structures between the genders and a higher genetic and environmental sensitivity to dyslexia in boys than in girls.

Translating Dr Rutter's percentage into a ratio shows a range of 2.25-1.7 boys to 1 girl and at a glance, this shows that MAP is moving closer to a more accurate reflection of the gender profile of dyslexics found in the larger population. In 2003, the ratio was 4 boys to 1 girl and a 2008 report revealed that there was no change in that ratio. However, in 2011, a ratio of 3 boys to 1 girl was reported and now, the ratio stands at 2.5:1. One can argue that previously, MAP was not effectively reaching out to and supporting girls with dyslexia, but the current ratio shows that although the boys still outnumber the girls, the difference is closer to the actual prominence of dyslexia between the sexes.

GRADUATION

In 2014, 167 students graduated from MAP. EdTs recommend students for graduation and these recommendations are reviewed by the graduation panel which compares their performance in MAP against their performance in schools before approving their status.

MAP graduates consist of two groups:

- Auto-graduates, who exit the programme because they are about to exit secondary school education and,
- Graduates, who meet the graduation criteria

The 167 graduates consisted of recommended graduates as well auto-grads – 84 students were auto-graduates. A total of 96 students were recommended for graduation and approximately 86.5% of them were approved for graduation, while

13.5% were advised to continue their intervention with DAS as they had not met the requirements for graduation, this works out to 83 students who were given approval for graduation. A further analysis of the graduates revealed (please refer to figure 5):

- Highest number of graduates who stayed on the programme between four to five years equals to 21 (approx. 25.3% of the cohort of 83 students)
- Highest percentage of graduates belonged to the Secondary two school level (21.69%) with Secondary three students closely following at 20.48%

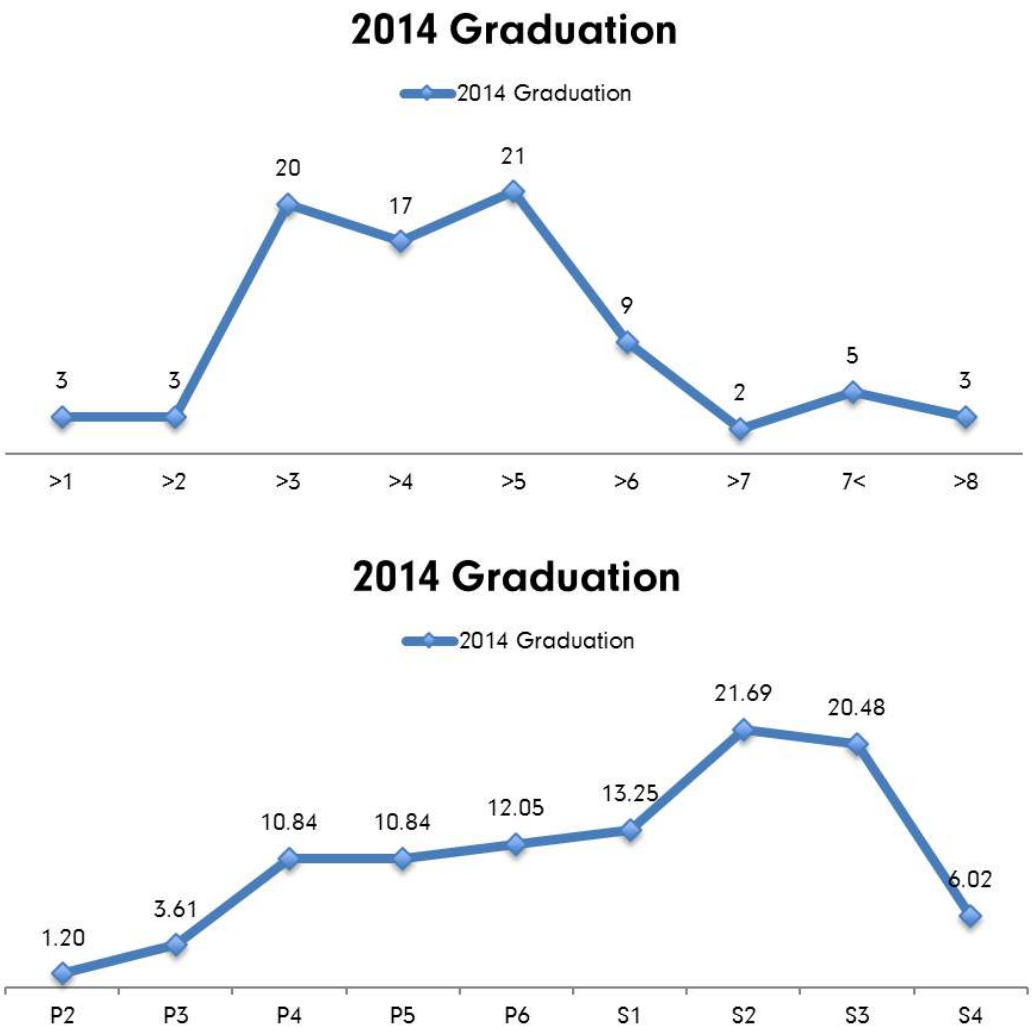

Figure 5: Graduation by duration & school level

For future evaluations, it would be important to continue to monitor the age at which learners start their remediation with MAP and study the trend of whether students are graduating sooner and within a shorter duration, which is the aim of the programme. Given the above-mentioned figures, with Secondary two students and a duration of four to five years being the majority, it suggests that most students enrolled when they were in primary three or four. There is clear evidence that early intervention produces greater benefits to the learners and with a younger starting age, does this correspond to shorter duration of intervention and sooner graduation from MAP?

Additionally, a review of the profiles of students who graduated from the programme in less than a year and those that graduated after more than 7 years may enable a further refinement of the admissions process with reference to suitability of the taught programme. With both group profiles in mind, what in the programme enabled some students to graduate much sooner and others to take twice as long as the average student? In last year's review of the programme we looked into a minority group we called intervention non-responders – is there a similarity in profiles between these non-responders and those who graduate later. Subsequent evaluations will aim to understand and comment on this.

MOE-aided DAS Literacy Programme (MAP): Admissions

Geetha Shantha Ram[1], Lois Lim[2]
1 Director of MOE-aided DAS Literacy Programme & Staff Professional Development
2 Assistant Director, Admissions, MAP
Dyslexia Association of Singapore

REPORT ON THE FINDINGS FROM MAP'S REVIEW PSYCHOLOGICAL ASSESSMENT DATA

MAP Admissions took a sampling of data from review assessments conducted in 2014 and ran some analyses to see if these students have made significant progress in any of the language and literacy measures.

The outcome measures covered the areas of language (verbal) and literacy (i.e. reading, spelling, reading comprehension, pseudoword decoding). In these analyses, it is assumed that the students are attending MAP between their first and last (review) assessments.

This is the summary of the analyses, based on the information from 174 students.

- Mean age of first assessment done: 97.78 months (or 8 years 1 month), SD 20.3 months.
- Mean duration of time between first and last (review) assessments: 50.40 (or 4 years 2 months), SD 22.02 months.
- At first assessment, students' profiles are as follows: Verbal (N=170, M=90.52, SD=13.62), Reading (N=168, M=90.29, SD=11.45), Spelling (N=163, M=88.30, SD=12.17), Reading Comprehension (N=157, M=89.41, SD=12.95) and Pseudoword Decoding (N=84, M=84.78, SD=11.04). Paired samples t-test analyses were run to compare the mean performance of students from first to last (review) assessments to see if they made progress in language and literacy measures*.

All literacy measures were found to be not significant. However, it was found that the students made significant improvement in their verbal abilities (i.e. improving from a mean standard score of 90.37 to 92.33 over time).

- The group was further split up into young (less than 8 years old) and old (8 years old or older) based on when they came for their first assessment.
- Independent t-tests were run on the difference in scores (from first and last assessments) to see if it made a difference when they received intervention*.

No significant differences were found between young and old groups on the language measure or any of the literacy measures except reading. In reading, younger students were found to make better progress (mean difference 2.37) compared to the older students (mean difference -3.60). Although no significant improvement was seen over the four year period overall, learners generally maintained their progress, which can be difficult for learners with dyslexia. Hence, the programme has benefitted the learners.

EXTENDING OUR SUPPORT: A REVIEW OF THE NON-DYSLEXIC ENTRY INTO MAP

Upon feedback from several parents over a few years, MAP reviewed the profiles of the students who applied to enter the programme and through that, a consistent group of students emerged who may benefit from the programme but were unable to access it due to the lack of a dyslexia diagnosis. These students are non-dyslexic, in that they were not diagnosed with dyslexia. However, their literacy difficulties often resembled those of dyslexic learners and/or they had other diagnosed difficulties.

Consequently, MAP trialled a controlled, non-dyslexic entry into the programme. The trial for Non - dyslexic students in MAP was opened from September 2014 to December 2014. An extension was made to current DAS preschool students who were placed in holding classes, because assessments had not been conducted yet.

Although there were a significantly larger number of students that were not diagnosed to be dyslexic but continued to have literacy concerns, many were not offered non-dyslexic entry into classes by Admissions psychologists. Some of the reasons raised by the psychologist include:

- Financial constraints of the family.
- Very low cognitive/verbal abilities
- child has other co-morbidity that has not been addressed (ie, attention, hearing, visual issues)

A total of 15 students were offered Non-Dyslexic access. However, only 5 students took up the classes, a 33% take-up rate. This suggests that perhaps the demand for the classes by parents were not as high as previously believed. It also urged a consideration to better understand why some clients decided not to take on the offered classes.

Table 1 summarises the reasons provided by the 10 cases that did not take up classes after being offered and also suggests reasons why some decided to take up the non-dyslexic entry:

Table 1: Reasons why Non-dyslexic entry to classes were accepted or not

Didn't take on classes	Possible reasons to take on classes
don't feel that their child would require specialist intervention as they are not dyslexic	from middle to higher income families
distance to travel to the centre is inconvenient location	generally weak cognitive abilities but may have adequate literacy attainments after receiving support from our preschool programme
fees is comparable to commercial classes	may have weak cognitive abilities and also continue to have weak literacy attainments
cost too expensive	may have significant language difficulties/ ESL concerns
declined after waiting some time for the classes (for preschool cases)	centre of choice is likely one that offer non dyslexic classes.
found a tutor to help the child	already a student in our Preschool classes

As the placements of non-dyslexic students in MAP classes have financial implications, concerns were raised regarding the tracking of such students in MAP

classes. Currently, Centre Managers (CMs) are required to tag case files that are sent to them to highlight the student's non-dyslexic status. Further, the following recommendations are suggested:

- CMs would be required to inform Educational Therapists (Edts) of student's non-dyslexic status upon placement in classes. EdTs should also indicate the status on the student's working file (red) so that new EdTs who might take over the case are aware of the child's status.
- Placement agreement form should also be placed in student's working file as a reminder of the status.
- EdTs are to advise parents of child's progress after six months and one year of being on the programme.
- Depending on the progress of the child, EdTs can advise parents to:
  - Continue with the programme at current rate if the child is showing some improvements
  - Graduate from the programme if the child has shown marked improvements
  - Request for a review assessment (lit only) if the child shows greater signs of being dyslexic (especially for children who have entered at a younger age.

Considering that the numbers are likely to be self limiting given the profile of the students that are likely to be offered and would sign up for non dyslexic cases, the placement of non - dyslexic students in MAP classes is recommended to continue. However, the following needs to be considered:

- As the majority of non-dyslexic students are likely to come from our preschool classes and are familiar with a particular teacher/centre, opening the classes to all Learning Centres would help support these full fee paying students.
- Clear and accurate briefing needs to be provided to the parents and an agreement signed to ensure that they are aware that their child is not dyslexic and hence, not subsidised.
- Close adherence to the recommended placement procedure needs to be exercised to ensure that non-dyslexic students are monitored, EdTs are aware of their slight variance in profile and correct payment is taken.

MOE-aided DAS Literacy Programme (MAP): Curriculum Development and Enhancement

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CONTEXTUALISING RESOURCES

The Integrated MAP Curriculum (IMC) aims to cater to the varied profiles of students and to ensure that they progress smoothly in a cumulative and sequential manner, building up on their strengths as well as working on their weaknesses. Hence, the curriculum was enhanced to include the following key essential learning components- Language and Vocabulary, Phonemic Awareness, Phonics, Reading Fluency, Reading Comprehension Writing (Grammar for Writing, Advanced Writing) and Morphology.

IMC was also designed to motivate and engage students while at the same time develop and equip them with the essential literacy skills. Thus, the IMC resource packs developed emphasise the use of relevant and localised content and context with teaching principles that spur the development of students into independent learners with the ability to apply a wide range of skills to a diversity of contexts. At certain levels, the IMC also hopes to enable students to cope with the curriculum demands they experience in school.

WHAT THE END USERS THINK: TEACHER FEEDBACK ON CURRICULUM ENHANCEMENTS

Following the launch of the IMC, several platforms were created to collate feedback informally from the EdTs and to enable the Curriculum Team to take a more proactive approach in evaluating the development and implementation of the IMC. A summary of the efforts to collect feedback is as follows:

- At the initial phase, most of the queries were communicated directly to the MAP Assistant Director (Curriculum Development and Implementation) for clarification and support.

- Subsequently, a designated Curriculum Google Site, a one stop information hub, was initiated to include any updates or information related to the curriculum, to better inform and respond to the EdTs in a timely and more efficient manner. These were monitored closely by the Curriculum Team.

- Opportunities for direct (face-to-face) feedback and discussion arose during the focus group sessions as well as the web chat conferences that were initiated to further support the EdTs.

- Further, a small sample of EdTs based at the different learning centres and ranging in terms of gender, age and teaching experience were invited to share their views and feedback on the IMC, the resource packs as well as the lesson plan templates towards the end of Term 4, 2014.

The feedback received, which drew on a diverse sample and different sources of information and suggestions, allowed the Curriculum Team to discuss, consolidate, identify and act on making the curriculum more accessible to the EdTs.

MAP TEACHING MATERIALS

There were many compliments on the quality and the comprehensive range of teaching resources and materials catering to the different profiles of students, making the planning for differentiated lessons more manageable.

Table 2: Feedback on the MAP Teaching Materials

EdT (Miss Sue-Lynn): The Curriculum Team has done a brilliant job in developing teaching materials. I think it has really been helpful for the EdTs to use the teaching materials to plan and differentiate the lessons according to the learning needs of the students.
EdT (Miss Yiyao): I really, really like the controlled texts in the worksheets as it saves me time to look for relevant reading materials for my students. I also like the differentiated worksheets that are able to cater to the different needs of my students.

MAP LESSON PLAN TEMPLATES

Most of the EdTs were delighted with the lesson plan templates created to assist them in planning their lessons more effectively.

Table 3: Feedback on MAP lesson plan templates

EdT (Miss Halimah): I find the lesson plan templates very user-friendly and comprehensive as compared to the past. I used to have a rough sheet of paper whereby I will strike off the sounds I've used. Now that the scope and sequence is included in the lesson plan templates, lesson planning has become so much easier.
EdT (Miss Xin Ying): The lesson plan templates create a very structured and user-friendly way of recording what we are planning to teach our students.
EdTs (Miss Nur Farahin and Miss Nur Ashikin): It is very efficient to have the scope and sequence and the sounds included for multiple spellings for us to refer to especially since we are new.

IMC MATRIX

The IMC is more comprehensive and holistic as it now encompasses the essential learning components that enable the students to cope with the literacy challenges they face in school.

Table 4: Feedback on IMC matrix

EdT (Miss Xin Ying): The IMC reminds us, EdTs that the lessons should not emphasise on phonics alone. We also have to bear in mind that these students of ours need so much more than just the ability to blend, encode and decode. More importantly, they need a more holistic curriculum that encompasses writing as well as reading comprehension.
EdT (Miss Sharyfah): The IMC provides more opportunities to teach more skills. It includes components such as Grammar for Writing and the deconstruction of reading passages for the students.

IMC PACKS (GUIDES)

The IMC packs developed serve as teaching guides for EdTs to refer to when they plan their lessons.

Table 5: Feedback on IMC Packs

EdT (Miss Farahin): I like the Grammar for Writing pack because it is so structured and I know exactly how to teach it.
EdT (Miss Ashikin): As a trainee EdT, the clear instructions included in the curriculum packs are very beneficial for me.
EdT (Miss Yiyao): The Writing pack serves as a guide for the EdTs to plan their lessons to include relevant skills needed to work with our students.

MAP LOCALISATION OF CURRICULUM

For instance, some phonograms and concepts were either removed or shifted from their original positions in the Integrated scope and sequence.

Table 6: Feedback on the localisation of the Curriculum

EdT (Mr Shaun): The IMC provides a better and more fluid sense of progression, moving up the scope and sequence as there are now more relevant spelling patterns, affixes grouped together to teach the students

Based on the feedback gathered, further enhancements to the curriculum and materials include the following:

- curriculum resource packs to include longer controlled texts and additional activities, worksheets that they can tap on
- Lesson plan template revision to enable them to plan and complete their lessons within a stipulated lesson period of 1hr, twice weekly.
- Videos on how and what to teach

In conclusion, IMC has met with resounding success and educators using it have seen this as a positive enhancement. With the continued feedback and enhancement, MAP endeavours to continue to develop the IMC.

MOE-aided DAS Literacy Programme (MAP) Quality Assurance

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TEACHER EFFICACY: WHAT THE 2014 QUALITY ASSURANCE AUDIT REVEALED

The quality assurance audits are put in place to serve as a supportive as well as an evaluative tool for Educational Therapists (Edts).

The lesson observation audit consists of an evaluation of the following process:

1. Lesson planning and execution
2. Communication and class management
3. Professionalism

If Edts do not receive a "competent" status for lesson planning and execution, a re-observation is required (Evaluative tool). If Edts do not receive a "competent" status in Point 2 and 3 – an Educational Advisor (EA) will advise the Educational Therapist on how to improve in these areas (Supportive).

After the lesson observation, Educational Advisors meet up with the Edts and discuss with them on the gaps in planning and execution of the lesson and action plans are discussed. Educational Advisors give educative suggestions so that the Edt can adjust their teaching accordingly.

For the documentation audit, EAs peruse through the lesson plans of 1 adhoc class for the previous term and verify it against the students' worksheets and also compare it against the programme plan created by the Edt for that particular class. It is imperative that all Edts prepare a Programme plan for all students under their charge.

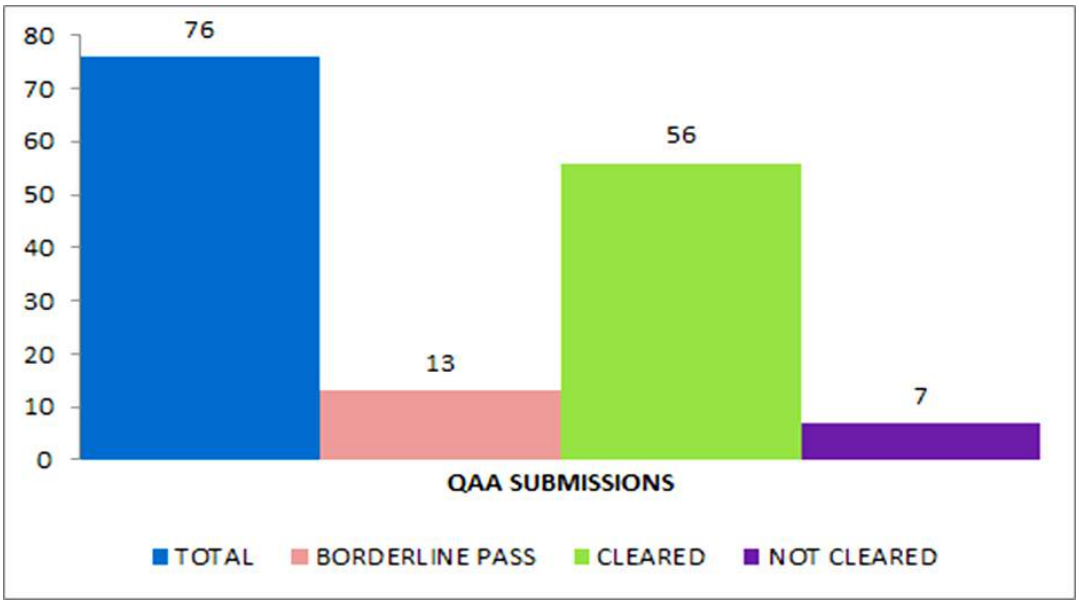

Figure 6: Statistics of QAA 2014

Programme plans are in place so that Edts can observe and plan for the needs of the student for the term and adjust their teaching, if needed. However in FY 2014-2015, the Documentation audit was not taken into consideration in the evaluation of an EdTs performance.

In 2014, a total of 76 Educational Therapists were audited and 7 Edts did not clear the audit. This translates to a 91% pass rate, an excellent outcome for the first year of audits. Another 13 Edts had borderline passes only. Edts who did not clear their audit and those who have received only borderline passes stood at about 26% of the total number of Edts who were audited . This situation will be monitored over the next few years and MAP's aim is two-fold:

- Reduction of the failure rate
- Overall enhancement of the quality of the instruction by EdTs, including those who passed

DAS has always set high standards for delivery of lessons. Since the 2014 audits were our very first organisation wide educational audit exercise, any Edt who did not conform to the standards was given advice on how to improve their teaching and no consequences of non-conformity were stipulated. However, for 2015 audits – receiving a competent status for audit is part of each Edt's KPI.

Also, a more structured support system will be implemented in 2015 to ensure that audit requirements are met by all Edts.

Another important process of the quality assurance audits is to identify training needs for Edts. This will enable better planning for the subsequent years and allows the organisation to plan for professional development in a more meaningful manner.

OPTIMISING COLLABORATIVE LEARNING: COMMENTARY ON STUDENT PLACEMENT INTO GROUPS

Upon receiving information about student profiles from Admissions, CMs place students into suitable groups in order to optimise the collaborative learning experience. Students' placements are monitored by the Quality Assurance division to ensure quality placements are in place across the 13 learning centres.

Edts' timetables are reviewed to ensure that students are placed in accordance to set placement guidelines, which are stated below:

1. Not more than 3 levels in learners' abilities within a class
2. Only primary or secondary students in a class
3. 1 hour twice a week lessons for those in lower primary levels
4. Two 1 hour classes to be separated by at least a day in between
5. Students in a class to have less than 2 years difference in school levels

Placements that do not meet with the criteria are flagged out and a report is generated for Centre Managers to make the necessary adjustments. Points 1, 2 and 5 of the placement criteria have been under particular scrutiny, as they most directly impact the quality of instruction. An evaluation of a random sample of timetables shows that point 1 of the placement criteria requires greater adherence as 44% of the classes didn't abide by that criteria. In contrast, only 4% and 1% of classes were in breach of points 2 and 5.

The less than ideal showing in point 1 may be due to the recent enhancements made in profiling and it is necessary to continue to provide feedback to the CMs to improve consistency in adherence to this placement criteria.

SPOTLIGHT ON CHALLENGING NEEDS: INTENSIVE REMEDIATION THROUGH MAP

Students who enter the programme are not homogenous in nature and some students need more support. The Intensive Remediation (IR) team, which consists of a multidisciplinary panel of professionals, helps both Edts and their students by observing classes and offering suggestions to manage behaviour and learning. The

endgame of IR is to reintegrate these students into the main literacy programme.

For the year 2014, the IR team started off with 25 cases. In the course of the year, 3 students were integrated into the main literacy programme. 22 cases are still under review and the students are being monitored periodically to see how they can be integrated back into the programme.

Table 7: IR Statistics 2014

Total number on IR	22
Total new cases	-
Cases reintegrated	3
Total review cases	7
Sit in observations completed	10
Video recording	2
EdT to monitor	3

STUDENT PROGRESS MONITORING: CURRICULUM BASED ASSESSMENTS (CBAS)

For progress monitoring purposes a total of 1595 students' progression from one band to the next was analysed.

These students were assigned the initial bands by MAP Admissions division. The Edts were given the banding for their students so that they can continue intervention with them using the newly developed band appropriate IMC, i.e. a more targeted intervention programme.

Whilst the psychologists took due care and diligence in banding the students, there was the element of historical data being used to determine bands. To explain further, students might have been in the programme receiving intervention for a few years however, their reports may have been dated a few years before. Owing to the above, Edts felt that the banding given was not reflective of the ability of their students whilst others felt that it was. Edts were then given an option to propose a band for their students.

ANALYSIS OF PROPOSED BAND AGAINST ORIGINAL BAND

After subtracting the number of withdrawn students a balance of 1560 students' bandings were analysed.

Original Banding Analysis	Total number	Percentage
Agreeable with the original band	717	45.96%
Proposed a lower band	620	7.76%
Proposed a higher band	121	39.74%
Did not propose any band	102	6.54%
TOTAL	1560	100.00%

45.96% of the students' bandings were accepted by the Edts. This is slightly less than half of the total number of students. The Edts who felt that the band suggested by Admissions division did not match their students' abilities were asked to propose a new band. About 47.5 % proposed a new band for their students and this works out to 741 students. A small proportion of Edts neither agreed nor proposed an alternative band for their students.

The proposed new bands were mostly in the higher banding category instead of a downgrade of band.

Analysis of post-CBA bandings compared to original banding	Total	Percentage
Post-CBA same as original band	359	31.94%
Post-CBA band is LOWER than orig band	130	11.57%
Post-CBA band is HIGHER than orig band	635	56.49%
TOTAL	1124	100.00%

Notwithstanding the above, a small group of Edts did not propose any band for their students. It can be assumed that since the IMC and bandings are a new initiative by

DAS, Edts were still trying to grasp it and hence did not propose any new bands for their students.

Analysis of post-CBA bandings compared to proposed banding	Total	Percentage
Post-CBA same as proposed band	536	47.10%
Post-CBA band is LOWER than proposed band	105	9.23%
Post-CBA band is HIGHER than proposed band	497	43.67%
TOTAL	1138	100.00%

The post-CBA results indicate that 31.94% of the cohort's banding is on par with the original banding – this works out to 359 students.

Which was more predictive – proposed or original banding?	Total
Post-CBA same as proposed band	536
Post-CBA same as original band	359

About 11.57% student scores became lower than the original banding, i.e. 130 students. Whereas 56.49% of the students showed and upward movement – i.e. they moved to a higher band than their original banding.

The post-CBA scorings of 536 students or 47.10% of the cohort is on par with the banding proposed by the Edts.

Only 105 (9.23%) students' banding is lower than the proposed band and about 497 students (43.67%) moved further up in the banding.

The data analysis suggests that the proposed band is more reflective of the students current banding rather than the original band. The following could be some of the reasons why the trend is such:

- The original reports used by psychologists to determine the banding might not be the most up to date available documentary evidence of the ability of the students.
- The Edts are more familiar with their students and their abilities and hence their proposed band is more aligned to the CBAs.

RETAINING APPROPRIATE CLIENTS: A REVIEW OF STUDENT WITHDRAWAL AND ITS IMPACT ON THE PROGRAMME

Ideally we would like to see students leave our programme as graduates. Inevitably, some students leave us without graduating. In the interest of finding out how we can help these students and also to obtain feedback, calls are made to students' parents to find out the reason for their withdrawal. It is our intention to provide the best possible remediation for our students and give them support till they qualify for graduation from DAS. A committee was set up to contact parents to find out why they have left the programme.

In 2014, in a bid to better understand the reasons for withdrawals, a total of 52 calls were made and the following is the summary:

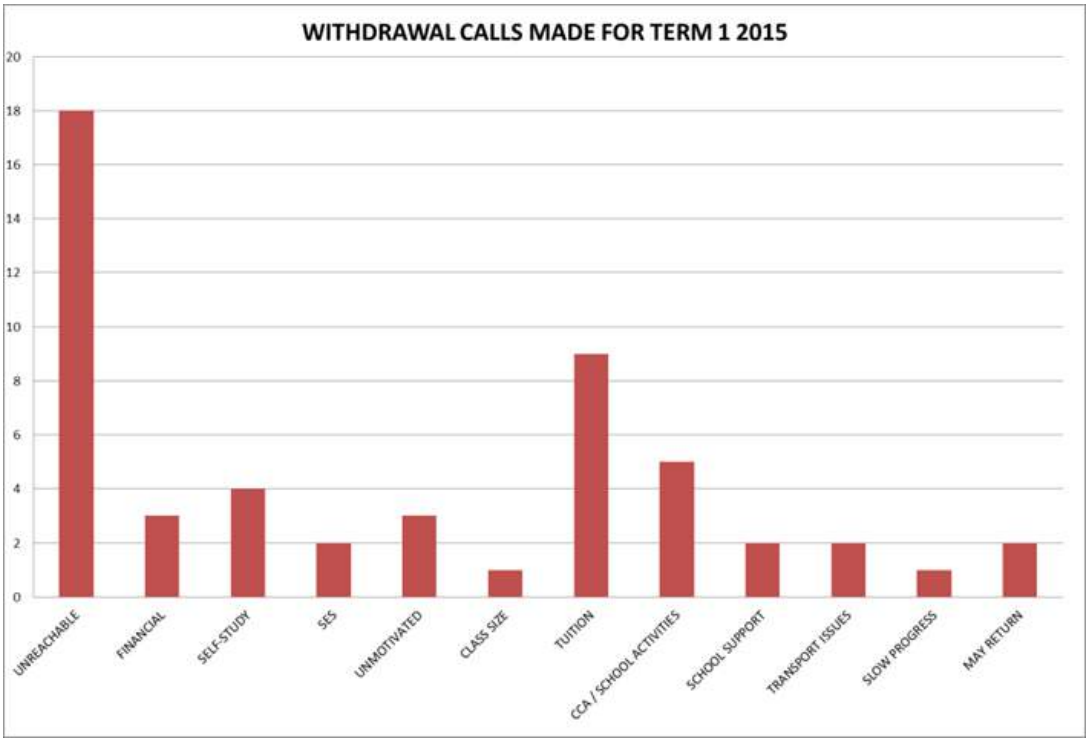

Figure 7: Student withdrawal analysis

Unfortunately, a significant number of parents were unreachable. 17% of the students' parents cited tuition classes as the reason for leaving. Moving forward, this needs to be further monitored – is there a prevalence of parents withdrawing their

children with a preference for private tuition? If so, a further investigation into their reasons will be necessary. And although withdrawals are unavoidable, MAP statistics reveal that the majority of students have stayed and therefore benefited from the programme.

MOE-aided DAS Literacy Programme (MAP):

A preview of the Joint Project with Temasek Polytechnic,

School of Humanities & Social Sciences School

Temasek Polytechcnic Project Team
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In this year-long joint project, Temasek Polytechnic will assist DAS in evaluating the effectiveness of MAP. One issue with assessing the effectiveness of the intervention programme is that usually it is difficult to come up with a standard control group, where the performance on MAP is compared between a group of students who do not go through the intervention with another comparable group of students who underwent MAP intervention. However, because of ethical, operational and logistical constraints, it is difficult to carry out such a study with a standard control group.

Therefore, this project proposes an alternate study in which we categorise participants into different age groups and use each age group as an age-control for comparison with other groups. For instance, one group may start their intervention programme at 7 years of age, while another group may start their intervention programme at 8 years of age. The literacy proficiency of each group is measured at the start and end of the intervention period (1 year). By comparing the performance of the 7 years old group at the end of the intervention (they will be 8 years old at that point) to the performance of the 8 years old group before they start their intervention, some conclusions may be drawn about the effectiveness of the intervention. Should there be any difference in literacy performance, one can conclude that it is not due to maturation effects, but can be attributed to the intervention programme[1].

[1] *MAP responds: We are also aware that there are cohort effects and groups may start at a different level from others. Hence, this study will also contain a within child comparison across the year, to monitor the progress individuals are making.*

Currently, the literacy proficiency for the students undergoing the intervention is assessed by looking at five major areas of literacy skills covered in the curriculum: Reading, Spelling, Reading Fluency, Reading comprehension and Writing. For the purpose of the joint study, MAP's CBAs will be adopted, revised and expanded upon in order to ensure adequate and comparable measurement items across the study. A pilot study was therefore conducted to test the effectiveness of the grouping of and sequenced progression in the MAP word list. As the CBA word list is based on the scope and sequence of phonograms and taught concepts, the evaluation of the effectiveness of the MAP word list indirectly comments on the effectiveness of the CBA word list. This also produces alternative sets of tests, which can be used alongside the CBA word list.

The MAP word list is grouped based on theoretical rules and theories and is therefore referred to as theoretical banding. Even though the theoretical banding is well supported by theories, and had face validity, there are still uncertainties on the actual validity of the grouping. This pilot study aimed to provide empirical and theoretical support of the word groupings.

A total of 45 participants without dyslexia, were recruited through convenience sampling and consisted of 19 primary Ones, 19 primary Twos and 7 primary Threes (ranging from 7 to 10 years old).

Stimuli. Based on the MAP word list provided by the DAS team, 120 words were selected and grouped into 3 different levels of difficulty as proposed by MAP. Words were sorted into groups, which were further divided into 3 subcategories that is representative of the difficulty level of the words. However for convenience sake, instead of taking into account the subcategories, we combined all the subcategories into their main grouping to help sort the words.

In this case, words that fall under the Band A category consists of the easiest words, while words that fall under the Band B category were considered to be of moderate difficulty and Band C consists of the difficult words. These words were picked from the MAP word list that was provided, to get a total of 40 Band A words, 41 Band B words and 39 Band C words. Due to an error on our part, we were not able to get an equal number of words for each of the bands and as a result had an extra Band B word and one less Band C word.

The 120 words were then randomly split into 4 word lists, consisting of 30 words per list. Within each word list, there was an equal number of Band A, B and C words. The order of the words were randomised with the exception of the first three words, which were all from Band A, this is to slowly accustom the children to the spelling task and not scare them by having to spell a difficult word right from the start.

Percentage Match Between Theoretical and Empirical Bandings. In order to check the accuracy of the theoretical banding for the difficulty of words, the theoretical banding was used to compare with the empirical banding for the 120 words. Empirical banding in this case was being referred to as the classification of words based on the frequency that the words were spelled correctly across all the participants. For the empirical banding, the first 40 words that were constantly being spelled correctly were being classified into band A and the next 41 words in the list were being classified into band B and lastly the next 39 words that were constantly being misspelled were being classified into band C. After obtaining the empirical banding, the theoretical banding was being compared to empirical data to check if the words were being banded accurately.

If the words are theoretically Band A, B or C but was shown otherwise empirically, there is a mismatch between theoretical and empirical bandings. While if the words that are theoretically Band A, B or C and, those words also falls under the same banding empirically, there is a match between theoretical and empirical bandings. For words that do not match after the comparison were coded as "0" and for words that matched between the theoretical and empirical banding were coded as "1". After which, the scores were averaged and it was found that only 50.8% of the words matched the theoretical banding.

Relationship between theoretical banding and empirical banding. A chi-square test of independence was performed to examine the relation between the mismatch of the MAP theoretical banding and empirical banding. This is to see if the mismatch was due to measurement error or flaws in the theoretical banding. When comparing the difference between the empirical and theoretical banding, it was found that for 59 words there was a difference between the bands, there was a shift in 1 banding or even 2 bandings. We identified words that had a shift in 1 band as having a change from either band A to B, B to A, B to C and C to B. For words that had a shift in 2 bandings, it was either a change from band A to C or from C to A. As long as there was a change in the direction of band, it is either grouped into the "jump 1" or "jump 2" category. If there is a match between the empirical and theoretical banding, it is grouped into "no jump".

AMENDMENTS

Based on the results of our pilot study, we came to the conclusion that the theoretical banding provided by the DAS team was a suitable tool to use to determine the difficulty of words. The correlation for the word average scores and the theoretical banding was the highest as compared to other psycholinguistic variables used in the literature. This indicates that even though there was a low match between the empirical and theoretical banding, it might still be a better tool for us to use to

determine word difficulty. The theoretical banding was also developed with the local context in mind and is easily available for all the words being tested.

To ensure that the word stimuli used in our actual study is as accurate as possible. Thus, the words that were shown to jump across 2 bands (i.e. Band A → Band C, Band C → Band A) were removed. It is also evident that there was a significant difference between the difficulty level of the 3 bands, with Band C being the most difficult, followed by Band B and Band A. However, the word average for the Band C words was the lowest, showing a floor effect in our data. Thus, we decided to reduce the number of Band C words used in the word lists. As such, the word lists used in the actual task will have a total number of 18 words, with 8 words from Band A, 6 from Band B and 4 from Band C, instead of having an equal number of Band A, B and C words throughout. This would then reduce the likelihood of a floor effect from happening. We also created parallel forms, in the sense that the level of difficulty across the 5 word lists that we created for the Literacy Proficiency Assessment were similar and consistent.

DISCUSSION

The purpose of this project was to develop a literacy proficiency assessment tool to assess children's literacy skills and to evaluate the effectiveness of MAP intervention programme used by DAS. A main requirement of this assessment tool is to have it be able to be administered every 3 months to comprehensively evaluate the intervention programme. This is because current assessment tools used by the Dyslexia Association of Singapore (DAS) requires a 6 month interval before the assessment can be used again to assess the children (to avoid test-retest effect). Thus, the creation of parallel forms in our developed assessment tool allows the materials tested during each testing session to be different while being on the same level of difficulty. As such, this helps to overcome the test-retest effect and allows it to be tested on a more regular basis (3 months) as opposed to other assessment tools.

The new assessment tool developed is also quick and easy to administer. The results of this study found that participants completed the assessment in a range of approximately 20 minutes to 35 minutes. Essentially, the current assessment tool takes up to an average of 30 minutes to be administered and minimises any fatigue effect, as opposed to the current tools used by DAS that may take up to 3 to 4 hours to complete.

In addition, a protocol for the administration of the literacy proficiency assessment tool was also developed. Administration of current tools used by the DAS has not been standardised and ways of assessment varies across the different practitioners, thus affecting the reliability of the assessment scores. Therefore, a standardised

protocol has been developed for the assessment tool developed to ensure that every assessment is carried out in the same way and that the resulting individual differences in literacy scores are not due to extraneous factors (i.e. practitioner's varying methods of assessment).

Through this study, it has also been ascertained that the words provided by the MAP word list are valid and should be retained. Even though it was initially found that only half the words have a match between their theoretical banding and empirical banding, it was later found that the theoretical banding still had the highest correlation with the word average as compared to other psycholinguistic characteristics. As such, it has been proposed that if the theoretical banding and empirical banding are too different (2 jumps; A to C, or C to A), it will be removed from the final ELA word list used for future assessments. In addition, it has also been proposed that the ratio of Band A to Band B to Band C words be revised so that there is more Band A words than Band B words than Band C words (A>B>C). This is so as to minimise any floor effect.

Additional positive features of this assessment tool developed through this project is that it is based on words that local students use, unlike the current assessment tools that are based on overseas context. This will provide a more accurate representation of the student's literacy proficiency as they are tested on words that is used in the everyday context of the local population.

Generally, this assessment tool that was created can be a possible screening tool to identify students at risk of learning disability (specifically for dyslexia) in an easier, simpler and shorter way. Students who show signs of dyslexia can be easily identified and be provided with the necessary interventions depending on their areas of weaknesses that will be revealed through their performance in the various tasks in the assessment tool. However, since this tool does not take into account age, further considerations need to be made as not all older students failing at higher level words are necessarily at risk.

Finally, the findings in the test creation phase of the year long programme evaluation project is encouraging as it provides support that the theoretical progression of difficulty level of words on the CBAs is suitable for use in the local context. Therefore, the value of this study towards the continued refinement of the CBAs cannot be underestimated.

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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 2015 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.

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OUR VISION

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

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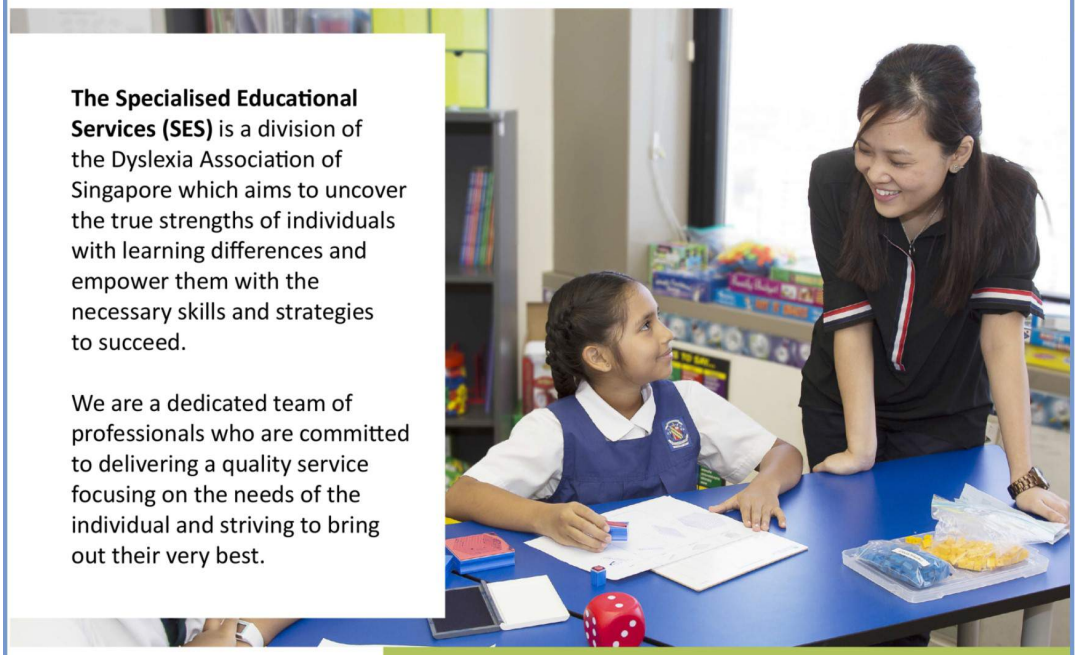

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We are a dedicated team of professionals who are committed to delivering a quality service focusing on the needs of the individual and striving to bring out their very best.

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PROGRAMMES

1. Preschool
2. Chinese
3. Essential Maths
4. English Exam Skills
5. Specialist Tutoring
6. Speech and Drama Arts
7. Bridging

THERAPY

1. Speech and Language

ASSESSMENTS

1. Multi-Professional Team
2. Psycho-educational
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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 deliver quality services focusing on the needs of the individual.

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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
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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 stroke 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 character.

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 refer 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. The DAS Chinese Research team has 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 meanings. This makes it harder for tasks requiring word retrieval. Poorer visual-motor integration skills also results in difficulty in producing Chinese character with strokes that are in correct direction, stroke sequence and proportion of the parts of the characters.

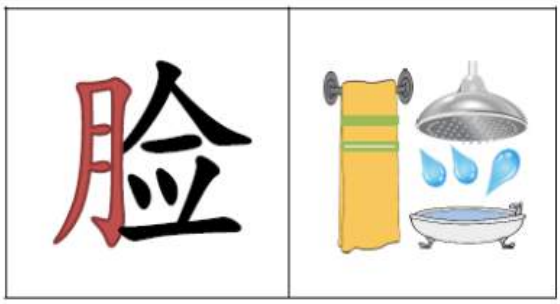
PROGRAMME DESCRIPTION

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. 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. Orton-Gillingham approach and principles are adopted and applied in the delivery of lessons. Learning is pegged at the learner's level of learning to help develop feelings of competency and success. In teaching sentence structures, teachers adopt a multisensory approach to allow students to understand the different parts that constitute a sentence and how to manipulate them into a sentence. Teachers would first present a sentence structure with examples. Next, students are required to produce sentences with the help of images. Lastly, they are then expected to form sentences on their own with the structure.

Sentence structure card

Word recognition strategies taught are intended to make character learning more memorable and engaging for the students. Generalisations are also taught to help them analyse what they have learnt and synthesise new information to apply into their learning. Some of the strategies taught include identifying semantic radicals, the picture method and coming up with short stories to remember characters. An example is illustrated in teaching the character for face. This helps students to associate the written character with its meaning.



Pictorial representation of the character for face

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 curriculum has also extended to the development of other literacy skills such as reading comprehension and writing. Scaffolding and explicit instruction are critical in literacy instruction in the classroom.

HOLISTIC DEVELOPMENT OF STUDENTS

The Chinese team has conducted two terms of reading programme for our students with the help of students from Nanyang Girls and Hwa Chong Institution. The programme garnered much support from parents and was also well-received by the students who came on a weekly basis. There was also a Chinese day camp organised by the volunteers for the students where the students gained exposure to the Chinese culture in the premises of Hwa Chong Institution.

PLACEMENT OF STUDENTS

Prior to placement, the students are profiled using the Battery of Chinese Literacy Tests adapted from Hong Kong and Taiwan by the DAS Chinese Research Team in 2012. The Battery profiles students' awareness of character structure and shape, knowledge of strokes and stroke order, vocabulary, morphological awareness, and spelling. 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 Hongkong and Taiwan. in addition, the phonetic and script systems used in these countries are different from what is used in Singapore.

The profiling tool 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 effective. The areas investigated are Chinese character orthographic awareness, Chinese character reading and writing, picture sequencing and verbal expression.

After using the tool for the last two years, while it is effective in dealing with class placements, the team feels that it is lacking in providing information on the child's ability in reading passages, comprehension and writing. We will need to develop additions to the existing battery to provide more comprehensive insights on the difficulties a child faces in learning the language. Revisions also need to be made to the multiple-choice spelling task so that we can better understand the nature of errors committed.

STUDENT ENROLMENT

As of end 2014, there are a total of 68 students. Out of the 68 students, more than 80% of them were still taking up Chinese lessons (Higher Chinese, Chinese and Foundation Chinese) in school. For those that are exempted from Chinese, parents enrolled or are continuing their child on the programme for exposure and to help them acquire conversational skills. Even though exemption from Chinese remains as an option, we see that parents are keen for their child to continue learning Chinese in a school setting and not be exempted. This is evidence of parents being motivated for their child to gain continued exposure to the language and hope for their child to master the language.

BURSARY FOR STUDENTS

A budget of $63,558 was set aside to provide bursary for our Chinese students and $30,109.80 was utilised. Of the 68 students enrolled, 26 of them are receiving bursary support for their lessons at the DAS. The breakdown of amount of bursary given to the students are as follows:

Bursary Percentage	No. of Students
100%	1
90%	7
75%	6
50%	6
33%	6

WIDENING OUR REACH

In 2014, we conducted a talk entitled "Things I can do to Provide Support for my child (TIPS)" at our Jurong Point and Bishan Learning Centres. The talk illustrated the current education landscape for learning of Chinese and shared with parents practical tips to help their children learn Chinese at home. The talks were well-received by parents and gave them ideas and strategies to work on Chinese at home. Feedback gathered indicated that parents are looking forward to more of such talks.

We have also opened up Parkway Parade as a centre offering the Chinese programme so as to support students who need help with Chinese in the east. We now have a total of 6 centres offering Chinese language support within the DAS.

The team also presented a poster session at the International Dyslexia Association Annual Conference in San Diego in 2014. This poster was based on the research

paper published in the Asia Pacific Journal of Developmental Differences titled " Chinese Language and Remediation Support for Children with Dyslexia in Singapore". There was much interest in the work done at the DAS by the Chinese programme and schools are looking at the provision of training in this area.

TEACHER TRAINING

The teachers on the programme are effectively bilingual to facilitate teaching. This allows for the teachers to be able to tap into their English vocabulary to help students understand and express themselves in Chinese. All teachers have a Chinese language proficiency at HSK Level 6 or an equivalent accreditation. This is also a requirement for all new teachers.

We also conducted our first professional certification course in Chinese Language Support and trained up 3 new teachers, boosting the teaching capacity to reach more students at more locations. The Chinese team is able to see up to 160 students weekly.

To further develop our teachers, as of date, an additional teacher has been awarded an Advanced Diploma in Chinese Language Teaching and another two teachers will be pursuing a similar qualification in 2015.

Dr Tan Ah Hong has also joined the team in June 2014 as a consultant and sessional teacher. Dr Tan was previously a lecturer at NIE and Curriculum Specialist at MOE. She was later appointed in 2008 as the Head of Secondary Chinese Language Unit before retiring in March 2014. She has since conducted training for the team on word recognition, reading comprehension and writing. In addition, she is also constantly providing feedback on quality assurance and curriculum development. In the coming year, we will be looking at providing teacher support and enhancing teachers' competency in providing intervention.

CURRICULUM DEVELOPMENT

The Chinese Language Teaching Framework (CLTF) and Chinese Language Ability Scales (CLAS) were completed. The former serves as a guide of the sub-skills to be taught to students to enhance their language competency and is a framework for the development of the curriculum. CLAS works in tandem with CLTF as a measure for class placements.

Revisions to the existing Oracy Pack has also been made after trialling in the classrooms. Following findings of its effectiveness, the Oracy Pack will be printed as a teacher resource in centres offering the Chinese programme. Supporting tools such as the semantic card deck, sentence card deck and sight work deck will also be printed. Literacy resources such as the word recognition manual, reading comprehension and writing pack will also be trialled.

In the classroom, teachers have been making a concerted effort to choose teaching content that is aligned with the school syllabus in terms of teaching of semantic radicals, characters and sentence structures.

EVALUATION OF EFFECTIVENESS

Participants

Two groups of students were used in this evaluation study. The first group of students have been on the programme since 2013. They formed part of the group that underwent the post-test for the evaluation study for 2013 and has continued receiving intervention on the programme. There are only seven participants in this group. The second group of students are students that has started to receive intervention between January to March 2014. There are a total of nine students in this group. Both groups underwent the post-test in November 2014.

Data Collection Tool

The evaluation study investigates the effectiveness of intervention in four main areas - reading, morphology, spelling and copying. On the reading task, students were expected to read single characters and form words with them. This measured their ability to read single characters and their morphological awareness through word formation. The assessor noted down any incorrect pronunciation and words formed with the characters for further analyses. On the spelling tasks, students were asked to write the missing character in a word. Students' answers were then recorded for analyses. Lastly, for the copying tasks, students were asked to copy a reading passage within five minutes. The assessor would then ask the student if they could remember what they had copied.

The same set of tests was used during the initial profiling of the students prior to placement for intervention. The results of that initial testing forms the baseline of their ability. The test items in both the reading and spelling tasks are the same on both the pre-and post-test. However, they were reordered in the post-test.

Method

The performance on the four areas of the first batch of students (Batch 1) who underwent the programme in 2013 were compared to students who continued into the second year of intervention and those that started to receive intervention in the first quarter of 2014 (Batch 2). A separate analysis was also performed to evaluate the impact and benefits of intervention received beyond the first year of intervention.

Results and Analysis

The programme was designed to help students in their reading and to increase morphological awareness. While gains in morphology have consistently shown significant improvement across all time points (post-test in 2013 and post-test in 2014) , the same was not observed for word reading when we look at the students has been on the programme for two years. The reason for this observation has to be further investigated both in the classroom and in an evaluative setting. The non-significant result for morphological gains could also be due to variability in data as

Batch 1	Batch 2	Students on the programme for 2 years
N=16	N=13	N=7
Improvement in Performance		
• Paired samples t-test revealed that Reading (*p*=.001) & Morphology (*p*=.007) significantly improved	• Paired samples t-test revealed Reading (*p*=.042) & Copying Speed (*p*=.024) significantly improved	• One-way ANOVA revealed Morphology (*p*=.025) and Copying speed *(p*=.044) improved significantly over all time points
Error Analysis		
• Lesser visual-phonetic-semantic error when reading (p=.015)	• Committed more phonetic reading errors (*p*=.01) • Committed more semantic reading errors (*p*=.02) • Made lesser visual-phonetic-semantic when writing (*p*=.001)	• Lesser visual-phonetic-semantic error confusion when reading (*p*=.048) - consistent with pre-post test • Lesser errors when writing (*p*=.038) • *When writing, lesser VPS errors are made (p=.000)*

a child dropped from a score of 74 to 44. With the reading scores for students who has been on the programme for two years, no significant difference could be found due to variability in data as another child has a decrease in reading scores while the rest showed improvement. This is also due to low numbers in this group.

The observed increase in phonetic and semantic errors when reading for Batch 2 could be due to the shift of the programme to include literacy components such as reading comprehension. It is probable that students are committing the errors as part of a learning process. Post-testing on these students at the end of 2015 could provide clues if these contribute to gains eventually.

The significant improvement in copying speed could also be related to the increased writing activities in class and teaching of strokes, stroke order and semantic radicals. However, the accuracy of strokes were not taken into consideration and is an area that could be further investigated to show a more explicit correlation between mastery of stroke and stroke order and copying.

When interpreting the findings of this study, caution must be exercised due to the small sample size. A consideration that was taken is also the possibility of age being a confounding factor in the study. When a child goes through the academic year, the child would have learnt more from school. The progress could have been due to the additional input from school instead of intervention. Future studies will need to compare students on the programme with those that are not on the programme with the constant that they are still attending Chinese lessons in school. In this study, all students were still attending Chinese lesson in school.

In addition, due to the limited class time and differences in learning needs of students, there was variability in the input of the various teaching components. This may have contributed to differences in results and may not show as statistically significant. Continued evaluation needs to be carried out for more conclusive findings.

FEEDBACK FROM DAS TEACHERS

While teachers are unanimous in noting an increased interest for learning the language and verbal expressiveness, they have raised concerns of whether all students are applying the skills and strategies learnt at the DAS in the school setting. Nevertheless, it has been reported by parents that students that are more motivated have applied these skills, helping them to perform in weekly spelling tests.
As the programme progresses to provide literacy support for our students, the classroom teaching duration of an hour is insufficient to cover essential skills students

require to help them cope with reading and writing tasks. This has been reflected by teachers on classroom teaching. The duration of an hour for class is too short to complete a writing or reading comprehension task. This sentiment is also shared by parents who have voiced their request for longer classroom teaching duration.

FEEDBACK FROM PARENTS

To find out parents' view on their child's progress, all parents were asked to rate their progress and provide feedback on the programme. The results of the rating is as follows:

- 19 out of 26 parents were either very pleased or pleased with their child's progress in learning at the DAS.
- 5 out of 26 parents were satisfied with their child's learning at the DAS.
- 2 out of 26 parents were not able to give an opinion about their child's progress in learning at the DAS.

In summary, 92% of parents were satisfied, pleased or very pleased with their child's learning in the DAS. This is a possible indicator of the objectives of intervention being met.

Feedback on child's progress includes being able to recognise and write more characters, speak more confidently and showed some form of progress. Parents also reported increased interest and motivation to learn Chinese and that students enjoyed coming for lessons at the DAS.

Some other feedback includes:

- "他会开始借华文书，这是好的。老师有耐心，孩子喜欢老师及DAS课."
  Mr Chan, whose child is in Primary 3
- *"He does learn new things and is showing interest in the subject and will tell me what he learns after class!"*
  Mrs Chua, whose child is in Primary 3
- *"Teacher Lay Yen is able to make my child want to borrow Chinese storybooks which he would never want to in the past."*
  Mrs Tan, whose child is in Primary 2

- *"I am pleased that my son isn't resistant to learning Chinese in DAS and can now speak simple Chinese when necessary but needs more practice. I hope he can become more fluent in Chinese."*
  Mr Lam, whose child is in Primary 5

- *"My child enjoys coming for classes and even though I wanted him to stop Chinese classes at the DAS, he wanted to continue. He is motivated to attend the Chinese class and is interested to learn Chinese and now does his homework without reminders."*
  Mrs Lee, whose child is in Primary 3

- *"I observe that my child is able to recognise and write more words. The teacher also shares weekly progress on what is being taught and that she makes special arrangement to meet me when I was unable to make it during the designated time for the parent-teacher meeting."*
  Madam Lai, whose child is in Primary 4

We observed more students borrowing and reading Chinese books. Parents also gave positive feedback on the professionalism of teachers and their patience. They also highlighted communication with the teacher being key. However, parents also voiced concerns on the rate of progress and some students are still having difficulty in learning Chinese characters.

FUTURE DEVELOPMENT

With regard to the limited classroom teaching duration, the team should also look at the impact of parental support to a child's improvement in the language. A survey should also be conducted with parents to determine the need and demand for longer class duration and the perceived effectiveness of doing so.

In terms of curriculum and classroom teaching, the team would need to explore how to create more concrete links between reading and development of literacy skills. This could be done through more storybook reading and an integrative approach in teaching. Card drills should also be done on a weekly basis rather than fortnightly for the purpose of reinforcement.

From the evaluation study, no significant difference was seen in spelling. This should be an area that is further investigated as writing is a critical area of literacy. Developing structured literacy and evaluating the effectiveness of such intervention could serve to inform of the improvements students are making.

Future areas of research could include comparing effectiveness of intervention at the DAS with those of enrichment centres and private tutors. This could mitigate the improvement made due to instruction in school. We could also investigate the effectiveness of intervention for students who are not diagnosed with dyslexia in Chinese but showing persistent difficulties in learning the language.

Lastly, there have been an increased request for students who have not been diagnosed with dyslexia in English for intervention in Chinese. These students have been persistently failing in Chinese in school. This gives rise to the question of whether existing assessment tools are adequate in diagnosing students with dyslexia in affecting all language learning and if a standardised tool for Chinese is then required to be accessed by these students.

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.

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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.

Specialised Educational Services
Preschool Early Intervention

Wong Kah Lai
Preschool Programme Manager
Dyslexia Association of Singapore

BACKGROUND OF PROGRAMME

The Preschool Programme was conceptualised and set up in 2006 in the interest of providing early literacy intervention to 6 year olds identified as being at risk of dyslexia. In 2014, the Preschool Programme extended to admit Kindergarten Year 1 (K1, 5 year olds) students. The programme had since reached out to over 600 children in Singapore. It gained the support of NTUC Income in 2012 as part of their corporate social responsibility (CSR) initiative. NTUC Income OrangeAid Fund continues to offer bursaries to children from low income families receiving Preschool Programme services.

The Preschool Programme works in close collaboration with Child Development Units (CDUs) of hospitals KK Women's and Children's Hospital (KKH) and National University Hospital (NUH). It complements the services of the PAP Community Foundation (PCF) SEN team in offering support to children with special learning needs. In July 2014, DAS Preschool Programme established literacy intervention services on-site at Joyful Juniors PCF Ulu Pandan Ghim Moh Link with the support of Member of Parliament Mr. Christopher De Souza.

PROGRAMME DESCRIPTION

Introduction - who it is meant for

Dyslexia impacts on literacy learning. The Preschool Programme offers 2 hour-weekly early literacy intervention to K1 and K2 children (5 to 6 year olds) from mainstream

childcare centres and kindergartens. Parents may enrol their children direct, or through hospital and school referrals. Enrolment is open year round to avoid disadvantaging children and families seeking help.

Curriculum synopsis - what it covers

The Preschool Programme follows its own unique Early Language Learning and Intervention Framework that covers Listening, Speaking, Reading and Writing, the key cornerstones of language learning. Development being a continuum, our early intervention practices are therefore, developmentally appropriate and holistic in nature. Our skills and learning strategies imparted during intervention is directly transferable by the student independently, immediate from our classroom setting to that of his/her regular (mainstream) classroom.

Listening and Speaking skills with comprehension, are essential to grasping literacy concepts taught by teachers/Educational Therapists. This is an area of particular weakness with children coming from non-English speaking families/background joining our early intervention classes. DAS Preschool Programme designed and developed its own Oracy Pack in 2014, to address this gap. Consisting of three independent grab-and-use packs filled with activities and games, this tool enables teachers to carefully scaffold student's receptive and expressive language learning and vocabulary acquisition. Oracy Pack is used concurrent to our main literacy and it can stop once children had picked up sufficient communicative language to benefit fully from our comprehensive intervention sessions.

Reading is one of the important avenues to gaining knowledge. Reading is not just decoding, it refers to the process of gaining meaning from print (Rayner, Foorman, Perfetti, Pesetsky and Seidenberg, 2001). Bradley and Bryant (1983), noted that "Children who are backward in reading are strikingly insensitive to rhyme and alliteration1. They are at a disadvantage when categorising words on the basis of common sounds even in comparison with younger children who read no better than they do". Preschool Programme targets this area explicitly through engagement in multi-sensorial instruction in letter knowledge, phonemic awareness, sight words and practice to reading extensively.

Writing is a necessary tool in academic learning and communication. Having adequate fine motor skills coupled with relevant eye-hand coordination is key to writing readiness. Not all children entering Preschool Programme came with these much needed ability. Preschool Programme addresses this gap with its own Fine Motor Skills Pack designed and developed in 2013.

Embedded into Preschool Programme literacy instruction, is Social-Emotional Literacy

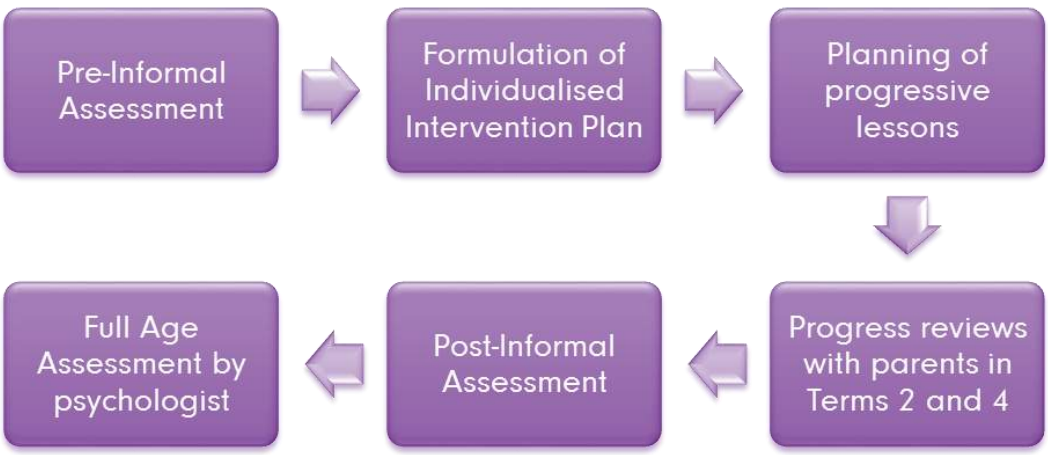
(SEL), a specially designed and developed (2015) component targeting the social and emotional well-being and development of at risk kindergarten children in our programme.

Lesson overview - what happens in a typical session

A typical intervention lesson includes story (literacy) appreciation, letter knowledge, phonemic awareness, comprehension, sight words and fine motor skills acquisition within a suggested pre-school scope and sequence.

Measurement of student attainment - and what happens next

Student progress is carefully monitored through observation made during each intervention session as appropriate. The process of measuring student attainment is summarised as follows.



Pre-school early intervention teachers and education therapists formulate and devise Individualised Intervention Plan (IIP) for students based on his/her specific learning needs obtained from Informal Early Literacy Assessment (Pre-test) at the beginning of the first remediation session with the therapist.

Parents are kept abreast of students' progress twice yearly during Parent-Therapist-Conference (PTC). Post-test is carried out at the end of the year to measure student achievement. This is documented with the overall evaluation results published (see Evaluation of effectiveness below). K2 students, exiting the programme as they head towards Primary One, are eligible for Full Age Psychological Assessment by our

qualified DAS psychologists. Children who are diagnosed as dyslexic may continue on with DAS in its main literacy programme at Primary One.

ENROLMENT

The programme has reached out to an increasing number of students.

- 2011 - 82 students
- 2012 - 117 students - 46 being NTUC OrangeAid bursary students
- 2013 - 135 students - 40 being NTUC OrangeAid bursary students
- 2014 - 268 students - 63 being NTUC OrangeAid bursary students, 29 on DAS bursaries

TEACHERS TRAINING

The Preschool Programme conducted two rounds of Professional Certificate Course (PCC) in 2014 to meet its sudden increase in student enrolment. In total seven new teachers were trained. Five being dual Specialists and two newly hired dedicated preschool teachers.

A member of the core team and the Programme manager undertook and completed the Advance Certificate in Training Adult learners (ACTA).

The Preschool Programme trained five DAS Centre Managers in the use of the Preschool Placement Checklist and how to do concluding sessions during public screening exercises. The Preschool Programme extended an internship to four Ngee Ann Polytechnic students on their final year studies, mentoring them from September 2014 to January 2015.

CURRICULUM DEVELOPMENT

Several challenges, with implication to curriculum and resource development, were highlighted in 2013 year-end programme report. These were in the areas of executive functioning, fine motor skills development, oracy and social-emotional development of the holistic student contributing towards school readiness for Primary One.

In response,

1. An Oracy Pack has been designed and developed. It consist 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. The teacher's resource guide book is in the print-queue with Publicity & Publications team, awaiting publication for our internal circulation/use.

2. A Fine Motor Skills Activity Resource Kit is ready. Consisting of a user guide, along with ready-made resource packs, this has been distributed into Learning Centres offering preschool classes. Additional resources have been put in to further complement and supplement this existing kit.

3. The design and development of a Social-Emotional-Learning/Literacy (SEL) Kit has kick-started. The concept encapsulates the integration of social emotional literacy with the learning of alphabetic knowledge, phonogram and sight words through fun based explicit instruction. The kit will comprise of board game(s), puppet(s), charts, resource files, user guide and so on.

WIDENING OUR REACH

Year 2014 was a busy and bountiful year. Preschool Programme conducted two sharing sessions at hospitals, NUH and Khoo Teck Puat (KTP Hospital, and 14 outreach and awareness talks for parents and mainly teachers from:

- Ansar Mosque, Medaki HQ
- PCF centres - Ghim Moh Link, Chua Chu Kang, Ayer Rajar, Teck Whye, Nanyang, Nee Soon, Hong Kah North
- Private kindergartens - Bethesda Kindergarten (Ang Mio Kio)
- Private childcare centres - PatSchool House, The Children's Place, Ilham Childcare

The Preschool Programme participated in four public preschool screenings at two DAS Learning Centres (Chinatown Point and Chua Chu Kang) and two at National Regional Libraries - Tampines and Woodlands.

The Preschool Programme extended its programme reach to Yishun and Chua Chu Kang Learning Centres. Yishun centre is now "Baby Bonus" registered. A Memorandum of Understanding was signed between SES Division Director, Mr. Nor Ashraf Samsudin, and MP Mr. Christopher de Souza, for off-site intervention service offered at Joyful Juniors Ulu Pandan PCF at Ghim Moh Link.

The Preschool Annual Seminar 2014 was a 220 seat sold-out event reaching out to parents, educators and various stakeholders.

The Preschool Programme was featured on TV with Frontline, a weekly Chinese current affairs/documentary programme.

Preschool Programme team members presented its programme evaluations in a poster presentation at International Dyslexia Association (IDA) Annual Reading Conference in San Diego, US. It was well received and garnered some interest. Professor Hugh Catts, whom we met at the conference, agreed to be our guest speaker in 2015 Preschool Seminar.

Members of the Preschool Programme wrote and published a paper - Effectiveness of an early intervention programme for preschool children at risk of dyslexia in Singapore - in the Asia Pacific Journal of Developmental Differences (Volume 2, Number 1, January 2015).

EVALUATION OF EFFECTIVENESS

Success indicators are based on bursary students' improvement in one of five categories:

- Alphabet knowledge
- Phonogram
- Learnt word knowledge
- Reading
- Spelling

Results from the pre and post-assessment worksheets were used as basis for comparison. A child is considered to have made an improvement if he/she achieves their Individualised Intervention Plan (IIP) or shows an improvement in their weak areas as listed above. Figure 1 below showed students improvement made in each aspect.

There was a significant improvement in Overall Literacy Ability from pre-test (M = 26.44, SD = 16.90) to post-test (M = 51.16, SD = 19.77), t(55) = 12.79 p <.001, 1 Cohen's d = 1.34.

Student improvement was seen in the following areas:

- **Alphabet knowledge**
  There was a significant improvement in Alphabetic Knowledge from pre-test (M = 56.04, SD = 31.34) to post-test (M = 80.43, SD = 21.35), t(55) = 7.52, p <.001, Cohen's d = 0.91.

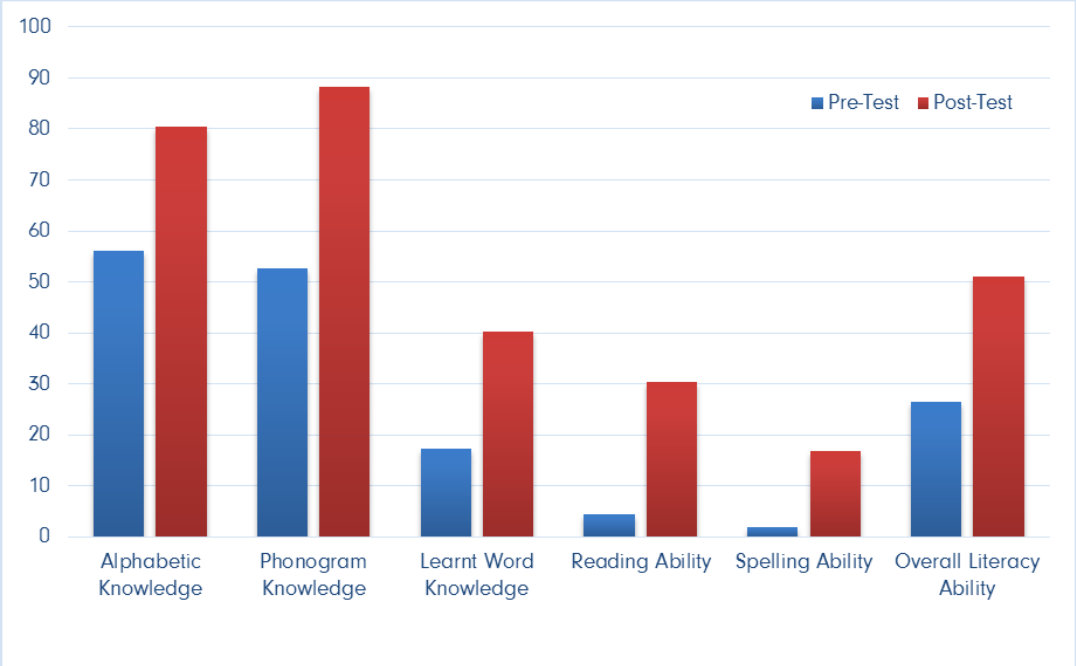


Figure 1 – Overview of Student Improvement from DAS Preschool Programme

- **Phonogram knowledge**
  There was a significant improvement in Phonogram Knowledge from pre-test (M = 52.68, SD = 34.43) to post-test (M = 88.19, SD = 20.47), t(55) = 8.66, p <.001, Cohen's d = 1.25.

- **Learnt word knowledge**
  There was a significant improvement in Learnt Word Knowledge from pre-test (M = 17.32, SD = 22.69) to post-test (M = 40.14, SD = 30.95), t(55) = 8.37, p <.001, Cohen's d = 0.84.

- **Reading**
  There was a significant improvement in Reading Ability from pre-test (M = 4.38, SD = 11.60) to post-test (M = 30.27, SD = 31.28), t(55) = 6.71, p <.001, Cohen's d = 1.10

- **Spelling**
  There was a significant improvement in Spelling Ability from pre-test (M = 1.79, SD = 5.17) to post-test (M = 16.79, SD = 25.05), t(55) = 4.79, p <.001, Cohen's d = 0.83.

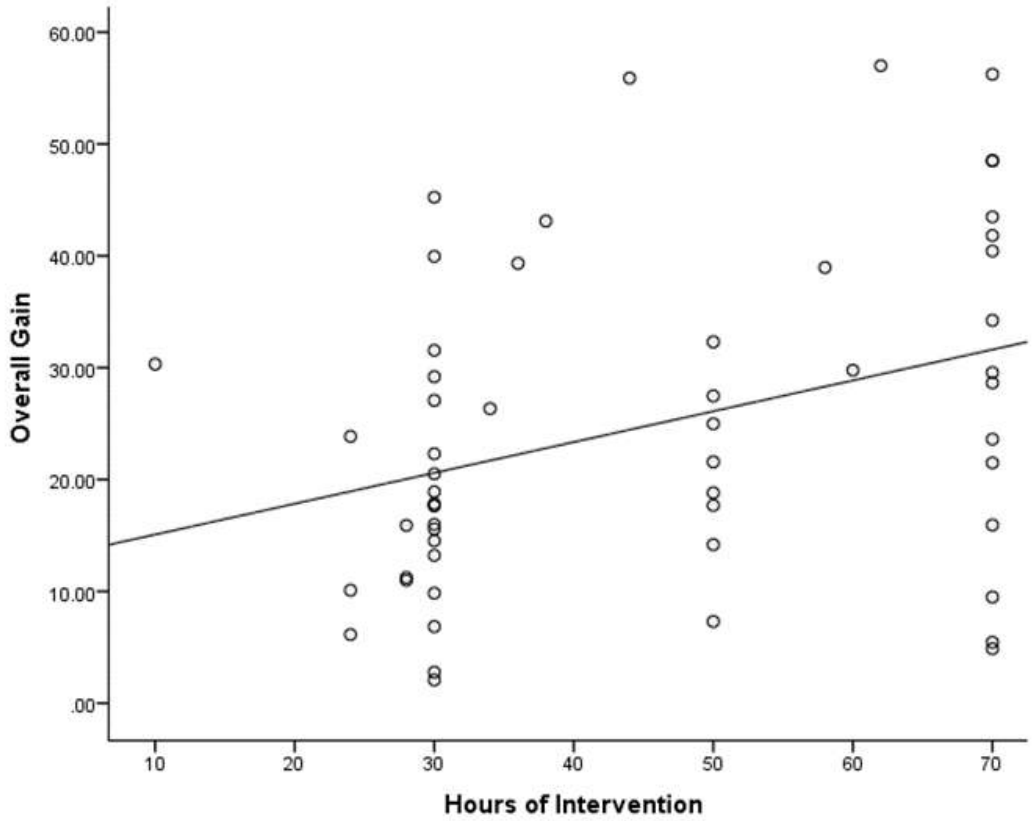


Figure 2 – Correlation of Overall Early Literacy Gains of Students attending DAS Preschool Programme

Footnote: 1 Cohen's d is 2 an effect size used to indicate the standardised difference between two means (https://en.wikiversity.org/wiki/Cohen's_d viewed 8 July 2015).

Footnote: 2 An effect size is a statistic used to estimate improvements in intervention studies. This allows for comparisons to be made between different studies, and to assess the magnitudes of improvements resulting from different interventions. An effect size of 0 means that there was no improvement. An effect size of 1 means an improvement of 1 standard deviation. In terms of the statistical significance of effects sizes (expressed as d), d = 0.20 is considered low, d = 0.50 is moderate and d = 0.80 is high (Cohen, 1988). The NRP's (2001) meta-analysis showed that effect sizes greater than 0.80 were found in only 32% of studies and effect sizes of 2.0 and above were rare (6%). (Sim, Wong, Samsudin and Bunn, 2015)

According to NRP's (2001) meta-analysis (Sim, Wong, Samsudin and Bunn, 2015), effect sizes greater than 0.8 were only found in 32% of studies. It is notable that all five areas of intervention –alphabet knowledge, phonogram knowledge, learnt word knowledge, reading and spelling—showed strong effect sizes of more than 0.8. Thereby validating the effectiveness of Preschool Programme

There is also significant direct correlation shown in Figure 2 between Hours of Intervention and Overall Literacy Ability Gains, $r(54) = .347$, $p=.009$. In short, more intervention hours means more literacy gains.

Knowledge is progression based, with alphabet knowledge and phonogram 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 and 2 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.

FEEDBACK FROM TEACHERS

Teachers are passionate and unanimous in their eagerness to work with preschoolers. In their words, "The younger the better, the sooner (they come into the programme) the best".

Most find the accompanied administrative work (mandatory) and work processes, a chore. At times, a source of stress. For example, Record keeping, programme evaluation, full age assessment.

Collectively, teachers are appreciative of the teaching resources given to them for their classrooms.

FEEDBACK FROM PARENTS/STUDENTS

Most find the programme helpful. Some expressed an interest and desire to do more, in partnership with the teachers, if only they can know what's being taught in

class during every lesson. Several parents highlighted concerns in their children's inability to read. They would like to play a more active part in their children's learning if only they knew how.

A large number of children felt happy coming to Preschool Programme for lessons. Individuals highlighted areas, through colouring sad and/or angry faces on their feedback forms, that they struggle more than most such as reading, spelling, writing.

FUTURE DEVELOPMENT

Children are at the heart of what we do. As such, there are three upcoming tasks in 2015 and three on-going tasks (not to be neglected) for ensuring the programme's continued welling being and sustainability.

The first task, looking into better integration of various curriculum components within a lesson plan to ensure effective and holistic literacy intervention. This may entail revision to the existing lesson plan format, including pre-and-post tests and adjustments to programme evaluation, if any.

The second task examines the teacher's delivery of the programme and its components to ensure quality teaching and effective intervention. This may entail a classroom observation made by the programme manager and/or member of her core team. A short feedback debrief to follow. Monthly team meetings cum inset sessions to provide opportunities for teachers to raise issues/concerns, creating a platform for mediated learning and peer support.

The third task looks into addressing a gap in the curriculum. Its reading component presently lacks a structured and consistent reading programme/ framework that deliberately create opportunities for students to practice reading widely and with comprehension. Consequently, the gap in reading age and reading achievement is quite wide as compared to the norm with same age peers.

Preschool Programme's new online reading programme, launched recently, may potentially address this gap. This new reading programme, with its virtual classroom, allows teachers to monitor students' reading achievement through completed tasks such as comprehension quizzes, self-recording of individual's reading of structured, levelled readers and so on. Students can choose to read on their own or have the book read to them. Parents are able to participate in shared or paired reading with their children and listening to it played back. The extensive library of age appropriate books on a wide tempting range of topics can be accessed via ipads and mobile devices, too.

For continued sustainability, the Preschool Programme needs to:

1. Continue refining its internal processes to reduce administrative lag time between enrolment and actual placement as student population grows
2. Work on administrative processes to minimise stress and bottlenecks
3. Engage more kindergarten and childcare teachers and parents, in varied settings, through Preschool Awareness talks, educating them towards understanding dyslexia and ways of supporting students (young children) with different learning needs

REFERENCES

Sim, T., Wong, K. L., Samsudin, A. B., & Bunn, T. (2015). Effectiveness of an Early Intervention Programme for Pre-school children at risk of Dyslexia in Singapore. *Asia Pacific Journal of Developmental Differences, 2*, 1, 27-37

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.

PRESCHOOL PROGRAMME

Specialised Educational Services
UNLOCKING POTENTIAL

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.

RECOMMENDED FOR
Preschoolers in Kindergarten One and Two who are at risk of dyslexia or having difficulties with reading, spelling and/or writing.

OUR APPROACH

Our 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 have the option to continue with the MOE-aided DAS Literacy Programme.

DYSLEXIA ASSOCIATION OF SINGAPORE

Find out more at **www.ses.org.sg** or **6444 5700**

Specialised Educational Services (SES) is a division of the Dyslexia Association of Singapore.

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

Edmen Leong
English Exam Skills Programme Manager
Dyslexia Association of Singapore

BACKGROUND OF PROGRAMME

The English Exam Skills Programme (EESP) is offered to primary school students at DAS. These students, similar to the rest of the Singaporean children population, have to sit for their PSLE (Primary School Leaving Examinations). Considering the strong emphasis on performing well in the PSLE, limited access to good secondary schools, and the known struggles of a dyslexic learner, the EESP aims to reinforce and teach skills these students need in their PSLE.

The EESP team started off by evaluating the examination needs of a typical Singaporean child with dyslexia. Team members started looking at school exam papers and analysed the various components of the PSLE paper, and realised that students at DAS tend to struggle with similar components of their examination, such as the Grammar, Editing, Synthesis and Transformation, Cloze Passage, and Comprehension. As such, the EESP team started working on these students' weaknesses. The team has since developed a set of curriculum addressing some of these challenging components.

The EESP curriculum designed aims to maintain and adhere to the structured and sequential schema of the OG principles (Gillingham and Stillman, 1997) while addressing the examination needs of the students. Lessons were also designed to be partially multisensory to ensure that students are given activities closest to examination conditions as possible, but also given opportunities to experience several possible pathways to learning, increasing the chances of retention of concepts learnt. (Gillingham and Stillman, 1997).

PROGRAMME DESCRIPTION

The development of the EESP started in late 2013, where team members who were teachers at DAS started designing a 10-week programme consisting of the four exam components (Grammar, Editing, Synthesis and Transformation, and Comprehension). The development of the EESP curriculum had since been ongoing, and several terms' worth of the programme had been designed and implemented.

As of today, the EESP programme covers curriculum catered to students as young as Primary 3. This is to give our students opportunities to start understanding and grasping the skills, techniques, and foundations they will require for their PSLE at a young age.

With the addition of our P3 and P4 curriculum, the EESP now runs 3 concurrent programmes to cater to the following group of students:

a) Primary 3 and 4
b) Primary 5 and 6 in the Standard stream
c) Primary 5 and 6 in the Foundation stream.

The new curriculum focus and breakdown of teaching and learning hours are as follows with effect from Term 4 2014.

Primary 3 and Primary 4	No. of hours	Primary 5 and Primary 6	No. of hours
Grammar	4	Comprehension	3.5
Editing and Spelling Rules	2	Synthesis Transformation	3
Study Skills - Annotation to understand text - Organisational	3	Editing	2.5
Milestone Activities	1	Pre/Post Tests	1
Total hours	**10**	**Total hours**	**10**

ENROLMENT

Enrolment of students in the EESP programme has gradually increased across the terms. However, several of our students leave the programme when they sit for their PSLE paper at the end of Term 3 each year. The EESP team attempted to build up on our student numbers by opening our programme to Primary 4s in Term 4 2014. With this implementation, a total of 66 students were enrolled in Term 4 2014.

*The number of students increased after the implementation of Primary 3 and Primary 4 curriculum in Term 1 2015. Of the 128 students enrolled by Term 1 2015, 55 were Primary 3 and Primary 4 students.

TEACHERS' TRAINING

With a similar goal in helping our students achieve academically especially in school examinations, several Educational Therapists have shared their interest in joining the EESP team. Careful considerations were taken into account before we selected a total of eight Educational Therapists to join our EESP team. We ensured that all Educational Therapists have been teaching in DAS for at least a year, and are familiar with the primary school syllabus. Teachers were also selected based on the demand for EESP classes in the various centres.

Our teacher training conducted for these eight Educational Therapists took place in July 2014, where a two day workshop was used as a platform for the new EESP teachers to understand and learn the rationale, teaching methodology, and procedures in place within the EESP.

All of the eight Educational Therapists were very keen to learn, and grasp concepts they needed to know very quickly. By the end of the workshop, these teachers were confident in conducting EESP lessons on their own with our shared lesson plans and worksheets.

Term meetings have also been conducted since the workshop with these Educational Therapists. This provides these Educational Therapists opportunities to review what they have learnt, share their experiences in teaching the EESP, and provide the EESP team with feedback at the end of every term.

CURRICULUM DEVELOPMENT

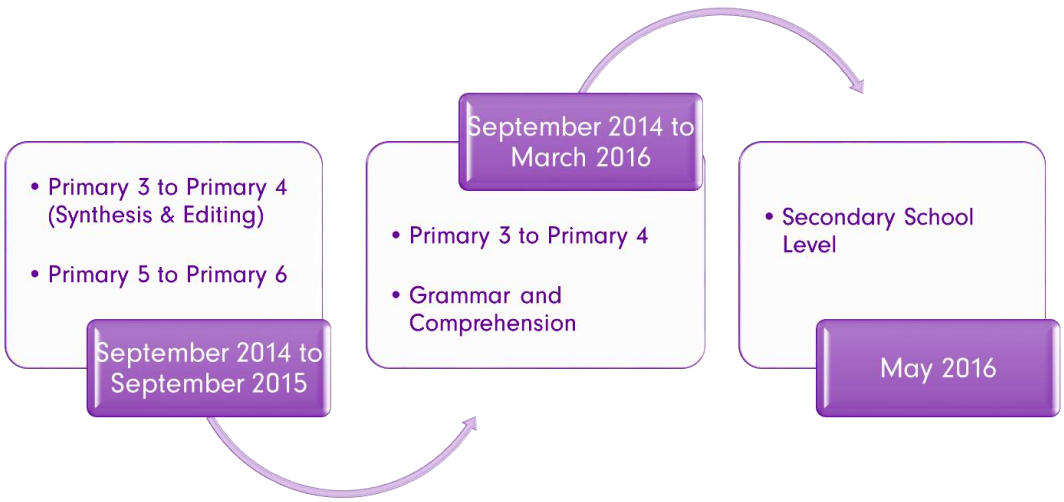
The curriculum development processes references Nation & Macalister (2010), and

Richards (2001), who suggested a systematic and cyclical curriculum development process, involving the analysis of needs and situation, goal and learning outcome planning, syllabus, assessment and evaluation. Adhering to these processes, the developers were able to consistently analyse, review, assess, and evaluate the designed curriculum from the feedback acquired from teachers, and students, as well as the pre-tests and post-tests conducted at the start and end of each term.

The consistent review of the curriculum not only ensures the quality of the designed intervention; it also enables teachers and developers to consistently modify the EESP to suit the changing demands of a student with dyslexia. These also enable teachers to track the progress of students attending the programme.

Adhering to the curriculum development frameworks, the team have successfully completed one and a half years worth of syllabus for both the Standard and Foundation stream for Primary 5s and Primary 6s. The team is currently working on completing 6 more months' worth of syllabus for the Standard and Foundation stream for Primary 5s and Primary 6s, as well as a new set of curriculum for the Primary 3s and Primary 4s.

The diagram below summarises our projected plans for our curriculum development across the levels:



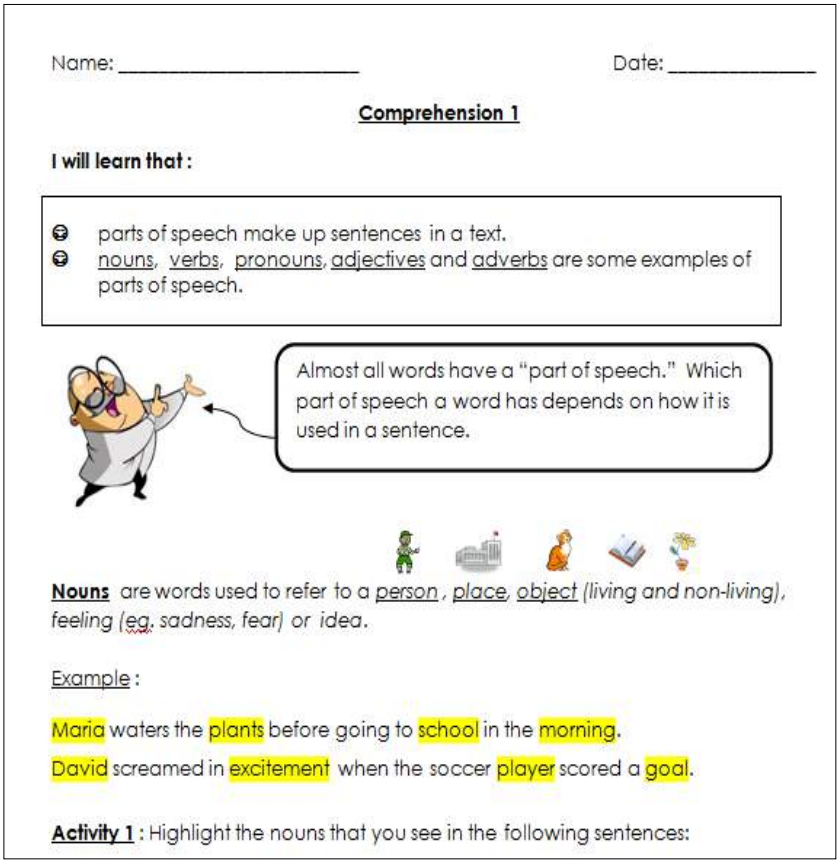
STRENGTHS, CHALLENGES & AREAS FOR IMPROVEMENT: PRIMARY 3 AND 4

The team understood the need to design resources that are appropriate for the age group. As such, the resources created consist of more pictures to ensure the younger children are able to learn and grasp concepts taught more easily.

Constant feedback gathered from the Exam Skills teachers on the students' responses as well as their personal feedback with regards to the resources were crucial for the developers. In Term 1 2015, most of the teachers reported that the Primary 3 and 4 scope and sequence for the term was overwhelming for the students. For instance, feedback was given that introducing all the parts of speech in one Comprehension lesson was too overwhelming for both therapists and students. As such, the team has seriously considered the feedback given and enhanced the scope and sequence as well as the teaching resources accordingly. Besides having more pictures, the team decided to review previous terms' topics. Teaching of new concepts were to be taught in a more gradual manner per term.

Sample 1: Term 1 2015 Comprehension

All parts of speech have to be covered in one lesson.



Name: _____ Date: _____

Comprehension 1

I will learn that :

- parts of speech make up sentences in a text.
- nouns, verbs, pronouns, adjectives and adverbs are some examples of parts of speech.

Almost all words have a "part of speech." Which part of speech a word has depends on how it is used in a sentence.

Nouns are words used to refer to a *person*, *place*, *object* (*living and non-living*), *feeling* (*eg. sadness, fear*) *or idea*.

Example :

Maria waters the plants before going to school in the morning.

David screamed in excitement when the soccer player scored a goal.

Activity 1 : Highlight the nouns that you see in the following sentences:

The enhancements to the worksheets are shown from the samples below :

Sample 2: Term 2 2015 Comprehension

Only one or two concepts are to be taught. More visuals provided to aid students' understanding on the technical terms.

English Exam Skills (Term 2 2015) – Primary 3 & 4

Name: _____ Date: _____

Comprehension 1

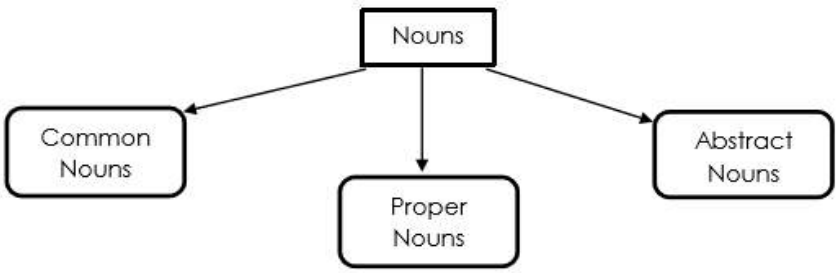
I will learn that :

- nouns are words that are used to name people, places, things and ideas.
- verbs are words that are used to show an action or state of being.

Nouns are words that are used to name a *person* , *place*, *object* *(living and non-living), feeling (eg. sadness, fear) or idea.*

Draw other examples of nouns that you know in this box.

There are different types of nouns namely :



We will be covering **common** nouns and **proper** nouns this term.

Sample 3: Comprehension

More pictures were provided in the worksheets to capture students' attention and aid in their understanding of concepts taught.

Activity 1 : Highlight **ALL** the **nouns** that you see in the following sentences:

1. My uncle, Logan, won a free ticket to watch a movie.
2. Jess had Nasi Lemak for lunch at Changi Village last Sunday.
3. Her grandparents came from Indonesia to see her newborn baby.

Verbs are words used to show an action or a state of being.

		
The man ***walks*** with a stick.	The girl ***is eating*** a slice of watermelon.	The girl ***is*** a cyclist.
verb	verb phrase	state of being

Verbs may also be expressed in more than one (1) word, especially if it is used together with a helping verb such as '***is***'. It is known as a verb phrase.

Example :

Sam is running to the bus stop.
(verb phrase)

Jenny is thinking how to solve the Math problem.
(verb phrase) (verb)

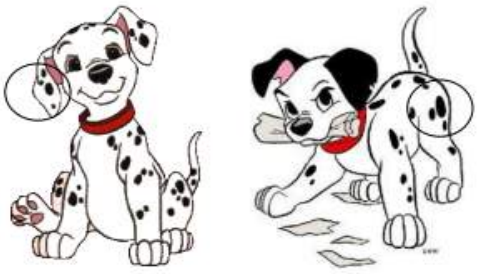
Sample 4: Grammar

More pictures were provided in the worksheets to capture students' attention and aid in their understanding of concepts taught.

Activity 2. Possessive noun phrases.

Change the underlined words to the appropriate possessive noun phrase. The first example has been done for you.

1. The spots of the Dalmatians are very unique.



Circle the ___Dalmatians' spots___ .

2. The petal of the flower is missing.

Draw the missing _____.

Another struggle with the execution of the P3 and P4 curriculum was brought up by several teachers. Teachers found that Primary 3 and Primary 4 classes in particular consist of students with a differentiated range of abilities. Discussions with the team with regards to this matter suggest that a possible reason to this differentiated profiles is because these students have not been streamed into standard or foundation classes in their schools. The EESP team is currently working out possible strategies to overcome this difficulty.

STRENGTHS, CHALLENGES & AREAS FOR IMPROVEMENT: PRIMARY 5 AND 6

Development of resources for Primary 5 and 6 continue to progress and feedback given among EESP teachers had been positive. This may be because the curriculum development for these levels had been worked on for several years since we first started the programme. We will continue to develop and complete the remaining cycles of resources as planned.

It was also heartening to note that, the team had the help from interns majoring in Linguistics from Nanyang Technological University (NTU) and National University of Singapore (NUS) to work on editing the completed packs of resources to ensure greater accuracy and value. The interns were working alongside our team from May to July 2015 and made an impact to the progress of our curriculum.

EVALUATION OF EFFECTIVENESS

The effectiveness of the EESP is evaluated by termly pre-tests and post-tests conducted at the start and end of each term. Results of these tests throughout 2014 were summarised in the tables below showing the progress of our Standard and Foundation students in 2014. The progress was evaluated by calculating the percentage of students who improved in their test scores over each term (Leong, 2015).

Observations of scores in each of the pre-tests and post-tests revealed that large numbers of students had improved after each term. The percentage of students who improved across the four terms were also generally increasing across the terms. It was also observable that students in the Standard stream performed slightly better than students in the Foundation stream. A detailed breakdown of the percentage of students who improved in both streams were recorded in the tables below.

Standard curriculum progress over 2014

Term	T1 2014	T2 2014	T3 2014	T4 2014
% Improvement	89.5	89	100	96.5
P value	**p <.05***	**p <.05***	**p <.05***	**p <.05***

Foundation curriculum progress over 2014

Term	T1 2014	T2 2014	T3 2014	T4 2014
% Improvement	78	75	86	85
P value	p >.05	p >.05	**p <.05***	**p <.05***

The data recorded in the tables extracted from Leong, (2015) reveals a significant percentage of students who have improved in the standard stream across the four terms, with 100% improvements in Term 3. Significant percentages of students who improved in the Foundation stream however were only observable in the later two terms (Term 3 and Term 4).

Results from both the Standard and Foundation classes from the EESP clearly indicate that there is constant progress and improvements in not only the students results, but also the development of the programme.

Further evaluation of the components within the pre-tests and post-tests will be similarly conducted to evaluate and enhance the EESP curriculum.

FEEDBACK FROM TEACHERS

The EESP Educational Therapists were given opportunities to give the EESP team members feedback on the curriculum on a term basis. At the end of 2014, all of the EESP Educational Therapists submitted feedback on their experiences with the EESP curriculum, training, and lessons.

All of the Educational Therapists were very happy and satisfied with the consistent training and updates on the curriculum since it helps them teach and learn easily. Several commented that the lessons we designed were structured, organised, and cumulative and thus makes it easy for both students and teachers to grasp. Some also commented on how lessons were very engaging and productive, and they were able to easily scaffold activities using worksheets to cater to the skills students need to learn.

FEEDBACK FROM PARENTS/STUDENTS

2014/15 has been a successful milestone for the EESP. This was evident after the release of the PSLE results towards the end of 2014. EESP students who took their PSLE in 2014 were our first batch of students who completed at least a year's cycle of our programme before sitting for the paper. The EESP team and teachers were overjoyed after hearing successful stories from students and parents. Here are some examples of these success stories:

Over a phone conversation.

> *"Hello teacher. I got my PSLE results already. Thank you so much. I can get into Secondary School!"*
> – Student A.

By SMS

> *"Hi Teacher A, Student B's PSLE result is 239. She got As for all 4 subjects. She said she promised to inform you"*
> – Parent B

By SMS

> *"Student C did well for PSLE. I am happy. Thank you for all your help."*
> – Parent C.

Other conversations with parents recorded in Leong's, (2015) paper also revealed that parents are satisfied with the results of the EESP. These comments are recorded below.

> *"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 such 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'*

WIDENING OUR REACH

Several activities were planned in order to widen the reach of the EESP. One of the opportunities we had was during the DAS open day in June 2014. The EESP team had the opportunity to open several booths across different learning centres to share with prospective parents about the EESP.

A couple of Tips Talk sessions were also organised in 2014, where parents were invited to attend sessions with our team members to understand the changes in the PSLE syllabus that will take place in 2015. These sessions not only provide parents with opportunities to understand what kinds of skills and information their children will need to learn and grasp for their PSLE paper, but also provides an opportunity for the EESP team to share with parents what we can do to help their children.

Our EESP core members have also been making several informal visits to various learning centres to share our programme with the Centre Managers and Educational Therapists throughout 2014.

FUTURE DEVELOPMENT

The EESP team have been very excited in expanding our programme for the younger primary students. This is because we realised how the programme will be very beneficial if students are given opportunities to start grasping concepts and skills at a younger age. As such, the team has embarked on our journey in developing a curriculum for the Primary 3 and Primary 4 students since early 2015.

The EESP will continue to consistently develop and enhance the curriculum for our students, with the primary focus on completing the syllabus for the Primary 3s and Primary 4s. Meanwhile, we will also look into expanding into the secondary school curriculum in the future.

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ABOUT THE AUTHOR

EDMEN LEONG
English Exam Skills Programme Manager

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.

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, times table facts and following multi-step calculations.

Specialised Educational Services Essential Maths Programme

Anaberta Oehlers-Jaen
Programme Director of SES Maths, Assessments and Specialist Tutoring and Head of DAS International
Dyslexia Association of Singapore

BACKGROUND OF SES MATHS PROGRAMME

The aim of the SES Maths Programme since its inception in 2009 is to effectively support students with dyslexia who have persistent difficulties in mathematics, particularly with maths word problems.

The SES Maths Programme, is recommended for students with dyslexia who 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.

OVERVIEW OF SES MATHS PROGRAMME

These difficulties can impede a child's ability to understand concepts, do calculations and apply what they have learnt to processes such as counting on and counting back, understanding number relationships, place value, times table facts and following multi-step calculations. Research by the British Dyslexia Association (BDA) has found that 60% of dyslexics also require support in Mathematics.

The SES Math Programme caters to this need and as at December 2014 is supporting 209 dyslexic children to cope with their learning difficulties and to maximise their true potential.

PROGRAMME DESCRIPTION

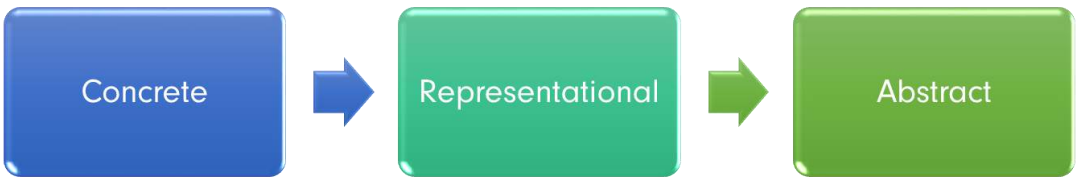
The methodology applied, constantly keeps in touch with the mainstream school maths syllabus, with the aim of bridging the gap between the student's ability and mainstream syllabus by addressing areas they are weaker in.

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 also incorporates the following research based principles which is 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.

THEORETICAL FRAMEWORK

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 foundational maths skills, such as basic computation, in order to progress toward higher order mathematical thinking.

Through the approach adopted at SES Maths, we aim to strengthen their foundations for confidence in higher-level maths, and thereby bridge the gap between the student's maths abilities and the demands of the school mathematics syllabus. Our students are also taught to solve problems using Polya's Four Step Process approach - understand the problem, plan a strategy, solve the sum and check the workings.

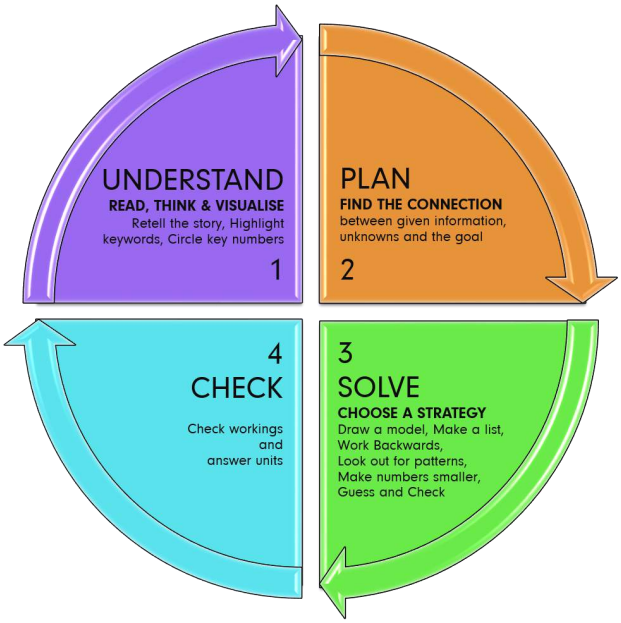


Figure 1. Polya's Four step process approach (1945)

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.

1. Primary School students (P1 to P6).
2. Current or ex-student of DAS, other DAS Programmes with a diagnosis of Dyslexia.
3. Students scoring the following grade on their most recent exam paper.
   P1 to P3 Band 4 (Below 50%)
   P4 to P6 (Standard): E Grade (Below 34%)
   P5 to P6 (Foundation): E Grade (below 49%)

RECOMMENDATIONS

The Maths Core team are currently reviewing the entry criteria, as we had noticed that patterns of results fluctuate throughout the academic year and grade level. We are aiming to move towards a more inclusive and simplified entry criteria for 2016.

Revised Entry Criteria for 2016

1. Primary School students (P1 to P6)
2. Current or ex-student of DAS or other DAS programmes with a diagnosis of Dyslexia.
3. Students scoring the following grade on their most recent exam paper.

   P1 to P4: (Below 50%)
   P5 to P6: (Standard): (Below 59%)
   P5 to P6: (Foundation): Open to all foundation students.

EXIT CRITERIA

Students should be expected to:

- Score at least 80% on the programme's annual performance test. This figure will need to be monitored.
- 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 programme when they have completed P6.

RECOMMENDATIONS

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

ENROLMENT

The SES Maths Programme in 2014 saw an increase in student enrolment from 94 students in January 2014, to 209 students in December 2014, who received support for their Maths difficulties, in addition to receiving DAS MAP remediation classes for Dyslexia. This suggests continued growth and expansion for 2015.

Table 1. Statistical Information on the SES Maths Programme

	January 2013	January 2014	December 2014
Number of students	74	94	209
Number of students on the waitlist	58	68	30
Number of trained therapists	12	18	34
Number of currently practicing therapists	12	12	27
Number of Learning Centres with Maths resource provision	6	12	12
Number of Workshops	0	5	
Number of Maths Insets for Dual Specialists	0	3	
Number of TIPS Talks Conducted	0	4	

BURSARY FOR STUDENTS

Report on utilisation of the StarHub Bursary

StarHub is the official sponsor of the SES Maths Programme for 2014 with a donation of $160,500 in April 2014. The fund helps to support students who require further financial assistance. Due to financial constraints these families are unable to afford the non-subsidised Maths Programme, even though they require support additional support in Maths.

SES Maths is pleased with the results for 2014 which has shown that 48% of students which is 100 of the 209 students on the SES Maths programme have benefitted from receiving up to 100% bursary. 71% of the funds have been utilised. Students and parents have shown their appreciation and good progress through thank you letters to the Maths team of Specialists.

DAS through its fundraising effects will continue in 2015 to raise funds for the SES Maths programme so that more students are able to benefit from form Maths remediation. Table 2 reflects information about the current bursary utilisation.

Table 2 Statistics on the SES Maths Bursary 2014

STATISTICS ON SES MATHS BURSARY 2014 (STARHUB)						
Enrolment as at Term 4 Week 10, 2014	209					
No. of students on StarHub Bursary	100					
Percentage of students on StarHub Bursary	48%					
Breakdown of Bursary Distribution 2014						
	Term 1		**Term 2**		**Term 3**	**Term 4**
Funds Utilised	**$ 17,398.20**		**$ 21,084.35**		**$ 34,544.95**	**$ 40,975.65**
Total	$ 114,003.15					
StarHub Budget	$ 160,500.00					
Utilised	71%					
Bursary %	100%	90%	75%	50%	33%	**Total Students**
No of Students	**38**	**17**	**16**	**16**	**13**	**100**

WIDENING OUR REACH

In 2014, we conducted five student workshops that were conducted in June and December 2014. The team also delivered four interactive TIPS Talks for parents over the various DAS Learning Centres in order to share practical and hands-on tips for parents in support of their students who attend our SES Maths classes. We received excellent feedback from parents especially for the talks on Word Problems. The Maths team in 2015 will continue to engage with both students and teachers.

TEACHER TRAINING

In 2014/15 (Term 1) we had three insets for the Math's Dual Specialists:

- Annual Testing
- Parent Teacher conference
- Lesson planning and usage of math manipulative

Teacher Training: MATHS PRACTICUM - 2014 (PCC)

A total of 19 DAS Educational Therapists were trained to become Maths Dual Specialists.

Objective

To train the selected, confirmed Educational Therapists with at least one year experience in teaching MAP to become Maths Dual Specialists to facilitate the increasing number of students who had been enrolled to be placed into classes and be provided with the right instruction so as to benefit effectively from our remediation programme.

To equip the EdTs with practical hands-on skills to plan and teach essential maths concepts to students with numeracy difficulties integrating the ELA principles and the CRA approach.

Procedure

Each Trainee EdT is assigned to an experienced Maths supervisor EdT preferably at the same centre. Training is for a period of 5 weeks.

Quality Assurance: MATHS 2014

Objective

To ensure that teaching follows the scope and sequence and teaching approaches as outlined in the DAS Maths Curriculum and meets the standards as defined by the Quality Assurance Marking Rubric, there are observations which are conducted once a year. In 2014, Quality Assurance observations were conducted for the Maths Dual Specialists. The observers comprised of at least two Maths Core Team members so as to have inter-rater reliability. This is to ensure consistent ratings and to minimise any bias that may be present.

Curriculum Development

In 2014, the Maths Core team looked at the reaching out to the weaker students on the Maths programme. The diagram below reflects the key curriculum developments for 2014 which were trialled throughout the year over 4 terms with the exception of the Advanced Maths.

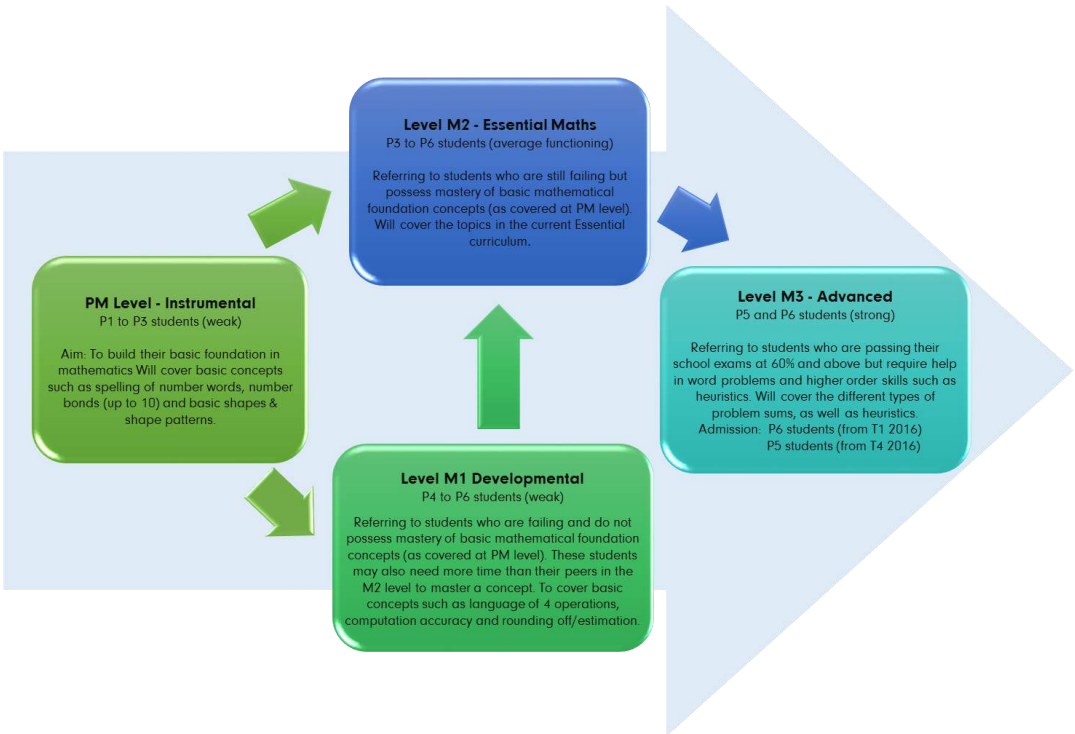


Figure 1. SES Maths Curriculum Development

Recommendations

Upon analysis and feedback from the trials of the proposed Maths grouping, which have been carried out in Term 1 2015, we have decided to integrate within the existing Essential Maths framework.

This would then allow for better differentiation at the classroom level and not at the placement level which would not be feasible due to manpower and logistical constraints. This integration allows for flexibility for the Maths teachers to incorporate elements that are relevant and developmentally appropriate for the students, supporting them in the mainstream curriculum. This enhances the current Essential

Maths Programme in terms of scope, reliability and expertise. Teachers will be given In-service training on the components that have been identified to support the weaker students.

The Level M3 (Advanced Maths), will however be offered to P6 students in Term 1, 2017 and P5 Standard students in Term 4, 2016.

MATHS PROGRAMME DEVELOPMENT FOR 2016: THE ADVANCED MATHS PROGRAMME

What is the Advanced Maths Programme?

The Advanced Maths Programme is a programme catered to address the learning needs of the P5 and P6 students who are struggling with the more complex word problems by teaching them appropriate problem-solving heuristics.

Who are the target group?

The programme is for students in P5 and P6, who have good computational skills and demonstrate good conceptual understanding of Maths topics at the Paper 1 Multiple Choice Questions and Short questions level but have difficulty comprehending the language of the complex word problems and applying appropriate strategies to work out the sums systematically and logically.

What are our objectives and rationale?

The Advanced Maths Programme focuses on promoting higher level thinking skills through the exposure to routine and non-routine word problems. It is hoped that students will come to discover the most appropriate solution using problem-solving heuristics. The Advanced Maths Programme is not a preparation course for the Primary School Leaving Exam (PSLE).

SES MATHS ANNUAL PROGRESS REPORT 2014

By Rebecca Yeo, Senior Educational Therapist

The following is an extract from an article published in the Asia Pacific Journal of Developmental Differences 2015 describing the research conducted by the DAS Maths team (Yeo et al., 2015, pp 147 -157)

DAS Maths wanted to develop a broadly focused maths test whose main purpose would be to evaluate how much learning had taken place topic by topic and stage by stage. The aim was not to differentiate between maths learners or to look for patterns of strengths and difficulties. The test, it was hoped, would both measure progress reliably and be a guide to teaching priorities across topics. The test was evaluated in a short pilot study in 2013 (reported in Bunn, Yeo, Siti Aisha and Abdullah, 2014, p 85-93). The results suggested that the students were making progress (Bunn et al., 2014, p 86). However, the team wanted to evaluate the test more thoroughly, and a study was a carried out to examine the strengths and weaknesses of the test.

METHOD

PARTICIPANTS

A total of 39 students took part in this study. The participants were Primary 2 (between the ages of 7.5 to 8 years old) to Primary 5 (between the ages of 10.5 to 11 years old) students who were already on the DAS Maths programme at least 6 months at the time of the first testing. All students who did not meet this criterion were excluded from the sample. This is to ensure that all students have had sufficient time to benefit from the programme before we evaluate their performance. The students were from the centres where the DAS Math programme was available at the point of assessment. As of November 2013, the DAS Math programme was only available at six learning centres.

The breakdown of the sample by grade levels is as follows: 2 students at Primary 2 (P2) level, 11 students at Primary 3 (P3) level, 14 students at Primary 4 (P4) level, 5 students at Primary 5 foundation (P5F) level and 7 students at P5 standard (P5S) level (refer to Figure 1). The grade levels of the students were based on the students' chronological school level at the beginning of the study.

In all primary schools in Singapore, all students would undergo a streaming examination for all subjects at the end of the Primary 4 year (i.e. when an average child is between the ages of 9.5 to 10 years old). The papers for this exam are prepared by the school, with the purpose of evaluating the students' strengths and

abilities based on their performance in each subject.

The results of this streaming exercise will then be used to guide students' placement into the types of subjects they would take in the remaining two years of their primary school education: Standard or Foundation. Students who have passed at least 3 subjects are allowed to take 4 Standard subjects, while students who have passed 2 subjects or less are given the flexibility to decide whether they would like to take 4 Standard subjects, 3 Standard subjects with 1 other Foundation subject, 2 Standard subjects with 2 other Foundation subjects, 1 Standard subject with 3 other Foundation subjects or 4 Foundation subjects (MOE Communication and Engagement Group, 2014).

However, these subject combinations are not set in stone. If a student performs well in one of the Foundation subjects at the P5 level, the school may allow for the student to upgrade one or two subjects to the Standard level if the school believes that the student can cope. On the other hand, for students who seem to be struggling with Standard subjects at the P5 level, the school may also allow for the student to change that subject to that at the Foundation level.

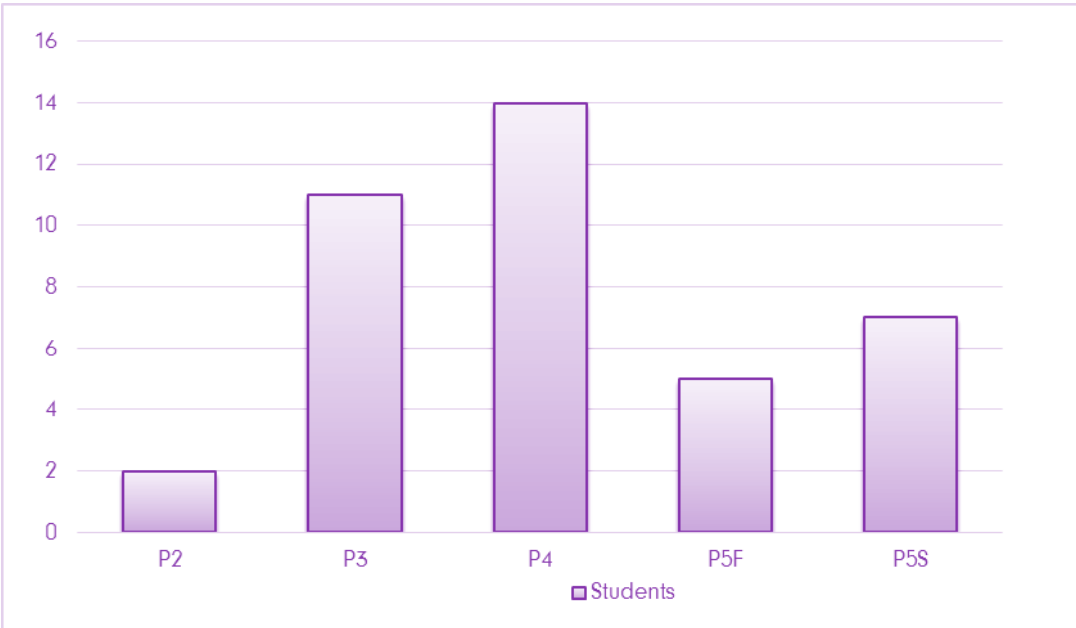


Figure 1. Breakdown of the students by grade levels.

MATERIALS

The students' mathematical conceptual knowledge was assessed using a comprehensive set of topical tests that were previously developed by the maths team, with some guidance from Professor Angela Fawcett and Dr Tim Bunn. The items in this instrument were created with reference to the 2007 Primary Mathematics Syllabus developed by the Curriculum and Planning Development Division of the Ministry of Education, Singapore (2006). We decided to use our in-house test because published maths tests do not cover the Singapore maths syllabus fully, and do not reflect the balance of computational and word problems that Singaporean students face. Moreover, we wanted to be able to identify topic by topic what concepts students had learned and still needed to work on. This collection of tests, known as the Annual Testing papers, assesses ten topics (addition, subtraction, multiplication, division, time, fractions, geometry, decimals, percentage, ratio) and covers calculations and word problems separately within each area.

The test was broken down by grade level (i.e. Primary 1 to Primary 6) such that students only need to attempt the items for their grade level and one grade below. Based on the Singapore mathematics curriculum, certain topics were only introduced from a certain grade level onwards (e.g. Decimals is only introduced from Primary 4) and thus were not tested for students who had not yet learned the topic because of the grade level they were in (e.g. Primary 3). In addition, students were assumed to have attempted the items that are two grades or more below their grade level correctly, and thus these items were not included in their test paper. For example, a Primary 5 student would be assumed to have attempted the items at the Primary 1, Primary 2 and Primary 3 levels correctly even though he did not do the questions. 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.

PROCEDURE

Students were administered the first test in November 2013 and then a copy of the same test six months later (May 2014). The tests were administered during one of the Math lessons within the school term so as to reduce the logistics problems related to data collection. The test was not timed but students were allowed a maximum of two hourly sessions to complete the test. While students were doing the test, the teachers in charge had to walk around to check the final answers of each question. If the final answer was correct, the student could proceed forwards to attempt the next question. However, if the final answer was incorrect, the teacher had to direct the student to try the question before. The testing on a topic will be discontinued if the student has 3 consecutive questions incorrect or if they have reached the end of the

section. At the end of the entire test, teachers will mark the students' responses using the answer scheme that has been provided and input the number of errors the student has made into a Microsoft Excel file. A percentage score would be calculated automatically by the Excel document that can be used for statistical analysis.

RESULTS

Before the data was analysed, it was first cleaned by checking for scores that fell outside the range of possible scores. The range of possible scores is defined as the scores between the lowest possible score for each grade and topic and the highest possible score for each grade and topic. Calculation of the range depended on the total number of items that the students were assumed to have attempted, and the total marks allocated for these items. A total of 27 scores were found to have fallen below the range of possible scores. These scores were adjusted to the lowest possible score as per the grade level of the student. Using the clean data, the students' pre-test and post-test scores were compared using a one-tailed matched samples t-test. The data was evaluated on two levels: (a) by topic, and (b) by level.

STUDENTS' PROGRESS ACROSS THE TOPICS

On the whole, regardless of the grade levels students were in, the results showed that there was significant improvement across all ten topics. Table 1 summarises the students' performance across the topics.

STUDENTS' PROGRESS ACROSS GRADE LEVEL

STUDENTS' PROGRESS AT THE P2 LEVEL

The Primary 2 students were only required to attempt a total of 7 topics, based on the school curriculum. These topics include addition, subtraction, multiplication, division, time, fractions and geometry. The analysis also revealed that there was no significant improvement in their scores when the topics were looked at as a whole ($t(6) = .003$, $p = .50$).

The comparison of their scores across topics is documented in Table 2. No significant differences were observed in any of the topics at the $p < .05$ level. However, scores improved or remained steady on 4 out of 7 topics, with the greatest improvement in division.

Table 1 Students' progress across the topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t-score*	*p*
Addition	83.60	14.11	88.44	11.20	$t(38) = 2.29$	.01*
Subtraction	75.86	22.33	83.58	17.85	$t(38) = 1.92$	.03*
Multiplication	79.82	16.56	89.75	11.51	$t(38) = 4.07$	<.001***
Division	66.55	23.09	84.48	17.51	$t(38) = 5.67$	<.001***
Time	72.36	18.41	81.32	19.21	$t(38) = 3.48$	<.001***
Fractions	58.79	23.47	77.62	22.85	$t(38) = 4.35$	<.001***
Geometry	72.25	25.41	81.88	24.82	$t(38) = 2.84$	.003**
Decimals	45.46	13.36	65.93	34.04	$t(25) = 3.61$	<.001***
Percentage	36.00	35.93	70.86	20.39	$t(6) = 2.66$	.002**
Ratio	57.80	42.12	92.81	3.38	$t(6) = 2.23$	.03*

*Note. *p <.05. **p < .01. *** p < .001*

Table 2 Progress of P2 students across the topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t*(1)	*p*
Addition	90.90	0	95.45	6.43	1.00	.25
Subtraction	75.00	7.07	80.00	0	1.00	.25
Multiplication	100.00	0	100.00	0	N.A.	N.A.
Division	57.80	42.00	93.75	8.84	1.53	.18
Time	77.80	15.70	72.25	7.85	1.00	.25
Fractions	83.35	23.55	47.20	66.75	0.06	.34
Geometry	100.00	0	96.00	5.66	1.00	.25

*Note. *p <.05. **p < .01. *** p < .001*

STUDENTS' PROGRESS AT THE P3 LEVEL

The P3 students showed significant progress in all topics at the post-test level except for addition (t(10) = 0.85, p = .21) and subtraction (t(10) = 0.87, p = .20). Table 3 summarises the results of the students at the P3 level. A significant improvement was also observed when all the topics were studied collectively (t(6) = 5.15, p < .01).

Table 3 Progress of P3 students across the topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t*(10)	*p*
Addition	87.88	11.85	91.65	10.55	0.85	.21
Subtraction	76.02	22.74	81.81	23.00	0.87	.20
Multiplication	77.91	23.01	93.35	9.40	2.38	.02*
Division	59.70	33.58	80.99	26.79	2.95	.007**
Time	60.91	21.89	77.27	23.49	2.21	.03*
Fractions	51.64	30.62	75.19	26.06	2.99	.007**
Geometry	72.1	21.92	86.00	20.59	1.90	.04*

*Note. *p <.05. **p < .01. *** p < .001*

STUDENTS' PROGRESS AT THE P4 LEVEL

At the P4 level, decimals is introduced as a new topic. Thus, a total of eight topics were assessed at the P4 level. Significant improvements were only observed for four topics: multiplication (t(13) = 1.81, $p < .05$), division (t(13) = 4.17, $p < .001$), fractions (t(13) = 5.08, $p < .001$) and decimals (t(13) = 2.12, $p < .05$). As a whole, a significant improvement was observed in the post-test (t(7) = 4.17, $p < .001$). Table 4 summarises the results of the students at the P4 level.

Table 4—Progress of P4 students across the topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t*(13)	*p*
Addition	80.11	17.52	84.18	11.63	1.11	.14
Subtraction	70.42	23.79	77.26	18.43	0.84	.21
Multiplication	76.07	14.76	82.39	12.94	1.81	.046*
Division	63.51	14.73	80.94	13.24	4.17	<.001***
Time	68.54	14.36	72.17	16.80	1.43	.09
Fractions	50.36	18.38	73.68	16.52	5.08	<.001***
Geometry	54.06	25.96	62.91	28.11	1.22	.12
Decimals	26.94	23.39	46.04	35.48	2.12	.03*

*Note. *p <.05. **p < .01. *** p < .001*

Table 5 Progress of P5F students across the topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t*(4)	*p*
Addition	78.54	16.02	82.86	14.82	0.59	.29
Subtraction	90.00	6.74	89.08	7.61	0.30	.39
Multiplication	87.60	11.61	98.66	3.00	2.61	.03*
Division	79.98	13.95	89.98	9.15	1.18	.15
Time	86.66	11.18	94.16	5.59	1.50	.10
Fractions	70.46	13.61	92.52	10.24	2.82	.02*
Geometry	89.98	12.09	98.46	3.44	1.83	.07
Decimals	60.90	21.92	88.66	3.43	2.85	.02*

*Note. *p <.05. **p < .01. *** p < .001*

STUDENTS' PROGRESS AT THE P5F LEVEL

Students in the P5F level were assessed on the same topics as the P4 students. Students in the P5F level are considered to require more help with their mathematics foundation as compared to their peers in the P5S level. Therefore, in the Singapore Mathematics curriculum, P5F students are exempted from two new topics that are introduced at the P5S level, namely Percentage and Ratio. Data analyses show that the P5F students improved significantly in three topics: multiplication ($t(4) = 2.61$, $p < .05$), fractions ($t(4) = 2.82$, $p < .05$) and decimals ($t(4) = 2.85$, $p < .05$). When all the topics were considered as a whole, a significant improvement was observed at the post-test level ($t(7) = 3.42$, $p < .01$). Table 5 summarises the results of the students at the P5F level.

STUDENTS' PROGRESS AT THE P5S LEVEL

Students in the P5S level were assessed on the greatest number of topics. Data analyses show that the P5S students showed significant progress in their scores in all topics except for subtraction ($t(6) = 1.70$, $p = .07$) and decimals ($t(6) = 1.87$, $p = .055$). When all the topics were considered as a whole, a significant improvement was observed at the post-test level ($t(9) = 5.90$, $p < .001$). Table 6 summarises the results of the students at the P5F level.

Table 6 Progress of P5S students across topics

	Pre-test scores		Post-test scores			
Topic	*M*	*SD*	*M*	*SD*	*t*(6)	*p*
Addition	85.37	9.28	93.90	4.93	2.01	.046*
Subtraction	76.63	28.18	96.10	7.16	1.70	.07
Multiplication	78.97	8.06	89.53	8.48	2.26	.03*
Division	76.31	14.45	90.47	12.20	1.96	.049*
Time	86.24	9.91	99.40	1.59	3.67	.005**
Fractions	71.56	14.65	87.39	10.96	3.30	.008**
Geometry	88.29	11.82	97.46	4.47	2.70	.02*
Decimals	71.49	30.57	89.47	34.04	1.87	.055
Percentage	36.00	35.93	70.86	20.39	2.66	.02*
Ratio	57.80	42.11	92.81	3.38	2.23	.03*

*Note. *p <.05. **p < .01. *** p < .001*

DISCUSSION

The objective of this study was to objectively measure the progress of the students in the DAS Maths programme to see if our programme is effective in improving the mathematical knowledge of our students. The results showed that students generally made significant improvements in their knowledge of all the topics that we have assessed them on. However, when we scrutinise the results by grade level, we find that the amount of progress the students made varied by topic, as well as across levels. There appears to be a steady decline in the number of topics where improvements are observed from P3 to P5F. One factor that could account for this decline is the increase in difficulty of the topics as one progresses through the school system. While our programme aims to help students to understand concepts within their zone of proximal development and at their learning pace, schools are teaching students concepts that are getting increasingly complex. Therefore, we find that although they do show some improvement, the students are still not matching up to their expected school standards.

There are also some unexpected trends in the results that are worthy of mention. First is the finding that the P2 students did not make any significant progress in any of the topics. There are several reasons to account for this. First and foremost, the sample size is too small for the results to be valid in explaining trends in a population. A bigger sample is needed to test if our intervention is effective at the P2 level. Secondly, due to the small sample size, a change in one of the participants' scores is likely to affect the overall mean and standard deviation of the scores significantly, which was what happened in the dataset. However, we also noticed that there was an anomaly in one of the students' scores. In this case, the student was observed to have regressed in his performance in the topic of Fractions. We approached the teacher of this student to try and investigate why this was so. We learned that the most probable explanation for this is due to a long time lapse of more than 6 months between the time he had learned Fractions in P2 (pre-test) and the time that his school had covered Fractions again in P3. This finding highlights the difficulties that some of our students with dyslexia encounter in schools which follow a spiral curriculum. One of the characteristics of dyslexia is a difficulty of retrieving information from long-term memory. By the time of the post-test, the student had already forgotten what he had learned about Fractions at the P2 level and his school had only just began to teach Fractions at the P3 level. This was probably why he did not perform as well as he did during the post-test 6 months ago.

There were also limitations to the design of the study and areas we could improve on. Firstly, we did not check which topics were already covered by our teachers at each testing. Matching the topics teachers had already covered with the progress of students would give us a more accurate picture of the effectiveness of our program.

This could also explain why students improve in certain topics not in others. Second, we were unable to form a control group in this design because we did not have ready access to students not on our maths programme. Nor did we control for other extraneous and mediating variables such as the number of hours students receive other forms of mathematics remediation (e.g. tuition) outside of our programme. Therefore, we were unable to determine if the results were entirely due to our programme or due to other factors. If we had controlled for other factors, we would perhaps be able to conduct a factor analysis to identify the main contributors to our students' improvements. Finally, the test was not being timed even though students could take a maximum of two hours to complete it. Thus, their results may not be an accurate reflection of their performance in school-based examinations where they have to complete their paper within a stipulated time limit. In future research it would be useful to check how much they could complete within a fixed time period, as well as allowing them as much time as they need to complete the test.

CONCLUSIONS

The main aim of the study was to evaluate the use of a comprehensive test of Singaporean primary maths as a measure of progress for dyslexic students on the DAS small group Maths intervention programme. The study shows that students made significant improvement across all topics covered by the test. Analysis grade by grade shows that at each grade level some topics show much greater improvement than others, with fewer topics showing progress at higher grades. This may be a result of harder topics being introduced later in the primary phase, and there may also have been less progress because of poor retention when topics were taught a longer time before the test.

The test is considered to be a useful instrument, but the DAS Maths team may need to consider alternative test designs to see if other ways of testing would be equally or more efficient. We may also need to consider ways to recruit non-intervention children as controls to measure the unique contribution of the programme. 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 programme and after every year of being on the program. This attitudes test would be administered together with the Annual Testing papers.

FUTURE DIRECTIONS

To help our very weak students who are struggling with basic math concepts, the team is currently compiling a set of differentiated lesson plans and strategies that are catered towards helping our weaker students with their number sense, a

fundamental skill for grasping mathematical concepts. This will be integrated into the current Essential Maths programme to help our teachers reach out to students with diverse math abilities.

Currently, our annual assessment of students' progress takes approximately one to two hours to complete. In the team's opinion, this is too long a duration, and students do report feeling unmotivated to finish the paper. Some have even displayed task avoidance. Based on the feedback, the team will look into how to shorten the test without affecting its psychometric properties. The Maths curriculum team is developing the Advanced Maths Curriculum to cater to the learning needs of students who are struggling with the more complex word problems by teaching them appropriate problem-solving heuristics.

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. The teaching standards of our existing dual specialists will be monitored by a peer dual specialist and one of the core team members using video observations of a lesson, once every year.

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POSITIVE FEEDBACK FROM PARENTS AND STUDENTS

Bursary recipient: Lisa Lam

Saturday, November 22, 2014 at 5:08 PM
To: samunn@das.org.sg

Dear Mr Samunn,

Thank you very much for helping my daughter in her 1st and only year of Primary School Maths class tuition. She has never passed her maths before and I am very thankful for DAS to have maths tuition for child like her. Next year she will be in Secondary 1 and DAS does not have Maths tuition for Secondary 1. I personally feel that my daughter Lisa Lam had not had even exposure to learning Maths the correct way. Could I request for DAS to teach her 1 more year in P6 tuition? I am also hoping for STARHUB sponsorship for the course as I do not have money.

Best regards

Lydia Lam Mother of Lisa Lam

Non Bursary Student: Harold Ngoh

Dear Teacher Albel

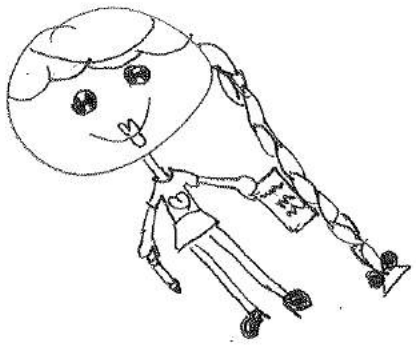
The DAS Math Programme has met my expectations in building a firm foundation for my son. The programme is able to simplify and using more hands-on approach to make mathematical concepts concrete for the children to understand. The worksheets are also not intimidating for him and he enjoys attending the classes.

Ms Albel is also extremely patient and understanding to empathise the kids' challenges and difficulty in grasping the computation and perception.

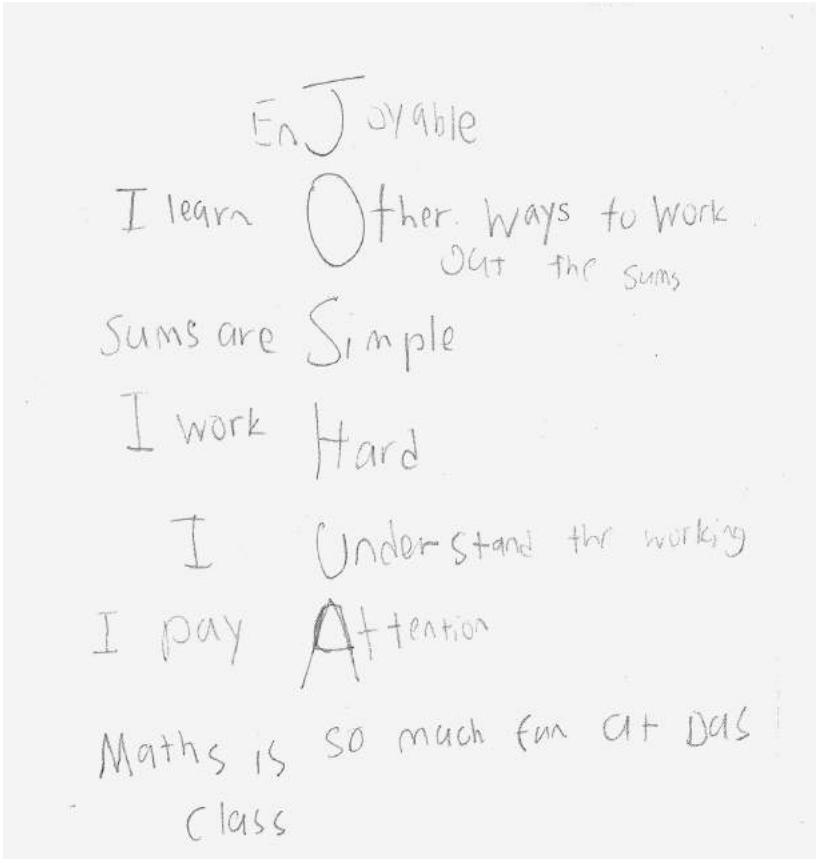
Thank you. It will be ideal if there's a programme for Secondary School.

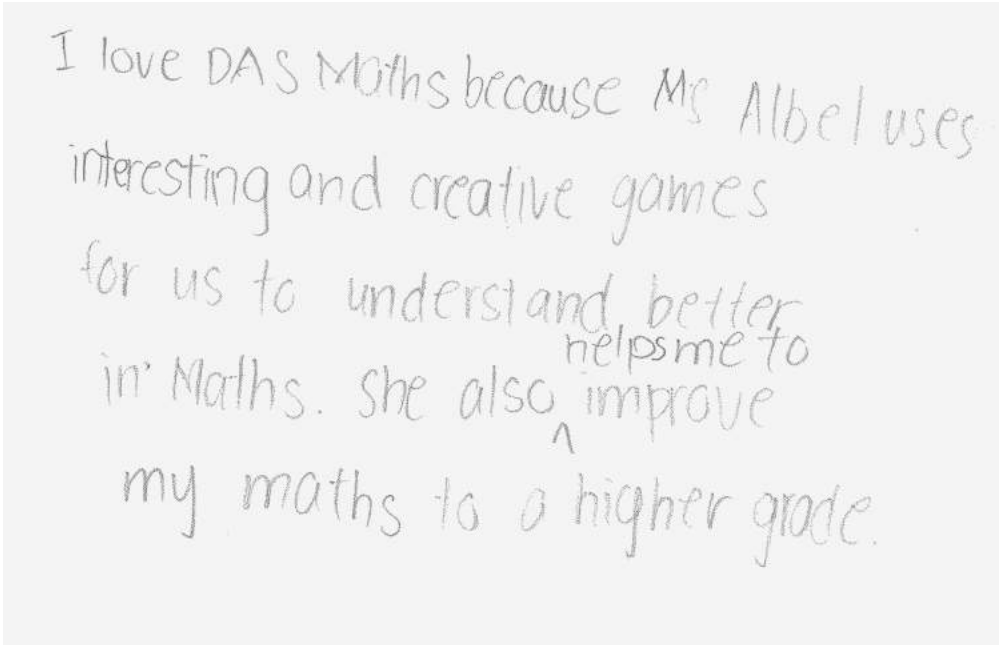
Thanks for your effort and confidence in Harold

DAS MATHS STUDENTS PRAISES FOR THE SES MATHS PROGRAMME



I am interested in Math
because when i was in P1, I was not
good in math. ~~after~~ I
learn math with DAS, I became more
smarter than before, I can even ~~past~~ Pass Math
in my school Math Exam.


EnJoyable
I learn Other ways to work out the sums
Sums are Simple
I work Hard
I Understand the working
I pay Attention
Maths is so much fun at DAS class


I love DAS Maths because Ms Albel uses interesting and creative games for us to understand better in Maths. She also helps me to improve my maths to a higher grade.

ACKNOWLEDGEMENTS

The comprehensive SES Maths Evaluation 2014 report would not be possible without the team effort provided by the following persons.

SES Director: Nor Ashraf Samsudin

SES Maths Programme Director: Anaberta Oehlers-Jaen

Core Team Members: Aishah Abdullah, Rebecca Yeo, Siti Aishah Binte Shukri

Maths Evaluation Report: Rebecca Yeo: Analysis of the Pre-Post Test analysis & collation of data and report on the Pre and post tests.

Contributions to SES Maths: Dr. Tim Bunn: Input for the 2014 Annual Testing pre-post data collection Excel spreadsheet, and discussion points. Adaptation of the Steve Chinn 15 minute test and Attitudes test.

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 Programme 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.

ESSENTIAL MATHS PROGRAMME

Specialised Educational Services
UNLOCKING POTENTIAL

The aim of the SES Essential Maths Programme is to effectively support students with dyslexia who have persistent difficulties in mathematics, particularly in maths word problems.

OUR APPROACH

The 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 C-R-A (Concrete-Representational-Abstract) approach. Every stage of learning ensures that the child links mathematical ideas in a progressive and cumulative way, bridging the gap between the student's ability and mainstream syllabus.

RECOMMENDED FOR

Students with dyslexia who 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.

C

CONCRETE
- **Counters to add and subtract**
- **Fraction pies**

R

REPRESENTATIONAL
- **Number line**
- **Use of drawing**

A

ABSTRACT
- **Numbers notation, maths symbols**
- **Problem solving**

DYSLEXIA ASSOCIATION OF SINGAPORE

Find out more at **www.ses.org.sg** or **6444 5700**

Specialised Educational Services (SES) is a division of the Dyslexia Association of Singapore.

Specialised
Educational
Services
UNLOCKING POTENTIAL

PSYCHO-EDUCATIONAL ASSESSMENTS

Educational Psychology 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 aim is to start with the concerns about learning or behaviour expressed by parents, teachers or sometimes the child and to try to provide sympathetic but objective information about the child's background abilities and current academic skills, and then evaluate whether there are serious difficulties and how great are the problems for the child, the patents and any teachers and tutors involved. Psychologists try to provide advice about the best curriculum options (if there are any) and then about how teachers, tutors, parents and the child them self can help the child most effectively. Usually this is a "snapshot" at a particular time, but the psychologist will learn more about the history of help to the child from parents and teachers, and in some cases future goals can be set (for tutors, for example) which can then be monitored to see if progress is at the expected rate.

WE CAN ASSESS FOR:

- Specific Learning Differences
- Dyslexia and Dyspraxia
- 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

Specialised Educational Services Psycho–Educational Assessments

Anaberta Oehlers-Jaen
Programme Director of SES Maths, Assessments and Specialist Tutoring and Head of DAS International
Dyslexia Association of Singapore

The SES Assessment Service has changed substantially since it began as DAS International in 2011. The main aim of this annual report 2014/15, is to provide information on the profile of students assessed, the demand patterns and to describe the work of an SES Educational psychologist as well as the quality assurance process. In order to understand SES Assessments as it currently functions, a brief summary of DAS International Services Ltd (a subsidiary of the Dyslexia Association of Singapore) needs to accompany this report.

Since April 2014, all psycho-educational assessments conducted in Singapore came under the purview of SES Assessments (Specialised Educational Services division) which is aimed at supporting both Dyslexic and the non-dyslexic population through providing a comprehensive range of psycho-educational assessments. DAS International is now involved in overseas activities and the active promotion of Dyslexia and Specific Learning Differences in the South East Asian region and continues to respond to requests for assessments through SES Assessments.

The period April 2014 - March 2015 was marked by change and efforts to realign and reintroduce the services of SES Assessments that was formerly under DAS International. Organisational, structural and staff changes, along with resignations particularly in the third and fourth financial quarters of FY2013-2014 had significant impact on the revenue for DAS International's Assessment services. Nevertheless, through deliberate networking and information sharing with International schools in Singapore the client perception of assessment services provided for by SES Assessments has been re-aligned.

Development of the SES Website, helped to introduce a new brand identity for SES Assessments. Although limited initially as a result of the restructuring and staffing changes, SES Assessments has started to see a significant pickup in referrals for assessments.

Initially there were two fully qualified UK Educational psychologists, that were hired to conduct psycho-educational assessments that demanded more than a diagnosis of Dyslexia as provided by the Dyslexia Association of Singapore as a criteria for entry onto the MAP Literacy Programme.

SES Educational registered psychologists in their professional capacity are able to diagnose a range of Specific Learning Differences such as:

- Dyslexia and Dyspraxia
- 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

WHY PSYCHO-EDUCATIONAL ASSESSMENTS?

Psycho-Educational assessments have a number of important functions: a comprehensive assessment report will contain detailed practical recommendations for parents and educators involved in supporting the child's education. Early identification and early intervention of learning differences is vital for the child's well-being and educational progress.

However, not all assessment work is best seen as diagnostic. The aim is often to evaluate progress or to pinpoint in what areas (if any) further interventions are needed. A very important aim is always to provide a positive experience for the child: this means leaving the child with a realistic but hopeful view of what they can do to help themselves further improve in learning. Among the recommendations are often those for exam accommodations. There are a range of guidelines on exam accommodations internationally, and many universities now have their own guidelines. The psychologist needs to check the specific guidelines required for each assessment.

SES Educational Psychologists produce professional, comprehensive and easy to understand reports for parents. The reports are recognised and accepted by institutions and educators world-wide. SES Educational psychologists are professionals who have extensive experience assessing people with behavioural, developmental and psychological issues that lead to learning differences.

As of March 2015, SES has one Educational Psychologist Dr Tim Bunn as the manpower had reduced earlier due to resignation by our other two psychologists. We plan to integrate and expand the number of psychologists who provide this service, so as to include registered psychologists from the DAS Admissions division who conduct psychological assessment predominantly for Singaporean students attending the MOE schools who require a diagnosis of Dyslexia for eligibility onto the main MAP Literacy programme.

MAIN TARGET GROUP AND STATISTICS

The market which SES Psycho-educational assessments serve are primarily students from the International schools both in Singapore and the region, at the same time Singaporeans who are looking for a comprehensive psycho-educational assessment. Most recently and interestingly in 2015 there have been requests from adults requesting for full psychological assessment. This will be discussed later.

PROFILE OF SES ASSESSMENTS: APRIL 2014 TO MARCH 2015

International Schools	MOE Schools	Coming in from Overseas	Adult Assessments
30	30	6	17

BREAKDOWN OF ASSESSMENTS FROM OVERSEAS CITIES

Breakdown of assessments from overseas cities					
Malaysia Johor	Indonesia Bandung	China Shanghai	Sri Lanka Colombo	Mauritius	Total
2	1	1	1	1	6

STATISTICS

SES Psychological Assessments		
Assessment Period	2013/14	2014/15
No Psychological Assessments	142	83
Assessments for International Students	92%	50%
Assessments for Singaporean Students	17%	50%

ANALYSIS OF REFERRALS

For the period April to March 2015, we saw students from the following schools coming through for psychological assessments for various reasons. Some being for exam accommodations, ADHD, ADD, Dyslexia, Literacy issues, Dyscalculia, Autism etc.

Referrals for our psycho-assessment coming from the International and Private schools mainly were from, ACS International, ACS Barker Road, Tanglin School, Nexus International School, Chatsworth International, Global Indian, NPS International, Canadian International, Australian International, Overseas Family School and Marlborough College (Malaysia). Referrals also came through from Ministry of Education (MOE) schools from students who were wanting a more complete diagnosis and cases whereby parents had other concerns apart from Dyslexia. We have seen some students with greater special needs from more specialised schools recently, including some intellectually disabled and autistic students. We also see some students where parents are specifically seeking maths/ dyscalculia assessment. Occasionally we also see children with a specific focus on attention issues, where a diagnosis of ADHD may be needed, and where a previous assessment by the DAS MAP Admissions psychologists, has suggested such a possibility but had not been able to confirm the suggestion.

OVERSEAS CLIENTS

Referrals for SES assessments conducted in Singapore from overseas clients have seen an increase with clients coming in from India, Indonesia, China and Vietnam. Parents would normally have the assessments conducted over the weekend.

ADULT ASSESSMENTS

Over the period 2014/15, the number of post-17 Adults who were assessed have increased. This comprised of a mixed group of clients who were seeking a psycho-educational assessments. We saw a total of 17 Adults.

Profile of post-17 Adults

They are generally of two major categories of clients.

1. Students in Further Education (FE) and in Higher Education (HE)
2. Working Adults

The profile within these two groups comprised of young adults who were undergoing FE at the polytechnics, junior colleges, IB schools and HE students who were in university undergoing degrees or post graduate qualifications. This also included some mature adults who are re-embarking on study after working for a while, and some (usually men) who have just completed military service. The main reason for the referrals for the Adult assessments which were in FE / HE was due to requests for an update assessment for exam accommodations.

The second group of Adult assessments are wanting to gain a better understanding of their psychological profile and which may be helpful for their current or future employers. Gaining insight into the nature the difficulties they might have been experiencing. Adult assessments are aimed to:

- Diagnosing Specific Learning differences such as Dyslexia
- Identifying the areas of strength and weaknesses
- Maximising the potential and improving the quality of life

We believe that the Embrace Dyslexia campaign which launched in 2014 has played a part in raising awareness and educating adults to come forward to better understand their learning through a comprehensive psychological assessment.

QUALITY ASSURANCE

Quality Assurance with only one psychologist under SES Assessments is both harder and easier than usual. SES Consulting Educational psychologist Dr Tim Bunn comes to SES Assessments with extensive experience from Local Authority work in the UK (the most common location of educational psychology assessment practice in the UK until recently) suggests that QA is always difficult. The UK, Dr Bunn notes, has had guidelines for many years, which statutory assessments are obliged to follow. But the

actual quality is not well specified by lists of headings of what to include. Most UK educational psychologists can obtain supervision from their team leaders, and in contentious cases they will usually consult with their team leader and often with fellow colleagues. This kind of consultation is very much about comparing the focus case with similar cases, and especially about clarifying what kinds of provision might be required. The psychologist's employer, the Local Authority, may have to pay for what the psychologist recommends; if an expensive private school is a possibility, this naturally causes a lot of careful analysis.

However with only one SES psychologist in the team as the other resident psychologist had resigned, this kind of peer consultation is not possible. External supervision has not been considered for lack of appropriate supervisors. Internal consultation (peer discussion) within DAS might be considered but has not been at this stage. However, by taking advantage of the wide experience of Professor Angela Fawcett, Research Consultant to DAS, and as a psychologist, some "arm's length" internal quality assurance has been possible. She has reviewed a sample of Dr Tim Bunn's assessment reports and concluded that they are of very high quality ("outstanding").

There are two other QA options. The current educational psychologist Dr Tim Bunn devised a very simple feedback questionnaire which he sends out with some final reports, and which some parents respond to (see appendix). The ratings and comments are positive and encouraging.

There is also a list of qualities of good psychological assessment that provide a reference point and (if there were opportunities for dialogue) a basis for discussion about the quality of the assessments.

The current psychologist uses a system in which a draft report is handed to the parents/young adult at the concluding interview, and they are encouraged to provide feedback and comments shortly after. This opportunity occasionally leads to substantial revisions but usually leads only to minor typo and biographical corrections. Nevertheless parents scrutiny helps to improve the quality of the final output, albeit at the cost of some extra time before completion.

CHANGES IN ASSESSMENT AND REPORTING METHODOLOGY

By Dr Tim Bunn (SES Consulting Educational Psychologist)

At a talk by a leading US neuropsychologist at SENIA 2015 only one significant change in interview and reporting techniques seemed to emerge, the inclusion of a section of Risk Assessment for the child without new interventions. The psychologist described the likely results over time of lack of action, and found this to be a powerful way to clarify the importance of any changes suggested. I have tried using this approach, but in most cases it seemed an unnecessary and perhaps alarmist feature, because in Singapore there is no option for state funded additional resource provision contingent on assessment (as from IEPs in the US). It may be worth using occasionally where insufficient awareness of the severity of a problem may be a concern.

The arrival of a new edition of the Wechsler Intelligence test series (now the 5th edition) has meant this test has been the most commonly used instrument. It is not very different from its predecessor WISC-IV but the fact that its norms are 10+ years more up to date makes it essential to prefer it. It is in fact more like the Adult test, WAIS-IV than its WISC-IV predecessor, and this is helpful given the increasing number of adults requiring assessment.

WISC-V has a considerably wider variety of optional tests, which has proven helpful. This to a large extent offsets a slight disadvantage - the crucial verbal ability measure is based now on only two tests, in the interests of avoiding over-long assessment time. But it is possible to use one or two supplementary measures if verbal ability seems to be a potential area of concern. There is also more flexibility in measuring the vitally important working memory (4 tests available, so two types of WM can be measured). And a new Quantitative Reasoning scale is available.
WIAT-III continues to be the preferred achievement test series, because it is up to date and very comprehensive. There are some weaker parts to WIAT-III, so it may be helpful to purchase at least one high quality alternative (eg Woodcock-Johnson-V or the Kaufman series). Two more intensive tests in crucial areas (reading comprehension and written language) have been purchased and used where these skills are a main focus, as second stage assessments.

In line with reported developments in assessment practice in the UK, the psychologist has made more use of questionnaires to clarify students' views and strengths and weaknesses at the emotional level of learning. The Southampton Emotional Literacy scales have continued to prove helpful, not least because they can be reported using charts, which add interest to the early stage of the report. A primary stage questionnaire giving a very short but useful balance of feelings about school, your own abilities, literacy, numeracy, oral work and inclusion has also been

very helpful. Possibly this could be trialled in Singapore mainstream schools as a way of obtaining broad Singapore norms. A secondary version has been written and is being trialled. The well-established BRIEF and Conners3 questionnaires have also been used frequently. Both seem to suggest unexpectedly high scores in some cases, so further collaborative work to check their validity or adaptations in a Singapore context may be helpful. In general, one of the key principles the current psychologist works to is making the student feel that the assessment is not a "judgement" on them but a way of making clearer how they learn and what needs to be done to help them learn better. Asking informal opinions about what they have experienced during the assessment contributes to this important goal.

Some use has been made in literacy assessments of home-made materials and trial-teaching. Further work to develop such materials is ongoing.

More has been done to develop materials for maths assessments. Sets of Singapore maths problems have been devised for most grades. This helps to Singaporeanise maths assessments where the only normative materials are from the US. Generally speaking it has proved helpful to use two parallel sets of questions, in multi-choice and straight answer form. This not only suggests which form the child finds more difficult but also provides a useful measure of how consistent they are.

Recently it has also been very useful to compare calculation efficiency with word problem efficiency. Two parallel sets of materials are again used, usually 20 items for each, so that the word problems involve almost the same calculation as the calculation itself, but of course the student has to understand what calculation they need to use. Results again provide some measure of consistency but also how much harder word form is for the student. It is hoped to develop materials which can be trialled in schools from which norms can be derived, as a way of having better Singapore based measurement tools.

Another area for development is in writing assessment. For all ages, writing is important. It is suggested that the Singapore Writing Fluency test (SWIFT) be expanded and updated. The norms of the WIAT3 writing tests must also be ascertained to be suitable for Singapore." So this is another area where further development of materials would be very valuable. It is not difficult to envisage better materials - but efforts to trial and norm them will be time-consuming.

SUMMARY

As SES Assessments have started to recover from the initial lull in assessment numbers during April to September 2014 as a result of restructuring of DAS International, the integration appears to have stabilised. Meeting the needs of

parents for a one stop assessment and remediation services under the SES Division has resulted in deliberate initiatives for SES Assessments for 2015/16 namely:

1. Stepping up interaction through planned direct meetings with International schools such as United World College (UWCSEA), Marlborough College, Global Indian, ACS International, Overseas Family School, Australian International School and Tanglin Trust, have already commenced.

2. Direct recommendations for SES Assessments coming through from these schools to parents is an important step, as this means that the schools value our reports. This has placed us in a good position to be on the list of preferred assessment service for their students we are hence able to build better relationships and consistency in revenue.

3. Through the four SES TIPS talks conducted by SES Educational Psychologists Dr Tim Bunn and Marinda Grimbeek over October & November 2014, awareness of the range of assessments our SES Educational Psychologists have increased.

4. Direct talks at International schools have started with four talks given at Marlbourough College & Global Indian International School, Anglo-Chinese School (International) given by Educational psychologist Dr Tim Bunn and Anaberta Oehlers-Jaen (Programme Director for SES Assessments)

FUTURE DEVELOPMENTS:

In 2016, there are plans through the integration of a one stop assessment services administratively at the DAS with SES Assessment for current registered psychologists from the DAS to carry out wider range of psycho-educational assessments required by SES assessments. We would then be in a better position to provide support to a larger and wider group of preschoolers, students and post-17 adults who have specific learning differences from both the International and the Singaporean school communities.

Another development we will be working on as adult assessments have increased would be outreach and engagement with FE and HE institutions. This is an untapped and potential market so that provision can be provided to students with Specific Learning Differences who could benefit from accommodations during examinations through a comprehensive SES Psycho-educational assessment.

Through professional development, attendance at relevant conferences, research, current test kits we will continue to maintain the gold standard which we have

established for our comprehensive and recognised SES psycho-educational assessment.

ACKNOWLEDGEMENTS

I would to acknowledge the following colleague who has contributed to the SES Assessments Annual Evaluation Report:

Dr Tim Bunn: SES Consulting Educational Psychologist

Providing information for:

- Changes in assessment and reporting methodology
- How did you find our Assessment Service client questionnaire
- Quality Assurance: Educational Psychology within the DAS SES team
- Principles of Psychological Assessment which should inform the development of SES Assessments

APPENDICES

How did you find our Assessment Service?

We asked parents to rate our service using the following 5 questions. Responses over a small sample have been very positive:

Questions on Assessments Services	YES %
How well did we listen to your concerns about your child?	96.6%
How efficient were we in receiving your referral, arranging appointments, completing reports and arranging feedback and any other outcomes?	88.3%
Were the conclusions we reached and any recommendations made appropriate, sensible and useful?	95.0%
Did the feedback you received (via a meeting and a draft report) help to answer the questions you came with?	98.3%
Was the final report you received helpful?	98.3%

Some additional comments were...

"The report is very technical and specific and I hope with the recommended / additional support from home as well as his teachers, it will be helpful."

"Thank you [for] your patience, kindness and ability to listen were very much appreciated by myself and A. It was good to know that you understood my concerns and took them seriously. A really enjoyed her time with you which is a feat considering some of the tests you requested of her! She felt confident enough to have a go fearlessly. Thank you to everyone at DAS!"

"Dr Tim Bunn was sensitive to L's reactions with regards to the various tests and assessments and adjusted to the sessions to his needs which we are most grateful for. We have found the whole process very useful and educational as both my husband and I are not dyslexic. Therefore we had many questions which we feel have been answered appropriately."

"Thank you for making time and helping in this area where many struggles to help their child to reach their potential.

Quality Assurance: Educational Psychology within the DAS SES team

1. Feedback form from parents; 0-100 ratings on 5 key questions about our service.

2. Monitor and report on speeds of arranging appointments and finalising reports to parents.

3. Peer discussion about casework to ensure the boundaries of comprehensive high-quality psychological assessment are continually being pushed onwards.

Principles of Psychological Assessment which should inform the development of SES Assessment:

Psychologists should explain and write reports that answer the questions posed by the referral;

They should use the widest possible background information, reports from teachers and others, parents' accounts of development and of the problems they see to "tell a story" of the child that makes sense.

They should clarify both strengths and weaknesses; as far as possible, set positive expectations, but they should avoid false reassurance;

They should separate evidence and conclusions unobtrusively (without giving the appearance of writing a scientific paper); use appendices for details that don't help to tell the story clearly. Explain the evidence, don't try to "blind them with science."

Make recommendations focusing on the problems and weaknesses that have emerged. Avoid a "scattergun" approach to recommendations (i.e. giving many recommendations "just in case" to impress the client). Try to build up evidence about the effectiveness of recommendations.

They should use clear language that is professional but not over technical; ask clients if what we say is understandable. Occasionally they may want a simplified version. It may sometimes be ok to bring yourself into the report, when reporting interactions and impressions and feelings; use first person language for this: rather than "the psychologist found John's appearance disconcerting at first" say, "initially I found John's appearance disconcerting.."

Psychologists should use all the information that is available: use error analysis even though the sample is small, use trial teaching so long as you are careful to say how practical it is to translate into daily practice; use the child's views on how they feel they can learn best; use the experience from previous teaching to infer what approaches work well or not so well with the child.

The psychologists should use the most appropriate and up to date tests available, and try out new tests whenever possible; it is important to base work on the assumption that it's the psychologist not the test that offers the assessment.

The psychologist should aim to provide as comprehensive a picture of the child as possible to answer the referral question(s), and sometimes answer the unspoken questions too.

The psychologists should aim to develop the quality of SES psychological assessments through reading, discussion, listening to clients, teachers and students and receiving feedback on what was valued about the assessment. They should also aim as far as possible to give the student a positive experience of assessment.

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 Programme 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.

Specialised Educational Services
UNLOCKING POTENTIAL

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 Maths, Assessments and Specialist Tutoring and Head of DAS International
Dyslexia Association of Singapore

OVERVIEW OF THE SES SPECIALIST TUTORING PROGRAMME

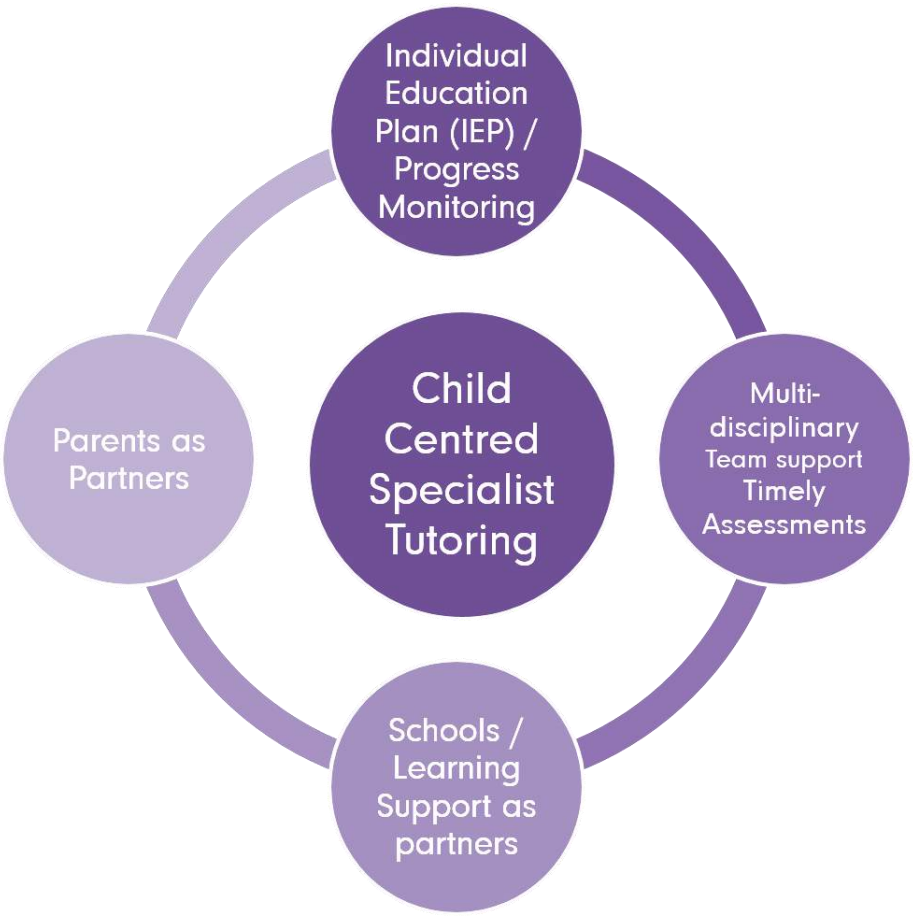
SES Specialist Tutoring is an individualised programme offered by SES (Specialised Education Services) a division of the Dyslexia Association of Singapore.
SES Specialist Tutoring aims to support both the International and Ministry of Education students, under the one to one programme. To complement the annual report, SES Specialist Tutoring sought parent views on the effectiveness and satisfaction of the programme through surveys. At the same time, background information on the demographics and student profile on the services provided by SES Specialist Tutoring was important in the understanding of the range of students supported by Specialist Tutoring who have Specific Learning Differences (SpLD). Case studies of selected students for both Specialist Tutoring and the Bridging Programme aimed to describe and give insights into the programme. Through the Individualised Education Plans and Progress monitoring, for these students, we are able to evaluate the effectiveness of Specialist Tutoring. Recommendation for improving the overall quality and level of service and outreach for our students and stakeholders is ultimately the aim of the annual report.

PROGRAMME 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.

Specialist Tutoring is individually tailored, based on the profile of the child obtained from our multi disciplinary team of educational psychologists, speech and language therapists, and in consultation with parents and educators. In order to further support the learning needs of our more challenged students who may have difficulty entering International schools in Singapore, SES Specialist Tutoring also offers the Bridging programme (now renamed Intensive Specialist Tutoring) which is an intensive remediation programme for children who are experiencing difficulties and gaps in learning.



Adapted from Bronfenbrenners' Ecological Framework (1970)

Programme Description:	Specialist Tutoring
Ages taught:	4 to 18 years
Instruction in:	English in the following areas:

Educational Therapy

- Literacy
- Numeracy
- Writing Skills & Creative Writing
- Curriculum support
- Study skills and Exam preparation

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 (IEP) 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.

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.

PROFILE OF SPECIALIST TEACHERS

The Specialist teachers are experienced in the international, private and public school systems. At the same time the team of specialist teachers also have extensive experience in supporting students with specific learning difficulties. All Specialists Teachers are highly trained in their area of expertise with a formal degree and professional qualifications. 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 (IEP) 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 Individualised 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.

APPROACH TO TEACHING

The teaching approaches in the Specialist Tutoring Literacy Programme are influenced by the DAS remediation programme, and have adopted the "The Essential Literacy Approach (ELA)" as a guide in supporting students particularly those with dyslexia who struggle with reading, spelling, and/or writing, in a multi-lingual Singapore and within the International School community.

The areas which are covered include:

- Phonics Instruction
- Reading Comprehension
- Reading Fluency
- Vocabulary

Originally based, on the principles of the Orton-Gillingham approach, which are language based, cognitive, structured, sequential and cumulative, simultaneously multisensory, diagnostic-prescriptive and emotionally sound. 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.

Manpower: Headcount of Specialist Teachers as at March 2015

1 Full-time Specialist Teacher
3 Sessional Teachers : (Teaching and paid per hour)
2 DAS Academy Senior Educational Therapists & Lecturers
3 DAS Senior Educational Specialists with the Dyslexia Association of Singapore

Distribution of Specialist Tutoring 2014/15	
Learning Centre	**Total No of Students placed for Specialist Tutoring**
Chinatown Point (CTP)	20
Parkway Parade (PWP)	19
Jurong Point (JPT)	3
Rex House (REX)	10
Tampines (TPN)	1
Bishan (BJ8)	2
Total	**55**

SPECIALIST TUTORING STUDENT PROFILE

ENROLMENT FIGURES

SES Specialist Tutoring	March 2013/14	March 2014/15
Average Number of Students	51	55
Number of Tutoring Hours	1964	2096
International School Students	44%	60%
Singaporean MOE Students	56%	40%

The average enrolment in 2014/15, was at 55 students. The composition of students who attended Specialist Tutoring in 2014/15 are as follows: 60% Singaporean (MOE) Students and 40% International School Students.

Although Specialist Tutoring has not increased significantly in terms of student numbers it is important to note that the numbers of tutoring hours has actually gone up year on year. This suggests that parents are signing up for more than 1 hour of Specialist Tutoring and for more than 1 subject (English and Maths) over the previous year. Interestingly, the number of International students attending Specialist Tutoring has increased year on year. This is due to more outreach efforts with the International school community, through direct engagement with the Learning Support staff and as well as direct parent referrals which have increased significantly from 13% to 35%. This indicates word of mouth referrals from satisfied parents have grown.

Source of Referrals for Specialist Tutoring			
April 2013 to March 2014		**April 2014 to March 2015**	
Source of Referrals	**% of No's Referred**	**Source of Referrals**	**% of No's Referred**
Media / Internet	21%	Media / Internet	9%
Teachers	49%	Teachers	30%
Friends, Relatives & Parents	13%	Friends / Relatives/ parents	35%
Awareness Talk	3%	Awareness Talk	1 %
Private Clinics	11%	Private Clinics	5%
Internal Referral DAS	3%	Internal Referral DAS	20%
Total Referrals	**100%**	**Total Referrals**	**100%**

The information on the referrals for Specialist Tutoring suggests that 'Friends, Relatives and Parents' and 'Teachers' are the primary sources who are recommending students for Specialist Tutoring. This is a good trend as compared to 13% for 2013 as this indicates that there is word of mouth through satisfied clients. Internal referrals have also increased to 20% where parents are opting for a one-to-one approach for their child's support after diagnosis provided by the DAS.

Outreach efforts into the International Schools through ongoing meetings and sharing with the heads of department and learning support has helped to initiate referrals for Specialist Tutoring. Singaporeans have also increased in their referrals for Specialist Tutoring. Currently nearly half of the enrolment comes from MOE students. These outreach efforts will continue for 2015/16.

Listing of Schools of students attending Specialist Tutoring	
International Schools	**MOE (Ministry of Education Schools)**
Singapore American School	Anglo Chinese School (ACS) (Barker/ Junior / Primary & Secondary)
Canadian International School (East & West Campus)	Singapore Chinese Girls School (SCGS)
Dulwich College	Henry Park Primary School
Stamford American School	Nanyang Primary School
Tanglin Trust School	St Josephs Institution
United World College (UWCSEA) (East & West Campus)	St Margaret's School
Australian International School	Nan Hua Primary School
Nexus International School	Raffles Girls Primary School
Global Indian School	
Overseas Family School	

SPECIALIST TUTORING: QUALITY ASSURANCE

Since its inception in 2011, Specialist Tutoring has received very positive feedback from parents / teachers and students on the improvement, flexibility, quality of service and enjoyment of ST classes (ST Evaluation report 2013/2014). We have

been quick to respond and adapt to our students. This has created for us a niche in this highly competitive arena. SES employs highly qualified and trained Specialists to support most of the students who are having learning difficulties with:

- Individualised Programme
- Individual Education Plans
- Progress Reports

At the same time, SES Assessments/ 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 from the initial full comprehensive psychological assessment, to Specialist Tutoring.

ANALYSIS OF THE PARENT SURVEY ON SPECIALIST TUTORING 2015

HIGHLIGHTS OF PARENTS' VIEWS

As it's important to keep in touch with parent's views and needs for their children, every year we conduct a parent survey. For the 2014/15 parent survey we had 18/55 parents who responded to the survey (32%). Of them, 89% were very pleased or were pleased, about their child's progress at DAS. This year's survey saw an overall increase of satisfaction on parent's views by 19% as compared to 70% of parents who were very pleased or pleased with the progress of their child in the 2013/14 survey.

This is encouraging as emphasis on attention to progress is one of the main areas of focus for Specialist Tutoring. Only two people were just about or not quite satisfied. The same two parents shared similar views throughout the survey. We will be speaking with the Specialist Teachers to understand the concerns of these two parents better.

All the parents received feedback from their child's specialist teacher, of which 66.7% of respondents felt that they received feedback extremely often or very often and 22.2% moderately 11% slightly often. We would have preferred to see a higher response on teacher feedback to parents. This is however an area to develop.

94% of parents felt that their children enjoyed their Specialist Tutoring classes with one parent (5.6%) answering just about enjoys Specialist Tutoring. At this year's survey 72% of parents reported that SES Specialist Tutoring professionals listened to them. It is encouraging to see that this year's survey 88% of parents said they were happy with their child's IEP (Individual Education Plan) as compared to 80% last year.

This suggests that parents are better engaged with the Specialist Teacher and more informed on the work that will be conducted.

This year we felt that it would interesting to look at the recommendation rate for Specialist Tutoring. We found an increase in satisfaction in this year's survey, with 88% of parents stating that 72% of parents "extremely likely" and "very likely" to recommend others for Specialist Tutoring, 16% "moderately likely" and 2 (the same parents), 11% "slightly unlikely".

Sample responses on open ended questions:

Q9: Do you have any other comments, questions, or concerns?

> *"Very happy that we located this professional service that is suited to our son. If the cost can be lower, then it is not so taxing for the people. I would have use them a few years ago, then the effect would be better Gladys is doing a really good job with Tim"*

With further reference to:

Q8: How likely are you to recommend Specialist Tutoring to others?

> *"...it is too costly else it is a good programme but most parents will be put off by the cost. However, the teacher - Ms Tam Shuyi is an extremely committed teacher with lots of love and passion for her job. She is a real asset for this DAS programme."*

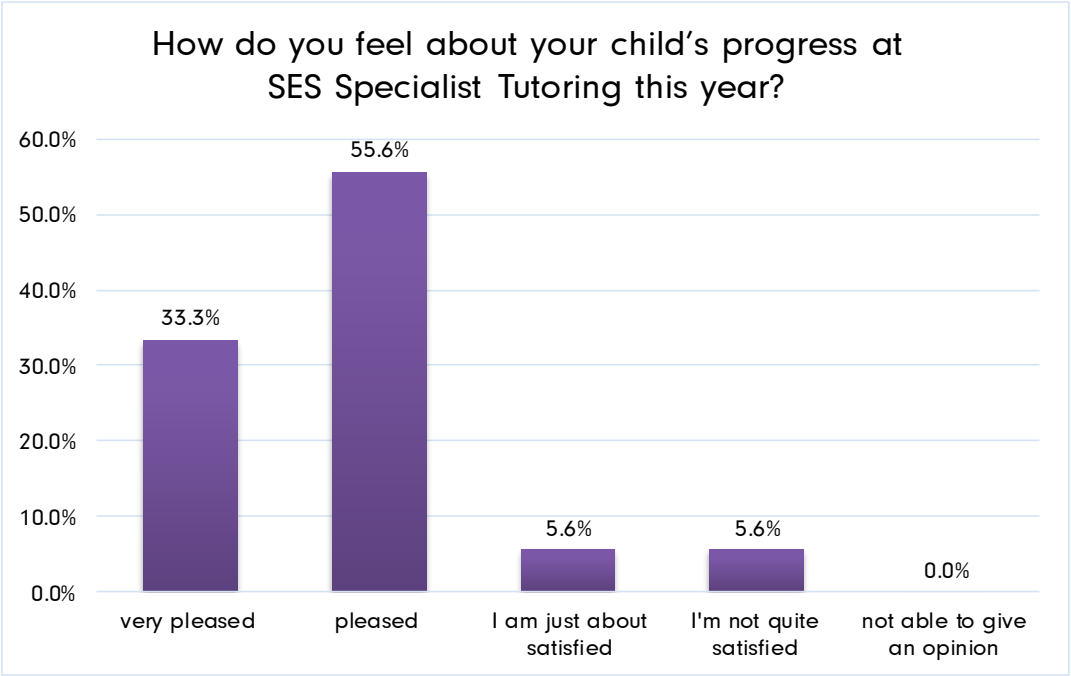
CONCLUSIONS

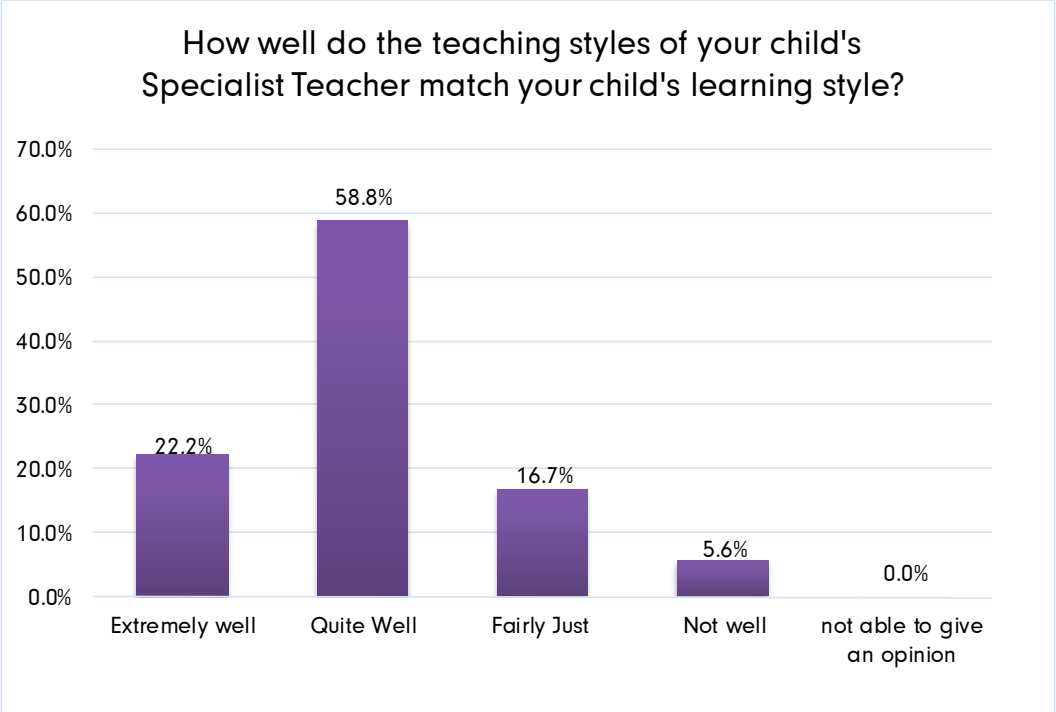
The response rates from these surveys are not high but in line with data from other surveys internationally, but there were very few negative responses or comments. It is also interesting to note that these comments tend to be related to the cost and not the quality of the service. It is therefore, extremely unlikely there were many dissatisfied parents. They could have responded if they wanted to make their views known.

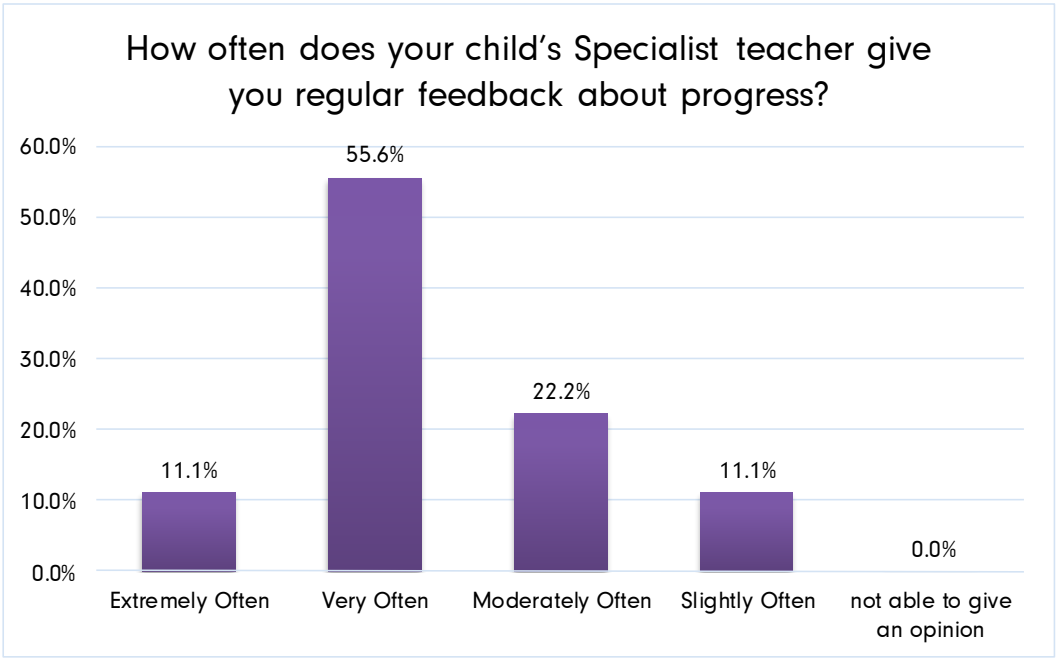
All feedback is important and taken seriously, so as to improve the level of service to our SES Specialist Tutoring clients.

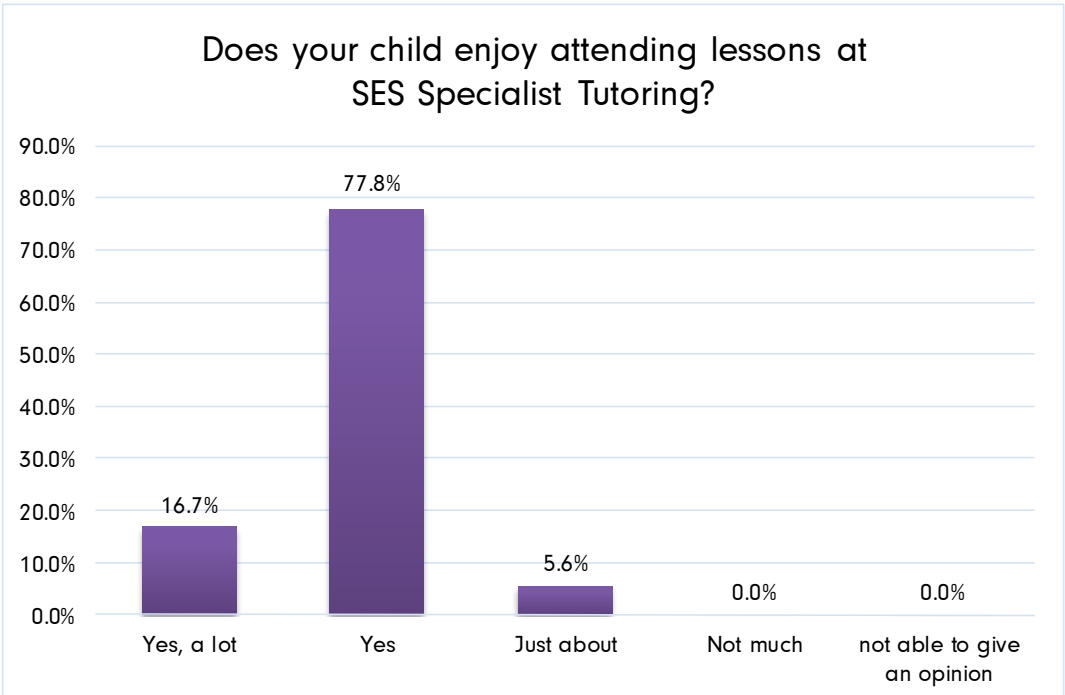
RESULTS OF PARENTS SURVEY

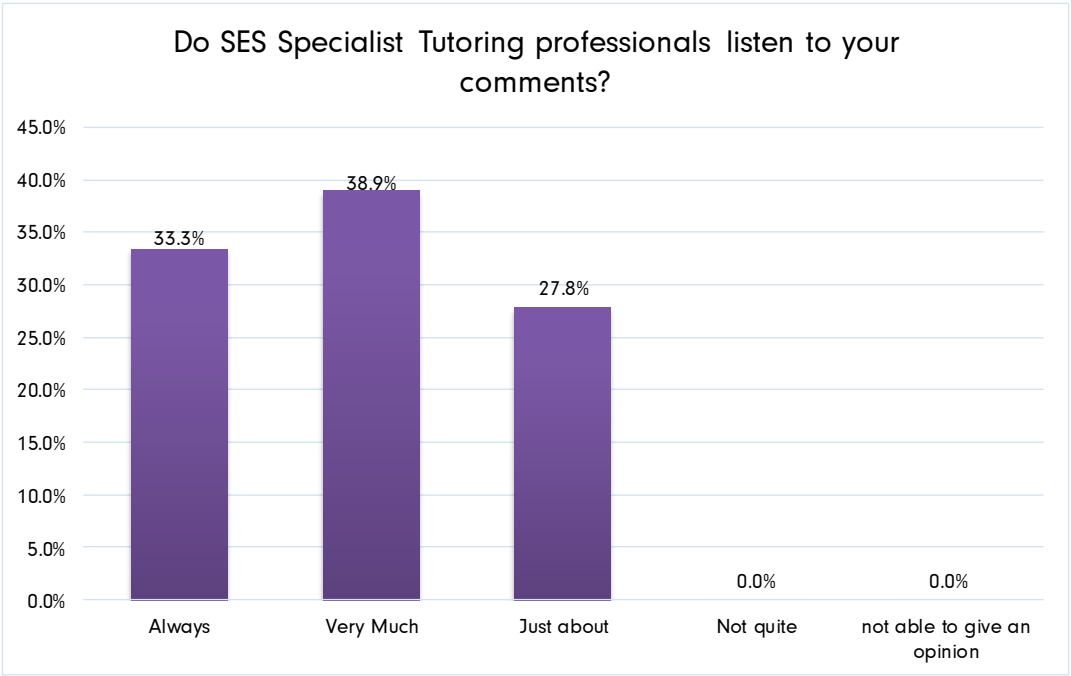
A total 18 participants out of 56 responded to the survey; the responses and results are detailed in the following graphs.

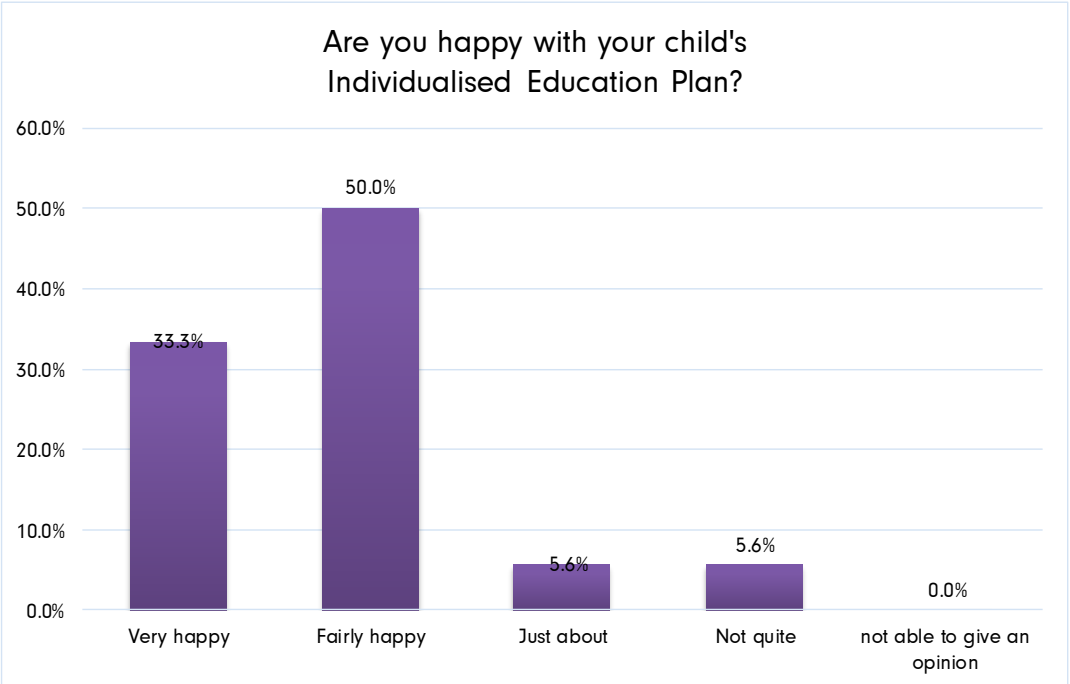

How do you feel about your child's progress at SES Specialist Tutoring this year?
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
33.3%
55.6%
5.6%
5.6%
0.0%
very pleased
pleased
I am just about satisfied
I'm not quite satisfied
not able to give an opinion


How well do the teaching styles of your child's Specialist Teacher match your child's learning style?
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
22.2%
58.8%
16.7%
5.6%
0.0%
Extremely well
Quite Well
Fairly Just
Not well
not able to give an opinion

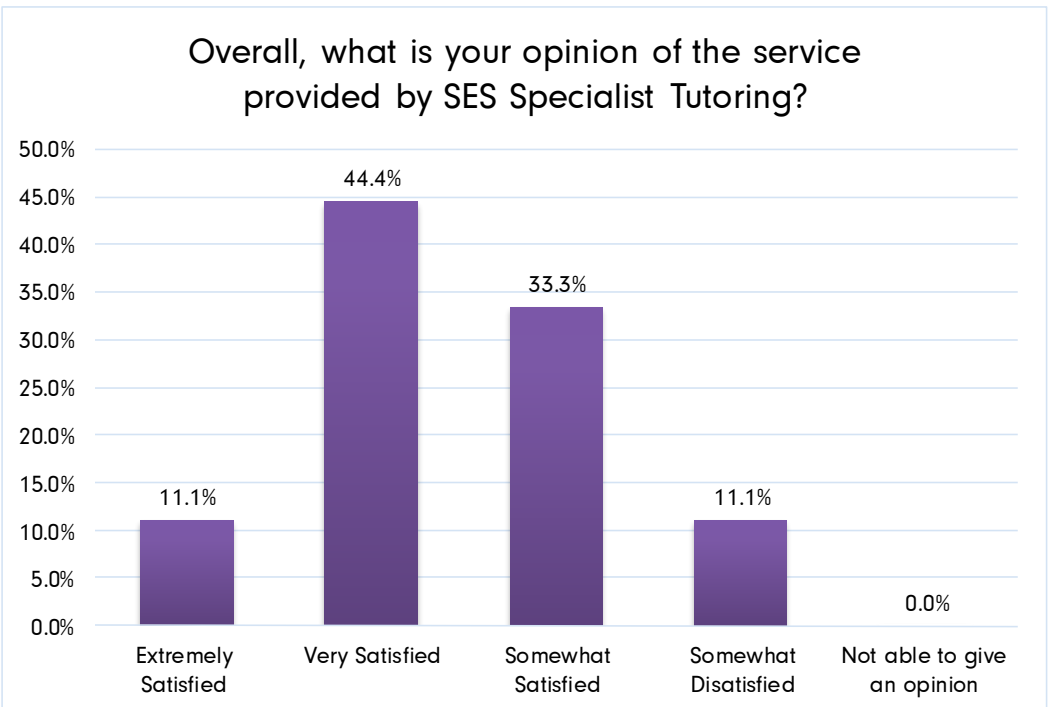

How often does your child's Specialist teacher give you regular feedback about progress?
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
11.1%
55.6%
22.2%
11.1%
0.0%
Extremely Often
Very Often
Moderately Often
Slightly Often
not able to give an opinion


Does your child enjoy attending lessons at SES Specialist Tutoring?
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
16.7%
77.8%
5.6%
0.0%
0.0%
Yes, a lot
Yes
Just about
Not much
not able to give an opinion


Do SES Specialist Tutoring professionals listen to your comments?
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
33.3%
38.9%
27.8%
0.0%
0.0%
Always
Very Much
Just about
Not quite
not able to give an opinion


Are you happy with your child's Individualised Education Plan?
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
33.3%
50.0%
5.6%
5.6%
0.0%
Very happy
Fairly happy
Just about
Not quite
not able to give an opinion


How likely are you to recommend SES Specialist Tutoring to others?
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
27.8%
44.4%
16.7%
11.1%
0.0%
Extremely Likely
Very Likely
Moderately Likely
Slightly Unliekly
Not able to give an opinion


Overall, what is your opinion of the service provided by SES Specialist Tutoring?
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
11.1%
44.4%
33.3%
11.1%
0.0%
Extremely Satisfied
Very Satisfied
Somewhat Satisfied
Somewhat Disatisfied
Not able to give an opinion

PARENTS' POSITIVE VIEWS FOR THEIR CHILD'S SPECIALIST TEACHERS

(Names of the students and parents have been anonymised)

Student: Olson (Grade 5)

Specialist Teacher: Shilpa Madane

Dear Sir/Madame,

Olson was referred to DAS Spring 2013, and has had weekly tutoring sessions with Mrs Shilpa since then. She has been of tremendous help for him first and foremost with reading and writing abilities, but later also with grasping the basic concepts in math. He has a very trusting relationship with her and finds their sessions educational and fun! He has come so far with the help from her and we are very grateful for being assigned her as his tutor. Looking forward to continue working with her for as long as necessary!

If you need further information, please do not hesitate to contact me!

Best regards

Vanessa (Mother of Olson)

Student: Adrianne (Grade 3)

Specialist Teacher: Brenda Horner

Yes –Adrianne will definitely continue with Brenda & we are sad that Brenda has decided to leave.

She has helped us so much & identified areas which needed specialised attention/support which we would never have been able to do so without Brenda's experience, passion & involvement. THANK YOU BRENDA!

Best Regards

Alice (Mother of Adrianne)

Student: John (Grade 2)

Specialist Teacher: Brenda Horner

Dear Ms. Oehlers-Jaen,

Apologies for the very late reply. Just to say that it's been brilliant having Brenda tutoring John, he adores her and he has learnt so much from her patience and firm encouragement. John has developed a lot in the last year, both academically and in his own confidence, and Brenda's been key to this. As parents, we're very happy with the support received so far. We are so sad Brenda is leaving!

Best wishes
Johnson Wilson (John's father)

Student: Jade (Primary 6)

Specialist Teacher: Malini Menon

Malini has worked with Melissa for the past two years on a 1 to 1 basis. Melissa has not only improved academically she has also received tremendous support emotionally. Malini has set Jade tough but achievable I.E.P's and this has broadened Melissa's thinking. Malini has a very nurturing way of teaching and this has been a great asset as Jade 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 Melissa will succeed in her PSLE. I can't thank you enough for getting Melissa to where she is today.

Warm Regards

Janine (Mother of Melissa)

Student: Andreas (Grade 4)

Specialist Teacher: Rajalakshmi Sivarama Krishnan

Two mornings a week my daughter looks forward to seeing Raji Siva at DAS at Chinatown Point for tuition. On these two days my daughter jumps out of bed and is joyfully ready to go. As a matter of fact, I would say my daughter is impatient for these classes. She walks out of them feeling confident in

herself and her abilities to be successful at her school. Boosting her self-esteem is no small feat either since she just cannot seem to catch up to her peers at school.

I felt utter despair for her academic future even though there are countless numbers of successful dyslexics. The despair came from the fact that I did not know how to help her or even where to begin finding help. Now my initial panic has subsided and it has been replaced with hope. If my daughter was lucky enough to find one excellent teacher, Raji, then maybe she will find more along her academic journey.

Joanne Churchill (Mother of Andreas)

SPECIALIST TEACHERS VIEWS ON STUDENTS' PROGRESS

For this year's annual report on Specialist Tutoring I would like to highlight some of the students who have been recommended by our Specialist Teachers on their overall excellent progress they have made under their charge. These students have been selected for the SES 2015 Special Achievement Awards which will be given out the annual DAS Graduation day. An award that is not only based on academic achievement, but also on the students attitude, determination toward their own learning, which their teachers and school have noticed improvement.

SPECIALIST TEACHER: MS BRENDA HORNER

(All the names have been anonymised)

Student: Angela: Primary P1

Angela began with DAS at the end of her K1 year and was really struggling with all areas of literacy and was far behind her peers at school. Since Sept 2013 she has worked with both Ms Raji and extensively with Miss Sue Lyn and lately with me. She has progressed so well that she is now able to read level six ORT books as well as well level I/J of reading a-z with 95% accuracy. Her sight words for reading continue to grow as she works really hard to master new words and apply them to her reading. She is able to learn her spelling words for school spelling and get 10/10 most weeks now for these words. She is able to apply the phonics she is learning to her written work and is getting better at making more accurate phonic choices for words when writing. Angela has grit and determination along with a cheerful and sunny disposition which make her a pleasure to teach as she works really hard to master the literacy skills she is being taught."

Student: Agnes Primary 5

Agnes began working his lesson at DAS in 2012 in his P2 year. He has worked super hard to get his head around problem solving in Mathematics and model drawing in particular. Agnes has become self motivated and self driven when it comes to his mathematics work. He has gone from getting none of his bar model sums correct to getting more than 60% and even as much as 90% of these questions correct now. He has moved gradually from scoring only one or two questions correct to being able to score on average more than 70% of the questions correct now. Agnes has a quick an enquiring mind and a keen sense of humour, both of which make his lesson a fun adventure each week as he grapples with getting his head around new topics as well as reinforcing concepts he has learned. Agnes has grown in patience with himself and is able to work slower and less impulsively, leaving himself time and space to check his work and go back to find and correct his errors.

Student: Anton Grade 5

Anton began at DAS in 2012,in his grade 2 year. He has made great strides in overcoming his reading challenges and is reading more independently now, as he remembers and applies the rules and skills he has learned. He has made the switch from learning to read to reading to learn, and while this is still hard work for him, Anton is determined and conscientious in practicing and applying what he has learned. He is aware of the added demands he faces as he progresses into Grade 5 now, and is working hard at learning and applying the rules he is learning for spelling, so that he can produce work which he can feel proud of and his teachers are proud of too. Anton is able to boast 'rock star' status at school as he captains the cricket team and joined many of them on an international tour representing both his school and Singapore.

SPECIALIST TEACHER: MICHELLE-LYNN YAP

Student: Darlyn

Darlyn is very hardworking and bright. She has been attending Specialist Tutoring since 2013. She recently participated in Asia's Got Talent and showed much perseverance through practice sessions with her dance troupe. Darlyn has managed despite her rigorous schedule to maintain her improve on her comprehension and pass her paper

She may have many other activities, especially being busy with dance but she knows how to give it all her best to catch up and will try her best to focus despite her being tired. She is a fast learner and her retention is pretty good especially when the new concept is attached to interesting bits of information.

Due to her achievements she has also received the DAS Special Achievement Award and was featured in FACETS. She has made excellent progress and if she was still on the MAP programme, she would likely be ready for graduation."Darlyn is a joy to teach"

SPECIALIST TEACHER: SAMUNN ABDUL CAFFOOR

Student: Brandon Secondary 1

Brandon (S1) joined Specialist Tutoring in 2014 in preparation for his PSLE. He had passed his PSLE and entered the express stream. A conscientious pupil Brandon has an enthusiastic and inquiring attitude, and his determination to do well is commendable and grows from strength to strength as his report cards at school reflect his academic performance. Positive feedback from his school teachers share that Bryan is willing to shoulder responsibility and is a team player.

SPECIALIST TEACHER: GLADYS WEE

Student: Trevor (Grade 3)

Trevor started attending Specialist Tutoring in August 2014. He has made significant progress in his Literacy School. Despite coming from a Spanish speaking background Trevor's perseverance in understanding and applying what has been taught in our ST classes has been transferred into his mainstream school at an international school he attends. There has been much improvement noticed at school as well as his attitude towards his learning which has shown in his confidence. Well done Trevor.

THE BRIDGING PROGRAMME

INTRODUCTION

Up till March 2014, DAS International Services offered an intensive remediation programme under The Bridging Programme, for children who were experiencing difficulties in learning, which impact on their ability to independently access a mainstream curriculum. For the purposes of the discussion of the case studies the name Bridging Programme will be used. Since April 2014 since DAS International operations in Singapore have come under the Specialised Educational Services Division (SES) The name Bridging Programme has since been changed to Intensive Specialist Tutoring.

RATIONALE TO THE BRIDGING PROGRAMME

Expatriate families face pressures when trying to secure educational provision for their children in International schools in Singapore, especially where their children are not 'typical' learners and are experiencing difficulties with acquiring literacy or Maths skills. The Bridging Programme, was therefore created and aimed at supporting children who are unable to secure a place in an international school, or are struggling in an international mainstream school.

KEY PURPOSE AND AIMS

The key purpose of the programme is to provide an intensive remediation programme delivered in small class groups and individually by specialist teachers, supported by a multi-disciplinary team where necessary which might include, Specialist Teachers, Occupational Therapists, Speech and Language Therapists and Chartered Educational Psychologists, in order to bridge the learning gap between the child and his or her mainstream peers. The aim is to ensure that the programme can support the development of essential literacy and numeracy skills that are required to access the academic curriculum in a mainstream school. This may enable the child to enter a mainstream school at a later date, with greater confidence, self-esteem and academic competence.

FEATURES OF THE BRIDGING PROGRAMME

- Maximum teacher to child ratio of 1:4.
- At least one individual session per day.
- Curriculum is designed around the needs and levels of the group.
- Ongoing review of IEP and cross curriculum targets.

- Integrated curriculum – consultation from our multi-disciplinary team comprising a Speech and Language Therapist, Chartered Educational Psychologist and Occupational Therapist integrated into their IEP.
- Support from Charted Educational Psychologists in terms of ongoing assessment, IEP planning, teacher mentoring and a report to support your application for exam access arrangements in school
- Access to evidence based assistive technology programmes to support literacy and numeracy development e.g. Nessy Fingers©, Nessy Learning©, WordShark© and NumberShark©

BRIDGING PROGRAMME CASE STUDIES

DAS International Services provided the Bridging Programme under Specialist Tutoring for three students prior to April 2014. 2 students Bradley Rein (Australian) and Caleb Thrush (American) were paired and Johnson Cheng (Malaysian), received the Bridging Programme intervention on his own over a separate time frame.

All the names in the 3 case studies have been anonymised.

CASE STUDY 1

Profile of Student

Name :	**JOHNSON CHENG**
Age:	8 years 3 months
Race:	Chinese

Background information on individual student

Johnson Chen was referred to the DAS International due to his parents' concern for his overall academic performance in school in Malaysia. He had been attending a Chinese medium school, but was unable to keep up with the school's academic demands, perhaps because of dyslexia but also because his understanding and use of Chinese was also very limited.

Bridging Period: Block Delivery

Johnson Cheng commuted weekly from Kuala Lumpur (Malaysia) to DAS International (Singapore) to receive the Block delivery of intensive remediation.

1st Block: 16th September to 26th September 2014

2nd Block: 8th October to 28th October 2014
3rd Block: 19th November to 29th November 2014
4th Block: 16th December to 20th December 2014

Total: 10 Hours of Occupational Therapy
24 hours of Maths
36 hours of Literacy

Weekly Lesson Schedule for Johnson Cheng

Sample of Block Delivery					
Intervention	Monday 21/10	Tuesday 22/10	Wednesday 23/10	Thursday 24/10	Friday 25/10
Occupational Therapy	2.30 pm to 4.00pm		2.30 pm to 3.30pm		No lessons
Maths		9.30 am to 10.30 am		9.30 am to 10.30 am	
Literacy		10.45 am to 11.45am	1.30 pm to 2.30pm	10.45 am to 11.45am	

PROGRESS REPORT FOR JOHNSON CHENG

Educational Psychologist: Dr Tim Bunn

1. The intensive teaching Johnson has received since September would probably have resulted in much faster progress if he had no specific learning difficulties. I think it is now possible to conclude therefore that he is dyslexic, and that a number of associated difficulties may also be slowing his progress in learning: these are probably an attention difficulty with a strong over-active, impulsive aspect, and some degree of fine-motor coordination difficulty. Johnson may also have some problems in understanding non-literal language, which will need more direct teaching than usual (i.e. he can't be relied on to pick up relevant background information and see how it can be used to answer some comprehension questions).

2. Johnson is somewhat avoidant as far as literacy is concerned. But he has accepted the need to attend and work at his lessons at DAS, and has made some encouraging progress. He hasn't yet made enough progress to enable him to feel confident and interested enough to work more independently. He will continue to need a lot of experienced specialist help.

3. He has made better progress in decoding phonically regular words, but his sight vocabulary for whole words remains quite limited. He is now able to use sounds to decode words successfully, across most letters and some letter pairs. He confuses some letters because of their shapes. He has not yet become fast and automatic enough at this to build a larger sight or spelling vocabulary. He copy writes very slowly and forgets to use inter-word spaces.

4. He has made more progress in maths than in literacy, but some aspects of maths (slow addition bonds and weaknesses in problem solving) continue to need attention. I think it is best to see his maths learning difficulties as more a "side-effect" of his dyslexic difficulties than of a specific maths difficulty. He has difficulty remembering bonds and in reasoning about maths concepts; this may be linked to his rapid naming difficulty and to more general language comprehension difficulties. His good progress in computation is encouraging and suggests that with some specialist support he can continue to do better at maths.

5. In general, Johnson is likely to benefit from being taught within a very "dyslexia-friendly" classroom environment, with a substantial amount of 1:1 or very small group help daily, and with support in mainstream lessons where independent reading and writing activities are required of him. He will also need his teachers to manage his relatively short attention and to help him become less impulsive. Some specific help in handwriting is likely to continue to be needed (although this is Johnson's least favourite part of literacy). Although he is likely to become a computer writer in the next few years, writing by hand still has some advantages for learning the "feel" of letters and words at this stage.

Specialist Teacher: Ms Raji Sivaram (10th April 2014)

Johnson has made tremendous improvement from being a non-reader to attempting to read single words and sentences. He has grown in confidence with his literacy and math skills and makes every attempt to read using the strategies that was taught to him. He is now able to spell some sight words and able to spell words using his phonic target words. His number skills in math has improved and he is able to do his math computations with much confidence.

REFLECTION ON THE BRIDGING APPROACH TO JOHNSON CHENG

As Johnson was commuting weekly to Singapore from Kuala Lumpur and parents the programme was designed to focus on his immediate concerns which were Literacy and Numeracy with Occupational Therapy support. The results of Dr Tim Bunn's progress summary as well as the Specialist Teacher's progress reports are positive with significant gains in certain areas. The parents of Johnson had decided to relocate to New Zealand where they felt he could benefit more from a smaller group size and a less academic focused environment.

Email from the parents of Johnson

> *Dear Ms. Raji,*
>
> *Thank you for very much for your progress report. We would also like to express our appreciation for your work with Johnson and your dedication in ensuring that he learns to read and write and his mathematical progress*
>
> *Regards,*
>
> *Mrs.Cheng*

CASE STUDY 2

PROFILE OF STUDENTS: BRADLEY REIN AND CALEB THRUSH

Background information on individual students:

STUDENT 1:	**REIN BRADLEY**
Age:	10 years 2 months.
Race:	Australian
Programme 1:	Individual Specialist Tutoring
Dates:	5th March 2012 –6th April 2012
Programme 2:	DAS International's Bridging Programme
Dates:	9th April 2012 – 22nd June 2012

Reason for Referral for the Bridging Programme

Bradley's family were based in the UK, during which time Bradley attended a private

school for Dyslexic students for 2 years. The family were then posted to Singapore. However due to Bradley's low test scores and severity of dyslexia he was not able to gain acceptance at mainstream International schools in Singapore. The parents were told that the schools will only accept Bradley once he has shown significant improvement in both his Maths and Literacy scores in order to cope with the demands of the International curriculum . The family then sought consultation with DAS International through myself, Anaberta Oehlers-Jaen as Head of DAS International to look into how the Bridging Programme could support Bradley with the aim of finding a place at an International school by the new academic year in August.

PROGRESS REPORT FOR BRADLEY REIN

Educational Psychologist: Dr Louis McCauley

1. Bradley demonstrated that he has been very successful in learning phonological decoding skills and is applying this newly learnt skill with success when required to read words in isolation. However; when required to decode passages of text Bradley tends to decode only half of the word and then guess what the words might be. This is affecting his reading comprehension. Bradley will continue to require a high level of support to continue to progress with his literacy development. He still has gaps in his learning and now that he has developed his phonological decoding skills to an adequate level his programme needs to focus on 'rules;' for example, putting an 'e' onto the end of a word in order to elongate the middle vowel. These rules will help Bradley to develop his spelling skills.

2. Bradley also needs to develop his reading comprehension as this skill will be essential for him to successfully access the school curriculum without a high level of support. He needs to be reminded to slow down when he is reading and to attempt to accurately decode the words rather than guessing.

Student 2:	**CALEB THRUSH**
Age:	10 years 4 months
Race:	American
Programme 1:	Individual Specialist Tutoring
Dates:	5th March 2012 –6th April 2012
Programme 2:	DAS International's Bridging Programme
Dates:	9th April 2012 – 22nd June 2012

Reason for Referral for the Bridging Programme

Caleb's family were posted from America to Singapore. Caleb was initially accepted at an International school at the start of the year. However before the end of the first break the family were told that the school was unable to provide appropriate schooling for Caleb due to the significant gap in his academic work as compared to his peers. He was asked to leave the school. The parents then sought the support from DAS International under the Bridging Programme. The family sought consultation with myself as Head of DAS International Anaberta Oehlers-Jaen, who asked the family to provide the necessary previous psychological reports, school reports and relevant background information including samples of Caleb's work. Again the main aim of joining the Bridging programme for Caleb was to be able to secure a place in August at an International school.

PROGRESS REPORT FOR CALEB THRUSH

Educational Psychologist: Dr Tim Bunn

1. Caleb attended DAS International on a daily individual basis February to April 2012, and then joined the Bridging Programme April to June 2012. He has reverted to individual teaching to maintain his skills and confidence prior to starting school in August 2012.

2. Caleb's teachers begun to see significant changes in his approach to learning and in his performance by around early May 2012. In discussion progress seemed to be occurring across all areas, and the team felt this may be because Caleb was no longer feeling worried or uneasy in a 1:1 situation, and was beginning to believe he could make progress if he listened and tried to do as the teachers asked him. His limited short-term (working) memory was felt to be the greatest obstacle to faster progress – he could still forget quite easily what he had recently learned.

3. I worked with him in some spare time before his lessons towards the end of May, expecting to see encouraging changes in his basic literacy and numeracy skills. The results were a surprise and a disappointment: on both the WRAT4 and WIAT-III tests Caleb seemed to have made very little progress, and where one test showed progress the other did not.

   On reflection and in discussion with the teaching team, it seemed likely that Caleb had come to the session "cold" and had probably not realised that he should use the strategies he had been working on in reading and writing. The exception was his writing in his own words: he had previously written only a

little very hastily and his words had tended to climb up the page as he wrote. But in June 2012 he was able to write more, to write on the lines for a whole page, and to mainly write in sentences with much better (though not perfect) punctuation.

4. It was agreed that Caleb may respond better after a lesson than before, and that reminders of some of the skills he has learned would be appropriate. I saw him again in August and joined his English teacher for the last part of her lesson so that Caleb would realise that the skills he had just practiced were relevant. The results show that steady progress at the expected rate has occurred in reading and spelling. Faster progress has occurred in non-word reading, and this is probably because of the strong emphasis on phonics training from his teachers.

   Some progress has occurred in sentence composition. Caleb's sentences actually look a great deal better but these tests emphasise writing using correct punctuation and grammar, and especially writing sentences using correct conjunctions. Caleb does use "and" but he has not yet learned to use other conjunctions reliably. He does not yet understand the difference between a clause and a complete sentence.

   Finally very significant progress has occurred in Reading Comprehension. Caleb read more slowly and took time to think about words; he made quite a number of decoding errors but he was prepared to re-read more than in January and was thus better able to make sense of the passages. His score has gone from 76 to 90 on this test, using the same (grade 3) passages.

5. Thus although his word level skills have progressed but only at a below average expected rate, his text level skills, in writing and reading, have improved significantly during the 6 months he has been supported by the DAS International. He will continue to need support. It will be important for his new teachers to get to know him and learn how to support him effectively so that he maintains and builds his new-found positive attitudes to learning.

DAS INTERNATIONAL'S INDIVIDUALISED PROJECT BASED CURRICULUM - SCHOOL BRIDGING PROGRAMME

The two students Bradley Rein and Caleb Thrush received both paired and individual remediation

Commencing: 16th April till 22nd June 2012

Core Areas of Therapy

- Literacy
- Maths
- Occupational Therapy
- Speech and Language Therapy

Supporting Programmes

As the students were not attending school and just coming to DAS International for the Bridging Programme, as Head of DAS International and the coordinator of the curriculum, it was important I felt that they had projects and explored their environment, similar to if they were at school. Therefore in addition to the intensive attention on Literacy , Math's, OT, SLT, they had a weekly sessions on Computer Based Assisted Learning, Computerised Literacy Program, Science / Social Science (*PYP: Primary Years Programme), Personalise Learning for Life using Supportive Strategies (* PLUSS) and Emotional Literacy Development.

Summary on Supporting Programmes

*(*Full details of the curriculum can be found in the appendix)*

- Computer Based Assisted Learning
- Computerised Literacy Program
- Science /Social Science (*PYP: Primary Years Programme)
- Personalise Learning for Life using Supportive Strategies (* PLUSS)

Field Trips

There were field trips (parental consent was given and risk factors taken into account) as well as simple cooking based on the science project. At the end of the 10 weeks the boys showcased the project that they have been working on. Please refer to the appendix for the parental consent and risk form.

Emotional Literacy Development

This was important to include as part of secondary curriculum as the social / emotional aspect of their learning was critical as it was noted on the psychological reports, feedback from parents and previous school reports that improving their attitude toward learning and self-esteem was important. I had included a specific element on Emotional Literacy Development in addition to the other components as a time to explore, understand, share and express ideas and feelings through Literacy texts. It is to be noted that the boys had become "best friends" which saw them seeing each other and hanging out over weekends and each other's homes. Our Specialist teachers and professionals also noted that the boys supported each other whilst they were performing paired tasks or project work. They had spoken positive words of encouragement to each other at various points when one found a task challenging, to not give up.

Sample of SES Bridging Programme Time table for Caleb Thrush and Bradley Rein

<table>
<tr><th colspan="6">SCHOOL BRIDGING PROGRAMME (STEP 1)</th></tr>
<tr><th>Time</th><th>Monday
16/4 & 23/4</th><th>Tuesday
18/4 & 24/4</th><th>Wednesday
19/4 & 25/4</th><th>Thursday
20/4 & 26/4</th><th>Friday
20/4 & *27/4</th></tr>
<tr><td rowspan="2">9.00
to
10.00am</td><td rowspan="2">SLT
Paired</td><td>OT
Caleb</td><td>Literacy
Bradley</td><td>Maths
Caleb</td><td>OT
Caleb</td></tr>
<tr><td>SLT
Bradley</td><td>Literacy
Caleb</td><td>Maths
Bradley</td><td>Literacy
Bradley</td></tr>
<tr><td>15 min</td><td colspan="5">Break</td></tr>
<tr><td rowspan="2">10.15 to
11.15am</td><td rowspan="2">Assisted
Technology
Based
Learning
Paired</td><td>OT
Bradley</td><td>Maths
Caleb</td><td rowspan="2">Assisted
Technology
Learning
Paired</td><td>OT
Bradley</td></tr>
<tr><td>SLT
Caleb</td><td>Maths
Bradley</td><td>Literacy
Caleb</td></tr>
<tr><td>15 min</td><td colspan="5">Break</td></tr>
<tr><td>11.30 to
12.30pm</td><td>NO
LESSON</td><td>PYP Science /
Social
Science
11.30 to 1pm
Paired</td><td>DAS
Computerised
Literacy
Program
Paired</td><td>DAS
Computerised
Literacy
Program
Paired</td><td>Life Skills
PLUSS
11.30 to 1pm
Paired</td></tr>
</table>

REFLECTION ON THE BRIDGING APPROACH TO BRADLEY AND CALEB

It was coincidental that both boys Bradley and Caleb had similar experience and were both unable to secure place in the mainstream International schools in Singapore. Both students also displayed in varying degrees, similar attention, behavioural issues, low self-esteem, dyspraxia, speech articulation and task avoidance issues in addition to their primary learning difficulty which was Dyslexia.

As we were in a position to design a programme based on the social/emotional and learning needs of the students, hence the Bridging Programme for these two students evolved out of similar short term and long term goals and targets.

As they had various learning difficulties I had decided to adopt a multi-disciplinary approach in the delivery of the Bridging Programme for Bradley and Caleb. The professionals involved were:

2 Educational Psychologists one for each student
2 Educational Therapists for both Literacy and Maths
1 Speech and Language Therapist
1 Occupational Therapist
1 External teacher for life skills, science, project work external outings.
1 Specialist Teacher for Assisted Technology

INDIVIDUAL EDUCATION PLAN (IEP)

Once input was received through the various professionals and combined sharing of the student needs the Individual Education Plan was set in place. As the Bridging Programme involved multi-disciplinary professionals, the individual targets within their Education Plan for each student had to take into consideration the overall Education Plan that relied on understanding and knowing each other's targets for the students.

MONITORING OF PROGRESS AND THE INDIVIDUAL EDUCATION PLAN

As the progress for both students was important to monitor closely and targets set needed to be adjusted accordingly weekly meetings were held to review the work conducted the previous week, as well as behaviour and attitudes of the students discussed with suggestions on managing and motivating the students. It was noted that the attitudes of the students started to improve and was noticed that the boys were starting to be engaged more with the lessons and started to understand that the Specialists were there to teach, encourage and take them to reach their potential through bridging the gaps in their learning. It was also noted that the

relationship between the Specialist and the students had developed into one of a good rapport, and the boys were taking shorter breaks in-between.

PARENT INVOLVEMENT

As part of providing a holistic approach and engaging the parents in the student's learning, both Bradley's and Caleb's parents received feedback after each class, along with instruction on what the parents might be able to reinforce at home.

CASE STUDIES SUMMARY

In summary, we are pleased that the Bridging Programme managed to effectively support these three students featured in the case studies who would otherwise have been unable to access mainstream school due to their low literacy and numeracy scores along with accompanying co morbidities. We will continue to aim to support such students bridge the gap to their learning.

SPECIALIST TUTORING FOR POST-17 ADULTS

Reflections by Albert Lee, Senior Educational Therapist

Specialist Tutoring started to receive requests from the post-17 group of young adults, which comprised a mixed group of clients who were referred after undergoing adult assessments under SES Educational psychologists Assessments. Over the period 2014/15, there were 17 young Adults who were assessed. Reassessments for exam accommodation were the main reasons cited for the assessments. Further information can be found on the SES Assessment annual report for 2014.

Profile of Learners

There are generally of two major categories of clients.

- Students in Further Education (FE) and in Higher Education (HE)
- Working Adults

Students in Further Education (FE) like junior colleges, IB schools, polytechnics and Higher Education (HE) from universities attended Specialist Tutoring as they needed help with their studies. The focus is on the process of learning and not the content of the curriculum. The support area includes time management, project work communication, examination paper preparation and study skills strategies. What

they hope to achieve through Specialist Tutoring are varied. It varies from intangible areas like confidence building, independent work as well as the measurable academic competency. Assistive Technology like text-to-speech and electronic mind mapping software have also been exposed to them, while taking into account their learning style, in order for them to find a more effective mean of learning.

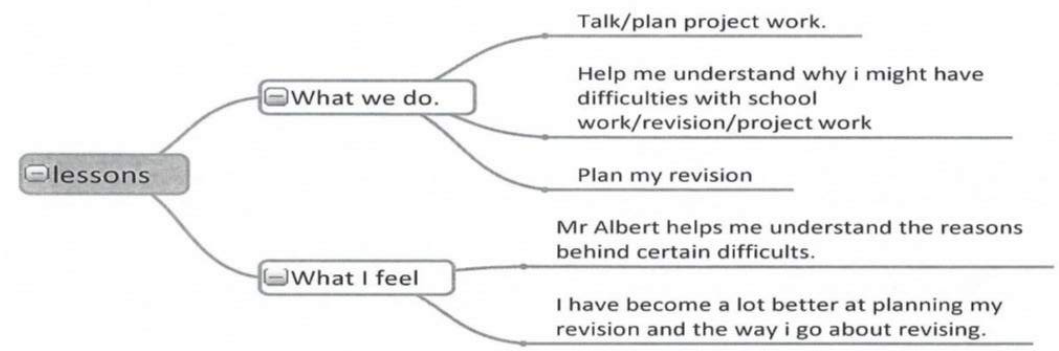
The support provided is usually over 10 to 20 weekly sessions. As it is tailor-made just for the specific learner, the learning objectives are set after the first session of interview and co-created with them. Being young adults, they are motivated to improve themselves and appreciate their role in developing the learning programme. Progress is monitored through direct casual discussion with the client before session commencement or through email or message checks. Generally, feedback has been very positive from both clients and their caregivers as recognitions of what is gained from the Specialist Tutoring programme. Some of the benefits may not be immediately apparent as it could be of a longer term nature where the client will need more time to see the difference. However, I am glad to say that this holistic approach in supporting these young adults has proven to be useful to my students to a large extent.

As for the second group, the working adults, they are those who engaged Specialist Tutoring services to get some help in their specific work nature as well as general life enhancement. The support is specific to their work nature and helping them to reach their individual potential. The support ranges from developing a business plan to finding strategies to remember medical terms that have caused confusion. Technology that are explored include simply utilising the existing functions of the client's devices like IPad and smart phone. Many a time, the full potential of the devices are not fully met.

The number of sessions are fewer, ranging from 5 to 10 bi-weekly sessions. Being working adults who pay for their own sessions, they are very motivated to work on improving themselves. Correspondences between sessions are positive as it is of the nature of discussions as adults. Progress is monitored through direct casual discussion with the client before session commencement or through email or message checks. Feedback from the adult clients has also been favourable as the short sessions gave them some take away pointers that they can work on in their work and social life. This is a totally new form of support that provides adults with learning difficulties a different avenue to help them reach their full potential.

Feedback from Post-17 learners

Interestingly the Individual Education Plan (IEP) was discussed and mapped out by the students themselves. This is to enable them to take responsibility for their own learning and outcomes which they hope to achieve. Please refer to the individual IEP mind maps on their reflection.



FUTURE DEVELOPMENTS FOR SPECIALIST TUTORING

Since the formation of DAS International Services in 2011, Specialist Tutoring and Assessments through publicity and marketing has been aimed at the expatriate clientele in Singapore and overseas. However since the reorganisation and incorporation of DAS International Specialist Tutoring and Assessments, under the Specialised Services Division (SES), there have been a process of decentralisation of the administrative for Specialist Tutoring as being similar to the other services under the SES division within the DAS wherein the Learning Centres manage the placement and collection of fees. This has had an impact on the parents who were used to all services under one central administration for Specialist Tutoring. This is an area that is being monitored closely, as Specialist Tutoring has always aimed to provide parents with a close partnership and sharing of information.

The production of new publicity materials and information sharing with both internal and external clients, to reflect the new branding of Specialist tutoring under SES has commenced with a new website for SES as a division which incorporates the individual programmes and services.

As the service adapts and changes however, 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.

Trends noticed in 2014 / 15 for Specialist Tutoring includes:

- Young Adults requesting Specialist Tutoring (short term in preparation for exams or projects)

- Students with more severe learning difficulties apart from Literacy have started to come through.

RECOMMENDATIONS

- 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. A training pathway for Specialist Teachers will be mapped out that will aim to enhance their delivery skills.

- A Professional Certificate in Individualised Education Programme (IEP) Planning for an SpLD Learner will be offered in March 2016 by the DAS Academy in consultation with the Programme Director Anaberta Oehlers on the content which would be important for Specialist Tutors.

- A Professional Certificate in Supporting Further Education (FE) and Higher Education (HE) learners with SpLD will be delivered in April 2016, by the DAS Academy in consultation with the Programme Director Anaberta Oehlers-Jaen on the content which would be relevant to the target group of learners.

- Further refinement in monitoring students' progress should be considered.

- Quality Assurance of the delivery through video sessions and feedback.

- E-Portfolio of Specialist Teachers will be in place for 2016.

ACKNOWLEDGEMENTS

I would to acknowledge the following colleagues who have contributed to the Specialist Tutoring Report.

Dr. Tim Bunn: Consulting Educational Psychologist
Providing the follow up assessment and summary write for the students in the case studies.
Mr Albert Lim: Senior Educational Therapist
Providing the write up section on the Post 17 whom he has been supporting.
Specialist Teachers: Brenda Horner, Ms Tam Shuyi , Rajalakshmi Sivarama Senior Educational Therapists, Mr Samunn Abdul Caffoor, Michelle-Lynn Yap, Puvaneswari Kurusamy, Nicole Chua, and Educational Therapists Ms Gladys Wee, Malini Menon & Shilpa Madane, for all the dedication to your students on Specialist tutoring.

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 Programme 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.

APPENDIX 1 : SAMPLES OF PROGRESS REPORTS & INDIVIDUAL EDUCATION PLANS

GROUP IEP TARGETS

Name: REIN, BRADLEY D.O.B. 30th March 2002

GROUP IEP OBJECTIVE

Professionals Involved: Specialist Teachers,. Educational Psychologist, Occupational Therapist, Speech & Language Therapist

Long Term Aims		Review Date
Occupational Therapy	To increase the speed of writing	
Speech & Language Therapy	Uses strategies to support his word finding difficulties	
Maths	To be able to tell the time	
Literacy	To structure his composition using story frames	
IT	To use AT as an alternative means to writing	
Behaviour	To improve confidence in his own ability. To improve awareness to surroundings to help others.	

	Termly IEP Targets	Date Review
1	To reduce the pressure of the pencil	
2.	To identify a story has a beginning, middle and an end	
3.	To respond to 'Can you show me? ' when struggling with expressive language	
4.	To understand that he can break down a task to manageable parts and say e.g. " I can do it'	
5.	To Use 'Text to Speech' for 10 sentences and use spell check independently	
6.	To connect science knowledge obtained to real life application.	
7.	To develop skills and confidence to create and complete projects.	

* I independent S supported E Emerging

STUDENT LITERACY PROGRESS REPORT (2012)

Name: Rein, Bradley
Date of Birth: 30th March 2002
Date of Sessions: 18th April- 22nd June 2012

Bradley is a cheerful and friendly boy with great imagination and creativity. He displays tremendous enthusiasm once a literacy activity catches his interest. He enjoys depicting his creativeness by way of drawing and colouring. Bradley gets motivated and involved when successful in a task and gets excited to work on similar tasks. He gets disappointed and needs a lot of encouragement to keep going when an activity gets difficult. With continued working and remediation, he is sure to show greater progress in his literacy goals. It has been a pleasure to work with Bradley and I look forward to teaching him during the next term. I wish him all the best in his new school.

SHORT TERM TARGETS REVIEW

Write A to Z / a to z sequentially
Bradley can independently sequence letters in the alphabetical order. However, there's confusion in writing the letters: j, q, F, L, M, P, R, Y

Phonemic blends/substitutions/ deletions (CVC to CCVCC words) & Rhyming Words
Bradley can handle the blending activity (visual, auditory, kinaesthetic, tactile) with ease.
He is able to give and write rhyming words and use them in verbal sentences and write phrases all by himself.

Initial & Final Consonant Blends
We have been working on blending activities all through the term. Bradley is very comfortable in handling his auditory, visual & verbal blending tasks; he is able to write words/phrases without support and form written sentences with intermittent support. When eliciting sounds '/f/ & /th/', Bradley interchanges one for the other in visual/auditory drills and written tasks at word level.

Consonant Diagraphs/ Short Vowels/ Consonant Letter Combinations/ Spelling Rules
Bradley has achieved success in learning consonant diagraphs & short vowels; he can use them at word/ sentence level independently. He hesitates to write lengthy sentences and needs a lot of praise to stay focussed on task. Bradley requires

support in consonant letter combinations (-ng, -nk) & spelling rules (floss, /ck/, /tch). He can read and spell words when attentive, but refuses to write when disinterested.

Suffix & Syllables
Bradley has been continuously working on plurals (-s) and can independently handle reading/writing tasks at sentence level. He has a good understanding on syllables and has been exposed to closed syllable words. During reading, he can decode multisyllabic words of familiar phonological sounds and words from the same family.

DOLCH: High Frequency Words
Bradley can read 'Pre-primer, Primer and First' list of words, except 'ate, take'. He is able to apply them to reading texts. He can spell words from Pre-primer list and apply them in writing tasks, in isolation & context.

Oxford Reading Tree Books (Stage 5), Identify 'Beginning, Middle, End' of a story, Comprehensions

On an average, Bradley can read ORT – stage 5 at 75 words per minute (2 corrections) and retell the synopsis, identifying 'beginning, middle & end' of the story. He has been working on picture sequencing/writing, cloze, recount, narrative text types & comprehension. He comprehends age-appropriate text types with support on multisyllabic words and completes activities on cloze comprehensions. He writes a few sentences with a lot of scaffolding and supporting words for spelling.

He has also been exposed to 'Audio Books' wherein he hears a story in parts and answers questions related to the storyline and characters. Bradley needs to work on writing a 6 sentence grammatically correct narrative. This will be one of his main targets during the next term.

Recommendations & Future Goals

Bradley will benefit from a weekly literacy support to work on his long term aims:

- To develop phonological skills and word attack skills to support reading & comprehension
- To develop spelling skills in phonic words, high frequency words & multisyllabic words
- To structure and write grammatically correct short narratives using story frames & graphic organisers

Sailatha Venkatram
Specialist Tutor

STUDENT PROGRESS REPORT (2012)

Name:	Rein Bradley	Educational Level:	Year 4
Date of Birth:	30 March 2002	Date of Sessions:	16.4.12 – 14.6.12

This brief report will take you through the progress of Bradley through his exposure to the use of Assistive Technology (AT) in his learning and areas to work on in the future.

The use of Mind mapping software programmes
The use of Mind Genius and MindMap mind mapping software programmes helped him to plan out his ideas to help him organise his writing better. His weak short-term memory and working memory also results in him not being able to recall information he has just learned. Mind mapping provides an alternative way for him to retain the information more quickly before he forgets it.

The use of Text-To-Speech (TTS) software programmes:
The use of ClaroRead and Natural Readers TTS software programmes assisted him in listening to text on websites and listen to his own typed out work. This allows him to demonstrate comprehension ability through his auditory skill instead of simply using his visual reading ability.

He is able to accomplish five sentences, about 50 words, using TTS. This can take up to twenty minutes. This is accomplished within three months. This differs from the previous target set for Bradley of 10 sentences, with independent use of spell checker to assist him. Bradley displayed displeasure after a few weeks using the TTS as he became frustrated with the spelling errors he has made. Instead of recognise the spelling errors and work on getting them right, he chose to give up on the activity. He has to be constantly encouraged to provide his own correction instead of depending on answers to be provided.

Use of Microsoft Office:
Bradley has been exposed to the use of a Weekly Planner template on MS Word to better understand time management. This trains him to be aware of his utilisation of time to provide a better sense of control.
He has also used the 'What I have learned & To-Do List' template on MS Word to reflect on what he has learned in his previous class by the other therapists to reinforce his learning across the bridging programme. He also learned to project what that needs to be done, including homework etc.

Use of Alpha Smart mobile device:
Whenever Bradley is alone in class, we have the opportunity to use Alpha Smart

3000 as a portable tool for brain storming of ideas on the go. This gives him the opportunity to recognise that learning does not have to be restricted to a classroom environment.

Behavioural Management:
Bradley was originally very compliant and engaged during the pair AT learning sessions. However, he started to display behavioural issues as the weeks progressed. This coincided with the period of time when his ear infection was affecting him. The physical discomfort could have increased his irritability and affected his ability to stay on task.

He favours the use of a visual timer during his 15-mins break time as well as his AT lesson time. It provides him with the visual indication of the time left for an activity to provide him with control over the situation.

His imaginative mind can be tapped into to allow him to channel his stories into written work. This may provide him with a mean to positively engage him with verbal stories.

Recommendations for Bradley:

- Bradley will benefit from a structured learning environment at home. This includes instructions that are consistently implemented that can be followed through in school environment.

- It will be beneficial for Bradley if the intervention at school is pitched at his level so that he can experience success and not be resistant to learning.

- Instructions on computer have to be put into smaller steps to ensure he comprehends 'step 1' before he moves on to 'step 2'.

- Breathing exercise and some Brain Gym activity to energise him may be good for him during between lessons.

Lee Albert
Senior Educational Therapist

STUDENT (MATH PROGRESS REPORT)
TERM 1(30TH APRIL—22ND JUNE) (2012)

Name: Rein Bradley Date of Birth: 30th March 2002

OVERALL REVIEW:

Bradley has made progress in his numeracy skills. He has achieved all the short term targets that were set for him. When I began the sessions I thought that he had a good sense of numbers and that his concepts as regards to basic number computations were good. After a few sessions I found that he was able to do the tasks as long as the pattern of questioning was similar. A slight variation in the method of questioning would frustrate him and he would give up. He would display anger and frustration at not being able to complete the task and was unwilling to go any further. He would be hard on himself if he made a mistake.

With encouragement and reassurance, that it was OK to make a mistake and that he would not be penalised for it, he is now willing to at least try. With the help of a lot of manipulatives, he has understood concepts better and is able to apply them to computations more effectively.

Great effort Bradley. Keep it up!!

SKILLS REVIEW

1. **Sequencing of numbers:**
   Bradley is able to sequence numbers from 1-100 with accuracy

2. **Arranging numbers in ascending and descending order.**
   Bradley is able to arrange random numbers in ascending and descending order and is familiar with the jargon.

3. **Greater than and less than:**
   He has learnt the different terms for greater than and less than and uses the >/< signs accurately.

4. **Place Value:**
   It seemed that Bradley had worked with manipulatives (base 10 tiles) to get an understanding of place values. Although Bradley had a basic understanding of place values, he was showing inconsistencies when asked to apply them to questions and addition problems. He knew how to solve addition problems with 'regrouping' but was doing it by rote, without

understanding how he got the answer. As a result, a lot of the times, his answers would be incorrect .

We have worked a lot on this concept and tackled it from various angles. He displays a reasonably good understanding now, and knows how and why 'carrying forward' or 'regrouping' is done.

My target was to complete addition with regrouping up to '100'. But he is now able to solve addition problems with regrouping up to' 9999' fairly accurately. He no longer relies on the place value template for this, and does it on ruled paper, aligning his numbers with accuracy.

5. **Number names:**
Bradley is able to spell numbers from 'One to twelve'. He still requires practise with 'four' and 'five'.

6. **Reading the clock:**
He is able to read the clock by the hour with confidence. We are currently working on the 'half hour'. He needs practise in alignment of the 'hour' hand.

His next IEP will focus on subtraction and simple word problems in addition and subtraction.

Specialist Tutor
Malini Menon
Date: 17th June 2012

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

BACKGROUND OF PROGRAMME

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

In our observation, dyslexia does not only affect a child's literacy ability, but their emotional well-being as well. Recognising this, the SDA Programme aims to use drama as a powerful tool for self-development and give dyslexic students the opportunity to improve their self-esteem through our structured drama classes focusing on language development, communication skills and personal development

PROGRAMME DESCRIPTION

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

OUR OBJECTIVES

- Identifying their inner strengths and hidden talents to boost self-esteem
- Developing literacy skills
- Develop effective communication and presentation skills
- Enhancing students' listening and concentration skill

DRAMA FOR PERSONAL GROWTH

We recognise that drama is a powerful tool for building self-confidence, which in turn can lead to a more positive self-concept for our students. They are then able to express themselves, their inner feelings and demonstrate their talents in an entertaining and artistic way without inhibition.

Some of the activities in our drama classes help our students to enunciate words clearly and effectively convey their intended message. For example, activities such as role-play provide stimulation in learning conversational interaction. This is a language-based activity where learners are given the freedom to express themselves freely with the use of language while incorporating imaginative skills.

On top of that, some of our students are shy and do not have the confidence to use English in daily interaction for fear of being ridiculed. At the programme, we provide students with the platform to be able to safely express themselves whilst at the same time develop their language skills in a fun, creative and engaging manner.

Listening and concentration skills are vital for an actor. Classroom lessons targeting these areas range from role plays to stage performances. In these, students are required to understand the fundamentals of stage directions, character dialogues, music and light cues.

PERSONAL DEVELOPMENT

We create opportunities for students to discover their strengths and weaknesses, organise their thoughts, attitudes and their feelings in the light of sharing their experiences with their peers. Furthermore, they also learn to work together, to cooperate, to contribute, and to listen to and accept the viewpoints and contributions of others.

CURRICULUM DEVELOPMENT

The curriculum and lesson methodologies are influenced by the Multiple Intelligence (MI) Theory and Orton-Gillingham (OG) approach. By combining both approaches, we are able to identify and harness on a child's strengths while delivering the lesson in a manner friendly for dyslexics.

When the programme was first launched, we worked on a curriculum that had three stages; namely, Foundation, Intermediate and Advanced.

- Young Artiste (Foundation 20 sessions)
- Growing Artiste (Intermediate 20 sessions)
- Theatre Artiste (Advanced 20 sessions)

THE REVISED NEW CURRICULUM

Moving forward, in 2014, the team revised the curriculum into a modular format. We planned a 1 year programme that will consist of 40 lessons. (Please see below the revised, new curriculum)

Rationale for this change

- Limitations to student entry:

  Previously, students are not able to enter the programme unless we have sufficient numbers to start a class at the foundation level. This change will allow us to accept new students with the existing group and regroup them according to their age groups.

- Insufficient manpower:

  It is challenging to start new classes at the Foundational level as existing teachers are engaged teaching their existing classes and needed to see them through even though class sizes may be small.

CURRICULUM DEVELOPMENT PLANS FOR THE YEAR 2015

SPEECH AND DRAMA ARTS & LITERACY THROUGH DRAMA CURRICULUM

With a whole range of highly interactive and enriching modules, the SDA team plans to develop a new curriculum - "Literacy Through Drama" to meet the changing needs of our students. A description of the various modules are as follows:

SPEECH AND DRAMA ARTS CURRICULUM -

DESCRIPTION OF THE 4 MODULES

Module 1:

Exploring Voice and Emotions through Coral Reading—Idioms and Phrases

In this module, students explore the use of idioms and phrases in the English language. Through drama tools such as dialogues, tableaux, story crafting and reader's theatre, students learn to make meaning and apply idioms and phrases in appropriate areas of language usage.

Module 2:

Dramatic Storytelling—Comprehension

Comprehension implies understanding a given article. In this module, through the exploration of various stimuli such as posters, articles, poems and story passages, students learn the art of constructing thought processes to read between the lines and make meaning.

Module 3:

Role Play and Improvisation—Vocabulary and Oral Communication

In language usage, choosing the right word and using the right tense play an integral part. In this module, students actively learn the nuances of using vocabulary and grammar effectively through drama games and activities.

Module 4:

Playbuilding Towards Performance—Scripting a Play

The last module for this year, is a culmination of all the literacy skills acquired through the year. Students apply their language skills to create and deliver an original story through forms of drama.

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

LITERACY THROUGH DRAMA

DESCRIPTION OF THE 4 MODULES

Module 1:

Let Idioms and Phrases do the Talking—Idioms and Phrases

In this module, students explore the use of idioms and phrases in the English language. Through drama tools such as dialogues, tableaux, story crafting and reader's theatre, students learn to make meaning and apply idioms and phrases in appropriate areas of language usage.

Module 2:

Between the Lines—Comprehension

Comprehension implies understanding a given article. In this module, through the exploration of various stimuli such as posters, articles, poems and story passages, students learn the art of constructing thought processes to read between the lines and make meaning.

Module 3:

Tricks of the Trade—Vocabulary and Oral Communication

In language usage, choosing the right word and using the right tense play an integral part. In this module, students actively learn the nuances of using vocabulary and grammar effectively through drama games and activities.

Module 4:

Get the Show on the Road—Scripting a Play

The last module for this year, is a culmination of all the literacy skills acquired through the year. Students apply their language skills to create and deliver an original story through forms of drama.

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

EVALUATING STUDENTS' PROGRESS

The SDA team has planned to use 2 different methods to evaluate the students.

First Method - overall skills learnt in the specific module

The method is by evaluating the students after each drama component is covered Students will be evaluated on the last day of the specific lesson/ topics skills. Students will be evaluated on overall skills learnt in the specific level.

For example:

- Tableaux - on 3rd lesson,
- Miming - on 2nd lesson,
- Voice – on 3rd lesson... etc.

A progress report will be given to their parents upon completion of each module.

Students' Evaluation method:

- The use of a rubrics to evaluate for skills taught by the 10th lesson (1 module)
- Observations by teachers during class for lesson 1 - 5 and the final performance.
- Student Evaluation Form (Annex 1)
- How is the score tabulated? Rubrics (Annex 2)
- Finally scores are tabulated for individual students (Annex 3)

Second Method - Southampton Emotional Literacy Scale (SELS) Survey

Being a programme which promises to heighten self-esteem and self-confidence level of its students, SDA needs a tool to measure the efficacy of its objectives. The Southampton Emotional Literacy Scale was selected in Term 4 2014 to be the tool to measure our students' emotional literacy level. There is an increased awareness to discover students' strengths and weaknesses in the area of emotional literacy.

SELS touches two components;

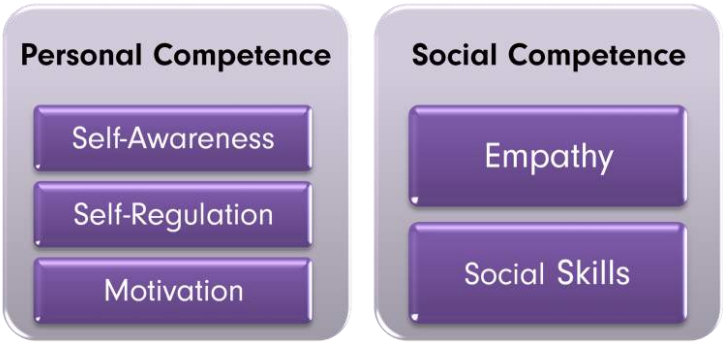
i) personal competence and
ii) social competence.

There are 3 types of checklists designed to assess the emotional literacy of our students;

i) parent's checklist,
ii) student's checklist and
iii) teacher's checklist.

The checklists contain statements that seeks the views of the student, parents or care-giver and teacher on the emotional literacy of the student.

Table 1: Components covered in SELS



In Term 4 2014, the SDA team approached 27 parents of our students to participate in SELS but we were not able to carry out the survey with those affected students. As there were few responses and some of the students were almost completing the Speech and Drama Programme, the SDA team decided to collect data from our fresh students in Term 1 2015.

Moving forward, we strive to provide a programme that will improve the social-emotional competencies and the literacy skills of our SDA students. The SDA team is committed towards the continuous improvement of our specialised Drama programme catering to the specific needs of students with dyslexia.

ENROLMENT

As of end 2014, there are a total of 28 students enrolled on the programme with an estimate of 5 of them receiving bursary support from the DAS.

With expansion in mind, the SDA team aims to increase its total intake to 40 students in the coming year.

New Initiatives to increase the student enrolment - Trial Classes

To Increase the enrolment the SDA Team conducted trial lessons for prospective students in Bedok, Bishan and Jurong Point Learning Centres. The response from the parents was good. There was a total of 22 sign ups and 18 attendees for the trial lessons. The team intend to continue with this new initiative in the coming year.

TEACHERS TRAINING

To meet the increasing demand for the new year, 5 trainee drama teachers completed a Professional Certification Course (PCC) in Speech and Drama Arts in 2014. With the addition of our new teachers, we are now able to open new classes at other centres like Bedok Learning Centre and also utilise their knowledge and training experiences during drama holiday workshops.

About The Training Programme

The PCC was designed for the EDTs who wish to do their dual-specialisation in Speech and Drama Arts. The course provided the knowledge and skills required to teach Speech and Drama lessons.

Course Duration:

Total of 20 hours over 7 Fridays from 1 Aug 2014 to 23 Sept 2014 (there were breaks in between)

At the end of the course, there was a summative assessment lead to awarding competent learner with a PCC Certificate.

The assessment was based on:

1) Teaching Practicum - 25 minutes
2) Submission of a 1-hour lesson Plan
3) 500 words Written Journal

To further develop our SDA instructors professional qualification in the field, 2 Educational Therapists completed their Diploma in Educational Studies (Speech and Drama) in 2014.

In July 2014, Ms Aishwariyah (Asha), a Drama and Theatre Educator with 10 years experience in the field joined the team as a consultant. She has done extensive work with many cultural, arts and media organisations locally and overseas Asha is currently working towards a Master of Education (Drama) at Nanyang Technological University (NTU). She has since written lesson plans for 2 modules, planned and executed the above-mentioned PCC for the new SDA teachers In addition, she also started looking into creating a resource pack for programme.

WIDENING OUR REACH

In term 2, 3 and 4 of 2014, we conducted three "Things I can do to Provide Support for my child (TIPS)" talk at our Tampines, Bishan and Rex Learning Centres. The topic covered "Effective Ways to Read with Your Child to Encourage Literacy Learning" was targeted for the parents of Primary School going children. The interactive and activity based talk was conducted for 90 minutes, ending with the question and answer session. The objectives and outline of the talk is as follows:

Objectives

To enable parents of preschool and primary school going children to use effective storytelling and drama tools at home to address literacy development by improving oral language, reading and comprehension.

Outline

- Discovering storytelling through drama as a powerful tool for literacy development
- Techniques to encourage children to appreciate good children's literature
- Learning how to select stories to interest and empower children
- Learning how to craft and tell stories using Drama as tool
- Encouraging children to re-tell stories
- Learning dramatic storytelling techniques

We have also opened up the SDA programme at our Jurong Point Learning Centre in term 3, 2014, with the intention of catering to our students residing in the west.

SDA Newsletter

The team came up with a new Initiative to reach out to our DAS parents and Internal Staff - The SDA Newsletter.

CLOSING THE YEAR 2014

Closing the year with a bang, SDA Staged an end of Year Performance with a total of 28 SDA students for 'Embrace Dyslexia' on the 20th of November 2014, at the NTUC Auditorium. The performance titled "Castaway" was the original story created by our students in Term 3 through improvisation and story building activities. The performance was then scripted, devised and directed by the SDA team.

After many hours of rehearsal, planning and preparation, our students made the SDA team proud with their wonderful performance. The experience provided our SDA students with a platform to prove their ability and showcase their unique talents.

SDA students then restaged the performance for an intimate audience of family and friends as a term end showcase on 22nd November 2014.

Finally, to conclude the year, the SDA team conducted a 10 hour Drama Holiday Workshop at Bishan Learning Centre, for a total of 18 students from both lower primary and upper primary levels from 24th to 27th November 2014.

FEEDBACK FROM 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 program, they experienced difficulties in expressing themselves, managing their emotions and working together as a team. However, over the terms with our active learning approach in classrooms have 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!"

FEEDBACK FROM PARENTS - TESTIMONIALS

"*Andie is more confident now. It is fun for the children."*

"Andrew is more animated at home. Great way to build his self-esteem and confidence."

"My children are always excited to come for the Speech & Drama Arts class. Good Job Teachers!"

"My son is happy and enthusiastic to attend every drama lesson. He is gaining confidence".

"The programme has improved her memory and attention span".

"My son can express himself better now".

"Saturday is the day he will wake up early all by himself and look forward to the drama class"

"Her self-confidence is improving".

" He is more expressive now. It shows that the programme has positive improvement in my child".

" Alan wants to go for the drama class even if he is sleepy because he is enthusiastic about the programme"
" Cheryl is now 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' …so wonderful!!

"Andy looks forward to the next term of FUN"

"We can see confidence level has improved compared to last time"

"My son, 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."

"The stage is Awesome but today's performance is Super Awesome!

"The children have practiced very hard; Despites of the challenges they have, they managed to perform very well with confidence! Love it! "

"The teachers' seriousness, passion, patience and dedication are admirable too."

So proud of all of you! Salute! Thank you for your hard work and guidance to the children. "

"Interestingly, since he started the Drama program, Daniel's school teacher noticed his positive change in his attitude; he has become more cheerful and he is happy to learn. Daniel has since improved extensively in his overall result this year and he will be receiving the Edusave Good Progress Award this year. Thank you very much for all the encouragements and positive notes flown to Daniel."

"In 2013 he had the opportunity to act in a Tamil drama aired in the local television creating awareness about dyslexia supported by DAS. Last year he acted in a drama presented at the Embrace Dyslexia Event. These opportunities provided by DAS have definitely boosted his self-esteem and discover his talents."

FUTURE DEVELOPMENT - SDA

1) Building new curriculum for new 'Literacy Through Drama' programme

The 'Literacy Through Drama' programme is an extension of Speech and Drama programme. This curriculum infuses the learning of the English language such as idioms and phrases, comprehension, vocabulary and writing with drama instruction.

Our Drama Instructors are not only trained to facilitate high energy drama classes but also professionally trained to provide literacy remediation to children with dyslexia. With the knowledge and experience of teaching literacy to dyslexic children, our teachers are actively involved in the building of this new curriculum. Lessons in each module are thought out carefully to meet the diverse group of

students who learn differently.

Objectives:

- to equip students with essential literacy skills
- to expand students' vocabulary bank
- to discover concrete meaning of words or phrases

It is very important not to confuse the Speech and Drama programme with Literacy Through Drama programme. Although both programmes involve the learning of the English language through Drama, the former focuses on drama and theatre skills, reading fluency, building self-confidence and self discovery, while the latter emphasises on the usage of the language using Drama activities as a tool.

2) Expanding SDA & LTD programme to more DAS centres.

Currently, SDA & LTD classes are offered in these centres; Bishan and Jurong Point Learning centres. In the year 2015, we will be offering it in Bedok Learning Centre too.

3) Continuing with SELS survey and collation of data

From parents' feedback, it is clear that SDA programme does bring positive change in our students. That is not sufficient to evaluate how well our students fare in emotional literacy. The team will continue to collect data from parents, students and Drama Instructors. With the data collected, the team hope it would provide purposeful information for us to support, encourage and intervene, where appropriate, in the social and emotional development of our students.

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.

SPEECH AND DRAMA ARTS PROGRAMME

Specialised Educational Services
UNLOCKING POTENTIAL

The aim of the SES Speech and Drama Arts 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 and is designed to help:

- Freedom of expression
- Use of imagination and creativity
- Communication skills
- Role-playing and stage performances
- Learn to understand, interpret and process script
- Exercise their working memory and processing speed

The students will also learn the fundamentals of stage directions, character dialogues, music and light cues. Class sizes are kept to a maximum of 10 students and are conducted once a week in a 1.5 hour session.

DYSLEXIA ASSOCIATION DAS OF SINGAPORE

Find out more:
www.ses.org.sg
6444 5700

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.

Specialised Educational Services (SES) is a division of the Dyslexia Association of Singapore.

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 and Joyce Tan
Senior Speech and Language Therapist
Dyslexia Association of Singapore

SES SPEECH AND LANGUAGE THERAPIST TEAM

As of December 2014, there were five Speech and Language Therapists (SLTs) working at the Dyslexia Association of Singapore (DAS). Ms. Elizabeth Lim joined the team in July 2014 and obtained her conditional registration in early January 2015. She has commenced her practice as a newly qualified Speech and Language Therapist under supervision as stipulated by the Allied Health Professions Council (AHPC) in year 2015.

SPEECH AND LANGUAGE ASSESSMENT

In year 2014, the SLT team had completed a total of thirty six speech and language assessments of which thirty assessments were funded by the Tote Board.

STUDENTS' PROGRESS EVALUATION

This table shows the number of students who had attended speech and language therapy in year 2014.

Term 1	Term 2	Term 3	Term 4
79	94	98	92

25 students between 7-16 years old were randomly selected for progress evaluation. All of the students were funded by the Tote Board funded recipients. They attended one-hour individual weekly speech and language therapy from term 1 to term 4.

At the beginning of each term, an Individualised Intervention Plan (IIP) consisting of intervention goals (IIP goals) was tailored for each student base on the results obtained from standardised assessments and/or informal observations. Some examples of IIP goals are as follows:

i. The child will be able to understand and follow two parts simple spoken directions with 80% accuracy in therapy setting

ii. The child will be able to formulate semantically and grammatically acceptable sentences using connector 'and' in a structured activity with 80% accuracy in therapy setting

iii. The child will be able to say the regular singular or plural form of pictured nouns with 80% accuracy in therapy setting

Their progress was measured at the end of each term according to the percentage of IIP goals they had achieved at the end of the term. Based on each student's progress and achievement, these IIP goals would be modified accordingly to facilitate learning of new speech and language skills before the new school term started. The table below shows the percentage of students who had achieved a certain percentage of IIP goals at the end of each term. These students had attended speech-language therapy from term 1 to term 4.

% of students achieving	100% of IIP goals	90%-99% of IIP goals	80%-89% of IIP goals	70%-79% of IIP goals	Below 70% of IIP goals	Total
Term 1	44	8	12	16	20	100
Term 2	24	12	20	28	16	100
Term 3	52	4	32	8	4	100
Term 4	8	13	54	21	4	100

The table shows that more than half of the students achieved 80% or higher of the IIP goals set in each term. There is a drop in the number of students who achieved below 70% of IIP goals over the four terms.

4% of the students achieved below 70% of IIP goals in term 3 and 4 due to unexpected slow progress as a result of missing a few therapy sessions. These students did not attend therapy because of medical reason or school.

The SLTs were not only concerned about the students' speech and language skills but also their emotional well-being. At the beginning of term 1, all students were asked to complete a pre intervention assessment of their self-esteem. The same assessment was done at the end of term 4. Findings as follows:

At the end of term 4,

	Higher rating	Same rating	Lower rating	Total
% of students showed	32	24	44	100

More than half of the students rated their self-esteem as either higher or the same at post intervention. On the other hand, after attending speech-language therapy, some students were more aware of their shortcomings in their communication and language skills. This may have contributed to a lower self-rating of self-esteem post intervention.

WORKSHOPS AND TRAINING EVALUATION

Apart from the regular assessment and therapy, DAS Speech and Language Therapists were also actively involved in providing training and raising public awareness. Training was provided to both DAS staff as well as to the public.

FOR STUDENTS—SOCIAL SKILLS WORKSHOPS

Looking at the success of the first run of social skills workshop in 2013, the Speech and Language Therapy team decided to conduct the workshop again in 2014. A total of four workshops were conducted. Much effort was put in to publicise the workshops by the workshop team. Flyers were placed on the notice boards of the

learning centres as well as published in the Parents' Newsletter and DAS quarterly magazine, FACETS. The parents and Educational Therapists were also notified via email. The details of the workshops were summarised in the following table:

Speech and Language Workshops 2014		
Date	10-13 June 2014	1-4 December 2014
Location	Parkway Parade Learning Centre	Jurong Point Learning Centre
No of participants	12	12
No of participants who received bursary	1	5
DAS SLTs	Ms. Choo Ling Fong Ms. Sharon Reutens	Ms. Choo Ling Fong Ms. Ho Shuet Lian

Contents of workshop

Participants learnt about social skills that are important for him or her to become more confident in holding a conversation, being a good friend and a good team player, as well as how to manage anger and bullying. The children were engaged through interactive discussions, specially planned games and reflective activities appropriate for their age group.

Summary worksheets were completed by the participants during each session to reinforce concepts learned. Parents were also kept informed of what was covered during the sessions, their child's progress and opportunities for improvement through a comprehensive feedback letter at the close of the workshop.

Participant Profiles

Majority of the participants joined the workshop with a fair sense of social skills knowledge. However, they needed practice and some guidance to apply their social skills knowledge appropriately in social situations. The students particularly enjoyed using the SMART board for hands-on activities.

Students' feedback

- They enjoyed the games and the videos.
- They were happy to receive prizes and individualised certificates highlighting their specific strength (e.g., Brave in speaking up, Helpful friend) at the end of the workshop.

Parents' Feedback

- Parents appreciated the summary of their child's performance because they knew what areas to follow up on after the workshop.
- One parent was glad that the facilitators also reinforced good sitting (not listed as goals of workshop) as her daughter had difficulties doing so (would fidget or slouch in seat and distract her friends).
- One parent revealed that her daughter is usually anxious in social situations, especially with new people and settings; but was very glad to see her responding positively in the workshop.

FOR DAS STAFF

Mentoring Insets (Overview on Speech and Language Therapy)

The Mentoring Inset on an Overview on Speech Language Therapy was held on 12 August 2014 at Rex House.

Ms. Sharon Reutens, Speech and Language Therapist shared with 10 new Educational Therapists on Speech and Language development, difficulties that children with speech and language impairment encounter and characteristics of language impairment as compared to children with English as a second language. She also covered administrative procedures on how to make referrals to Speech and Language Therapy and the availability of bursary for eligible children.

All 10 participants agreed that they would recommend a repeat of this mentoring to new staff. Participants appreciated the "referral procedures, warning signs or symptoms of speech/language impairments that should be of concern" and "The sharing of sample work from students in the SLT class". All surveyed participants rated the lecturer as "good" or "very good" across aspects such as knowledge on subject matter, clear communication of ideas and concepts and rapport with participants.

Sharon shared an example of a misunderstanding that happened in a conversation as the child has difficulty discriminating similar sounding words (e.g. fall v's fault):

Teacher:	Why are you late for class?
Child:	The train (MRT) very slow lah. It said a train **fall** from the railway.
Teacher:	You mean the MRT fell off the track?
Child's classmate:	How can it be? You mean the MRT fell off the railway and hit the cars on the road?
Teacher:	This must be a very serious accident.
Child:	I don't know lah!
Teacher:	Do you mean that the announcement said that there was a train fault?
Child:	Yah, I think is a train **fault.**

An important piece of feedback given by the participants who had already attended the Certificate in Speech & Language Impairment Course prior to the mentoring inset, is that, though it was a good review of what was covered in greater detail previously, more emphasis could have been placed on in-house procedures, co-morbidities and practical strategies.

FOR OTHER PROFESSIONALS AND PARENTS

Certificate in Specific Learning Differences (SpLD)

The Certificate in Specific Learning Differences (SpLD) is a Professional Certificate Course run by DAS Academy. It comprises 15-hours of in-class lectures, a 4-hour teaching practicum, an individual assessment of live observation and a teaching portfolio.

On 27 November 2014, Ms. Sharon Reutens, Speech and Language Therapist, conducted the module on "Working with the child with speech and language

difficulties", covering basic intervention strategies to support students with common speech and language issues. Participants were introduced to an understanding of the child's needs at various levels, classroom accommodations and management and using assistive technology. This was followed by a case study to apply the knowledge learnt.

This inaugural run of the course was attended by 2 participants. Both participants gave favourable feedback on the content of the course, knowledge of all trainers, their ability to communicate ideas and concepts, respond to questions and rapport with participants. One participant commented that the course "helped me to think out-of-box to manage children".

Certificate in Understanding Speech and Language Impairment

The Certificate in Understanding Speech and Language Impairment is a certificate course run by DAS Academy. It is a 12-hour course conducted over two Saturdays and covers topics such as assessment, intervention for communication difficulties and classroom strategies.

In 2014, Ms. Sharon Reutens and Ms. Choo Ling Fong, Speech and Language Therapists, conducted two runs in May/June (26 participants) and November/ December (13 participants) as joint lecturers. The lecture slides were revamped to streamline the content and to include more videos and examples that would be applicable to participants, and the revision of the assignment to a case study instead of a journal review provided participants an opportunity to apply the knowledge learnt and receive constructive feedback from the lecturers.

Based on the November/December run, all 13 participants agreed that they would recommend this course to others. Comments from participants included "Highly educational, engaging and fun", "superbly informative". 90% of surveyed participants rated the lecturers as "good" or "very good" across aspects such as knowledge on subject matter, clear communication of ideas and concepts and rapport with participants. One participant remarked, "I never knew the existence of speech and language impairment until I attended this course. Thankful for Ling Fong and Sharon for being patient and understanding. I really appreciate that you have explained my wrong answer clearly diplomatically and without putting me or anyone down".

Due to the positive collaboration and heartening feedback received in 2014, the DAS Speech and Language Therapy team has been invited by the DAS Academy to be lecturers again in subsequent two runs of this course in 2015 (July/October 2015).

PRESCHOOL SEMINAR 2014

The Preschool Seminar 2014 was held on 5 July 2014, at the Health Promotion Board auditorium from 9:30a.m. to 1:00p.m. The panel of DAS speakers showcased a multi-disciplinary team of preschool educational therapists, speech-language therapists, an educational psychologist and an occupational therapist. The event was met with an exceptional reception as it was sold out with 200 registrants.

Ms. Jessica Drake, Senior Speech and Language Therapist, shared the developmental milestones of a preschooler, with a focus on communication skills, as the first speaker. Ms. Ling Fong, Speech and Language Therapist, concluded the seminar with a talk on speech-language therapy, covering the different aspects of communication, communication difficulties that may be encountered by children, and how speech-language therapy can help.

Of the 112 participants who gave feedback on the seminar, 99% felt that they would recommend this seminar to someone else. 96% of surveyed participants rated Jessica "excellent" or "good" as a speaker. 98% rated Ling Fong as "excellent" or "good". Post-seminar, there were several members of the audience who came forward with questions for Jessica and Ling Fong, suggesting a keen interest in finding out more about speech-language therapy. Two referrals for preschool speec and -language therapy at the DAS were also received after the seminar.

Ms Choo Ling Fong is scheduled to deliver another sharing session on “It takes a village to raise a child: Developing a child’s speech & language abilities” during the Preschool Seminar in April 2015.

Talk for Allied Educators (AED)

The AED from North 1 cluster extended an invitation to the DAS Speech and Language Therapists to conduct a talk for their professional development. A professional sharing on reading fluency and comprehension strategies was conducted by Ms. Joyce Tan, Senior Speech and Language Therapist, on 1 August 2014. Feedback from the AEDs was very positive. They felt that the strategies provided were useful, stating the information shared as "clear, insightful and practical". They were encouraged to attend the DAS workshops run by the DAS Academy to further their knowledge.

Lecture on Speech and Language Impairment for MA SEN Students

Once again, the DAS Academy invited the DAS SLTs to share their expertise on Speech and Language Impairment for the students in the Master of Arts in Special

Educational Needs (MA SEN) programme. On 11 September 2014, Ms. Joyce Tan, senior Speech and Language Therapist, conducted a 2-hour lecture, covering typical speech and language development and characteristics of speech and language impairment with some local examples provided. Based on the evaluation form, all the participants rated the speaker with either very good or good on knowledge of the subject matter, practicality and relevance of contents, communication of ideas and responsiveness to questions.

Signposts for Building Better Behaviour

The Signposts programme was conducted at the DAS Academy in October-November 2014. Ms. Ho Shuet Lian, Senior Speech and Language Therapist attended the Signposts Facilitator Training at the Social Service Institute in July-August 2014 so that she is equipped with the skills and knowledge to conduct the in-house Signposts programme. Senior Educational Therapist, Miss Anita Pereira and Shuet Lian worked hand-in-hand to impart behavioural management skills to parents and carers. Sixteen participants were full of enthusiasm to learn and share their experiences and challenges in managing the difficult behaviours of their children. The sessions were interactive and interesting with plenty of discussion amongst the participants and the Signposts facilitators.

The five-week course was a fruitful and rewarding experience for both the facilitators and the learners. It was a successful interdepartmental collaboration between the Educational Therapist team and the Speech and Language Therapist team. In view of the benefits reaped from interdepartmental collaboration, Shuet Lian is scheduled to conduct another run of Signposts programme together with the assistant director, Ms. Lois Lim from the MOE-Aided DAS Literacy Programme (Admissions) in April/May 2015.

Speech Therapy Week - Raising Public Awareness

Speech-Language Therapists all around Singapore celebrate the Speech Therapy Week in the first week of November annually. During this week, various forms of activities to raise the public awareness of what this profession entails were held. This year, The Cerebral Palsy Alliance Singapore (CPAS) invited DAS Speech and Language Therapists to present a talk at a public forum on 1 November 2014. The theme was "Communicate: Join the Conversation", which highlighted the main focus of every SLT's work.

A series of awareness talks by experts in their respective fields were scheduled for the day. Joyce Tan, Senior Speech and Language Therapist, shared on early language and development. The talk was well-received, with a few parents and

teachers coming forward to ask about the programmes available at the DAS.

PARENT TESTIMONIAL

1. How was J like before attending SLT at the DAS?

J could not pronounce the long words and remember what she has heard in the conversation. She didn't understand the meaning of the sentence, especially the content didn't relate to the things she has experienced. She was very poor in grammar and could not form a sentence completely by herself. She lost her attention in every 3-5 minutes.

2. What do I like about her SLT class?

J likes the lessons which conducted by Joyce very much. She likes Joyce draw and wrote things on the paper when Joyce talked to her nicely. She likes the games at end of the class. She likes everything in SLT class.

3. How has J changed over the years with SLT intervention in terms of:

i) Communication?

J can form a simple sentence with the right grammar now. She can speak more confidently and willing to express herself by language instead of hard actions. She can follow the game rules better than before. She can pay attention on the interesting thing for a long time.

ii) School work?

J still has the gaps to catch up with the school work. But she tried harder and shows more interest in school work than before. Her English Oral exam is getting better score.

4. How have you benefited from the SLT class observation as parents?

As a mother, I learnt how patient I should be in order to get J to think and study. Also the Technics, e.g. using more pictures and body language to get J's attention and interests on the things. Need to remind myself to take slower path with J instead of rushing.

CONCLUSION

It has been a fruitful and fulfilling year for the SLT team. The team will continue to explore ways to measure the effectiveness and efficiency of the SLT intervention. They also see the importance to educate parents, teachers and other professionals to raise awareness on speech and language impairment as well as the role of oral language in literacy development. The team places a huge emphasis on the quality of their work and will continue to strive to improve their clinical skills through attending relevant training courses and consulting the experts on speech and language issues.

ACKNOWLEDGEMENTS

Special thanks to Ms. Sharon Sandra Reutens and Ms. Choo Ling Fong for their contributions.

This report is written by Ms. Joyce Tan and Ms. Ho Shuet Lian

ABOUT THE AUTHORS

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 newly qualified 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.

JOYCE TAN

Senior Specialist Speech and Language Therapist

Joyce was a Senior Speech-Language Therapist at the Dyslexia Association of Singapore. She has a sincere desire to help children and adolescents communicate more effectively. She believes in a collaborative and holistic approach to maximise the growth and development of each individual she works with. Her warm, patient and compassionate personality allows her sessions to be carried out in a lively and comfortable environment.

Her clinical experience includes providing assessment and therapy intervention to children and adolescents with specific learning differences, language impairment, speech disorders and fluency disorders from the age of three to 16 years. Her work involves intervention in an individual as well as group settings. Her previous experience as a Behavioural Therapist complements her current skills to handle difficult behaviour well.

Apart from her work with the children, Joyce also values her work with the parents and the other professionals. She hasprovided supervision to university SLT undergraduates as well as newly qualified speech-language therapists. In addition, she delivers talks and workshops to parents, teachers and other academic professionals. Joyce is a member of SHAS and is registered under AHPC

APPENDIX 1 — INDIVIDUALISED INTERVENTION PLAN (IIP)

DYSLEXIA ASSOCIATION OF SINGAPORE
SPEECH AND LANGUAGE THERAPY
Individual Therapy - Toteboard Funded

INDIVIDUAL INTERVENTION PLAN (IIP)

Student's name:	Student's BC no:
Speech and Language Therapist in-charge:	Learning Centre:
Frequency of intervention:	Period of intervention:
Educational level in school:	Home language:
Date of plan:	

Long Term Goal	**Status at the end of funding (1 year)**
(Student) will be able to effectively use his speech and language skills to access the MOE-aided Literacy Programme at DAS	

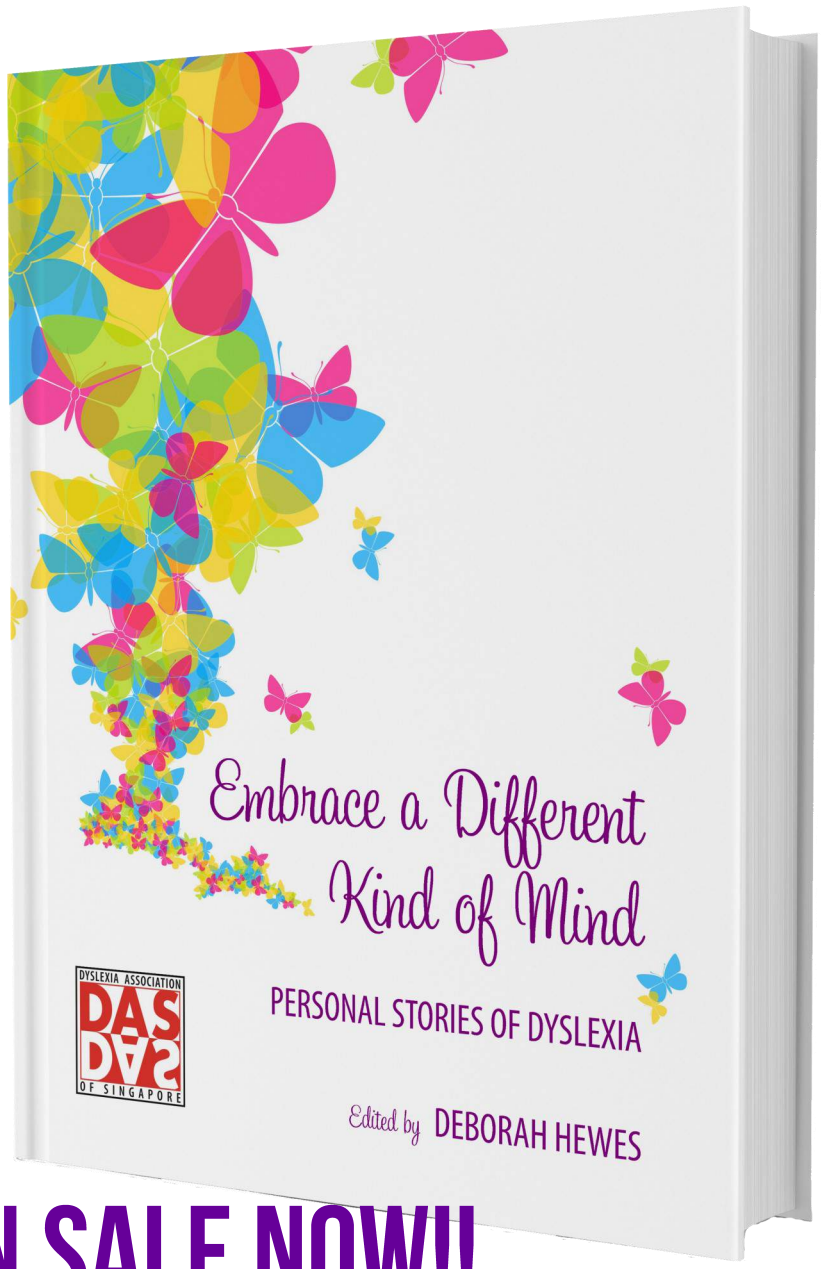
IIP Goals	**Term 1**
Receptive Language	
Expressive Language	
Grammar	
Vocabulary	

Remarks (e.g., reasons for early discharge)

APPENDIX 2 — SELF-ESTEEM ASSESSMENT

Name:			Date:	
BC No.:			Term:	
	 Yes	 Some-times	 No	Points
1. I am happy				
2. I am useless at lots of things				
3. I am a good friend				
4. I am lonely				
5. I am good at some things				
6. People listen to me				
7. People like me				
8. I am unhappy being me				
9. I feel bad about myself				
10. I have lots of good points				
			Total	

Adapted from Talkabout Relationship—Building Self Esteem and Relationship skills by Alex Kelly pg 34



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EMBRACE DYSLEXIA

Embrace Dyslexia Commitment

Embrace Dyslexia intends to raise awareness of dyslexia in the Singaporean community with an aim to have as many people understand both the strengths and challenges that individuals with dyslexia face everyday.

Raise awareness for Embrace Dyslexia by:
- Sharing information about dyslexia in your workplace
- Inviting DAS to conduct Awareness Talks
- Including information about dyslexia in the staff handbook

Explore opportunities to work with DAS
- Workplace Giving or Volunteering Initiatives
- Mentoring DAS Alumni for internships or work experience

Champion dyslexic individuals
- Recognising their strengths and understand their weaknesses
- Providing appropriate support and encouragement

Donate to DAS Programmes
- Support low-income families by giving to the Bursary Fund

Advocate for Embrace Dyslexia

Embrace Dyslexia with us. Sign your commitment today.

www.das.org.sg/embrace-dyslexia

DYSLEXIA ASSOCIATION OF SINGAPORE
HELPING DYSLEXIC PEOPLE ACHIEVE

The Dyslexia Association of Singapore (DAS) is a vibrant organisation serving the specialised educational needs of over 2,900 students with learning differences. DAS has over 240 professional staff offering a wide array of services and operates 13 learning centres across Singapore.

T 6444 5700 | www.das.org.sg

Why Should Singapore Embrace Dyslexia?

Dr Jimmy Daruwalla
President of the Executive Committee
Dyslexia Association of Singapore

DAS President, Dr Jimmy Daruwalla shared his EMBRACE DYSLEXIA vision during his presentation speech at the Embrace Dyslexia Dinner held on 19 November 2014 at Hotel Jen, Singapore.

As we all know, the only natural resource available to us in Singapore is human capital. We cannot afford to let even a single child fall by the wayside. This is not only because of an inability to read or write, but because dyslexia also has several positive aspects as well and we need to mine these qualities.

The incidence of dyslexia in the general population varies from 4-10% with at least 4% requiring remediation. Because of their extraordinary abilities people with dyslexia can contribute meaningfully to society. It has been known for some time that dyslexic business people are more likely to succeed as entrepreneurs and studies have confirmed why this is the case.

Professor Julie Logan of the Cass Business School in London found the incidence of dyslexia to be 20% in British entrepreneurs in 2001 and a "staggering" 35% of the 139 American entrepreneurs she studied in 2007. Perhaps such a study should be conducted in Singapore, and soon.

"Professor Julie Logan of the Cass Business School in London found the incidence of dyslexia to be 20% in British entrepreneurs in 2001 and a "staggering" 35% of the 139 American entrepreneurs she studied in 2007."

Dyslexics are more likely to become self-made millionaires when compared to their non-dyslexic counterparts and more likely to own multiple business. It is also worth noting that successful SMEs are a great source of new job growth.

They have the ability to see the big picture, without being bogged down in the details. They have the drive and determination to succeed where others would give up having faced failure frequently in their earlier days and have developed creative solutions to deal with it.

While reading may slow them down, they do learn to read people and are good at choosing people who they can delegate these responsibilities to, be it a parent, sibling co-worker, etc. Whereas a non-dyslexic often believes in doing everything himself. They have mastered the art of verbal communication, which is so important in doing business - and in employee relations it was found that the turnover rate is lower in businesses run by dyslexics.

It is well known that a business succeeds or fails not because of the money that is put into it, but the ideas behind it. Professor Logan showed that those who have dyslexia are more creative than those who do not have dyslexia. They are creative thinkers, a skill they have mastered in order to cope with their personal struggles. They can come up quickly with the best solution to a problem, or the right words to say to customers and investors. It is very obvious that if 35% of all successful entrepreneurs never began their businesses, we would have missed out on many good technologies and ideas.

Is dyslexia an Asset or Handicap? Dr Sally Shaywitz, Pediatric Neurologist at Yale University, feels it should be evaluated as an asset, not just a handicap. She said, "I want people to wish they were dyslexic". Dyslexics are not able to achieve their true potential because they have to negotiate the education system. She is trying to change the way dyslexia is viewed in the educational system and the business world too.

Another person who has taken a keen interest in the education system is Sir Jackie Stewart, the famous three time Formula 1 champion. He was diagnosed as being dyslexic at age of 41! He dropped out of school because he was so humiliated when he was asked to read in front of the entire class and when he failed he thought he was dumb and stupid. But then he found something he was good at – race car driving. He became an activist for 'Dyslexia Scotland'. Thanks to this group, Scotland is now the first country in the world to demand training in learning disabilities as part of all new teacher training.

When Jackie visited us he mentioned that change in Scotland had taken a long time,

and admitted to knocking some heads together to get the changes in Scotland. To quote his own words – "Some people still don't see the potential in learning disabled students and would just as soon write them off." Would you believe it if I told you that besides being knighted he was the recipient of eight honorary doctorates and a professorship!

I am also of the opinion that dyslexia is a "hidden" asset and not a handicap. The difference between a child that goes undiagnosed, and another that is diagnosed and has specific remediation can be dramatic. We have witnessed this at the DAS annual graduation ceremony for our students.

Professor Logan's study also showed the importance of a mentor and how important it had been for someone to "believe in you in school". A few words of encouragement can sometimes tip the scales between failure and success. An excellent example is Dr Carol Greider. Out of 13 schools she applied to only two accepted her – Caltec and UC Berkeley. She selected Berkeley and in 2009 was one of three winners of the Nobel Prize in Physiology and Medicine.

Parents of dyslexic children still find this to be quite a burden to bear and this is compounded by the negative perception in Singapore. We are not asking our children to do their own best but to be THE best. The doctrine of education appears to compete. The majority of our children are being led to believe that they are doomed to failure in a world, which has room only for those at the top academically, in terms of marks.

Our children are subjected to tuitions at a very young age, which has led to a multi-million dollar industry in Singapore. Parents do not want their child to fail and want them to be perfect because of the "kiasuism" which is so prevalent in Singapore. I wonder why adults expect perfection from children. Few grownups themselves can get through a whole day without making a mistake.

DAS hopes to change the way Singaporeans look at dyslexia and highlight the potential hidden and extraordinary assets of someone with a learning difference. In my humble opinion, the aim of education should be to teach us how to think rather than what to think. Dr Sally Shaywitz emphasised that, "We need to train executives to recognise 'Outside-the-Box' thinkers who don't perform well on standardised tests."

"DAS hopes to change the way Singaporeans look at dyslexia and highlight the potential hidden and extraordinary assets of someone with a learning difference."

There is a long list of successful dyslexics in every field. To name a few successful dyslexic entrepreneurs; Richard Branson, Henry Ford, Ingvar Kamprad (IKEA), Charles Schwab, Kerry Packer, William Hewlett (HP), Steve Jobs, Steven Spielberg, Craig McCaw (Cellular), Nelson Rockefeller, Paul Orfalea (FedexKinko), are proof of the hidden assets they possessed which made them millionaires. As Paul Orfalea mentions in his book, "I think everyone should have dyslexia and ADHD."

You may ask, "Why am I highlighting these entrepreneurs?" Singapore has been given the highest rating in the world for its business friendly environment.

Singapore has its share of local entrepreneurs but if we could only focus more on the strengths rather than the weaknesses of people with dyslexia, can you imagine how many more successful millionaire entrepreneurs we could have in this country, and perhaps someday even a recipient of the Nobel Prize, and let us not forget that the Father of this Nation, Mr Lee Kuan Yew was also mildly dyslexic.

ABOUT THE AUTHOR

DR JIMMY DARUWALLA

Dr Jimmy Daruwalla was born and raised in Mumbai, India, where he completed his MBBS and Master's degree before going to Glasgow in 1969 to further his studies. After receiving his fellowship from Edinburgh, he came to Singapore in 1976 and worked as a senior lecturer and consultant at the National University Hospital.

Dr Daruwalla left the University as an Associate Professor to go into private practice in 1990. He first joined a group of Orthopedic Surgeons at Mount Elizabeth Medical Centre before setting up his own Daruwalla Orthopedic, Spine and Hand Surgery in 1994, also at the Mount Elizabeth Medical Centre.

Dr Daruwalla became a member of the Rotary Club of Raffles City in 1989 and headed its community service programme, which organised a forum on dyslexia to create awareness about the condition. After two public forums, he formed a protemp committee which in 1991 registered DAS as a Society. Dr Daruwalla has since served as President of the DAS Executive Committee. He also chairs the Board of DAS Academy and DAS International.

For his dedication and contributions to the dyslexic children of Singapore, Dr Daruwalla was presented with the inaugural Tabla! Community Champion award in 2011. The award is presented to a member of the Indian community who has a distinguished record of working with the less fortunate in Singapore.

Embrace a Different Kind of Mind
Personal Stories of Dyslexia

Deborah Hewes
Head of Publicity and Publications
Dyslexia Association of Singapore

EMBRACE DYSLEXIA, an initiative of the Dyslexia Association of Singapore (DAS), endeavours to foster greater public awareness about dyslexia with the aim of helping everyone to understand both the strengths and the challenges in the lives of individuals who have dyslexia.

One of the more engaging initiatives of EMBRACE DYSLEXIA was to encourage individuals with dyslexia to step forward and share their personal challenges with dyslexia so that they might become aspirational role models for DAS students, DAS ambassadors of achievement, as it were.

We sought out those people with dyslexia who have followed their passion and are succeeding despite any educational struggles they have encountered along the way. Our call to action has been met with great success and we are grateful to those individuals who have responded.

Many interesting and motivated people were willing to share their personal stories and we are pleased to have collected more than 50 for inclusion in the book. These are all individuals who have worked to make a difference in the fabric of Singapore and wish to instill in young students the desire to strive for equal if not greater success in their future careers.

This effort has been truly enlightening and inspirational for those of us at DAS. We have been humbled by the generosity of these individuals in sharing their personal

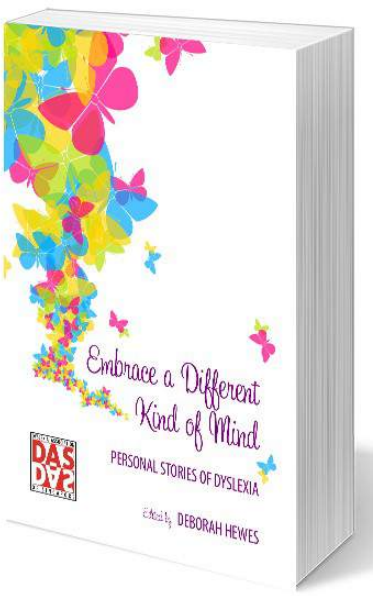
experiences and we hope that you feel the same.

We have selected a few of the stories to showcase in this Handbook. We were lucky to have a number of families participate and we have parents, their children as well as siblings contributing to the book. We also have stories from DAS parents and their point of view of parenting a child with dyslexia.

The first story we showcase in the Handbook is that of the late former Prime Minister of Singapore, Mr Lee Kuan Yew. Mr Lee revealed he had mild dyslexia in 1996 and his announcement helped remove the stigma of having a learning difference and paved the way to better public awareness and acceptance of dyslexia. Mr Lee is mentioned in so many of the personal stories as an inspiration to overcoming dyslexia.

Following is the Kwok family, Richard, Fuyu and Ting Yu. A family joined together in their dyslexic experience providing an inspiring and heartwarming read. Then we share the story of Jenny Khng. Jenny, a dyslexic herself with three dyslexic children, has been a stalwart supporter of DAS since its very early days and DAS has been grateful for her support over the years. And finally we have a story from a DAS parent, Zalina Zakariah-Ismael who shares what it is like to support her daughter, Deanna who has dyslexia.

As a dyslexic and a parent of three dyslexic children I found this project to be highly rewarding and inspiring. These stories provide hope to parents who have children with dyslexia. When the struggles and failure drags us down this book gives us the a light at the end of the tunnel. My friend and mentor said to me once when I was despairing over my children's progress at school, "The education journey is a long one, don't measure their success on one year, have faith that your children will make a valuable contribution to this world. Believe that they will be successful."



The Dyslexia Association of Singapore is privileged to be able to share their stories with you and hope in doing so provides greater public awareness of dyslexia.

Let's EMBRACE DYSLEXIA, despite the challenges we may have in learning, through determination, passion and willpower all of us can make a

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." Deborah is looking forward to starting her Masters Degree in Special Educational Needs in 2016.

Deborah is the Managing Editor of the Asia Pacific Journal of Developmental Differences and more recently has edited the first book of its kind in Singapore, "Embracing a Different Kind of Mind—Personal Stories of Dyslexia".

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

LEE KUAN YEW

Singapore's Founding Prime Minister
Visionary, Leader, Father and Builder of a Nation
1923 - 2015

It takes a great man to dispel prejudice. Lee Kuan Yew was a great man, and his example is a great step in the battle to fight bias against dyslexia. For Mr Lee was dyslexic too, only learning of this when he was an adult in his mid-fifties.

His daughter, Dr Lee Wei Ling, was at the time training to be a paediatric neurologist in Boston. She was sitting in on a test of a college student being tested for dyslexia when she realised she had difficulty with the words the student was being tested on.

Returning to Singapore, she noticed that her father was making the same mistakes, and suspected that he may have dyslexia as well. So she brought in a doctor to evaluate him.

"I had complained that I could not read fast without missing important items," said Mr Lee at the time. He was given a few words and asked to spell them out. He was eventually diagnosed with mild dyslexia.

Mr Lee revealed his condition to the world during a press conference at the Dyslexia Association of Singapore in 1996, when the then-Senior Minister announced his generous decision to donate to DAS royalties from the sale of the CD-ROM version of his book, 'Lee Kuan Yew: The Man and his Ideas'.

He explained that dyslexic people are as normal intellectually as non-dyslexics, but simply have trouble reading the letters of the alphabet and reproducing them correctly in a phonetic way.

Like Mr Lee, many people with dyslexia do not get diagnosed because they do not see that they are behind their peers in reading or spelling. They assume that the extra amount of effort they put into reading is the same as everyone else. So many dyslexics work harder than others without knowing it. That was the case with Mr. Lee

"I should have come to that conclusion that something was wrong when I did a course in speed reading and I did not succeed. And it was not because I was stupid, but because I have to run my eyes back to make sure that I got the right word, so I slow down," he had said of his condition. "But because I read it slowly, I read it only once and it sticks. So there are compensations."

The important thing, said Mr Lee, "is not to be discouraged and think that 'I am disabled'."

Citing the example of Leonardo da Vinci, who is also believed to be dyslexic, Mr Lee asked, "So what? He was a great artist, sculptor, thinker. I am not comparing myself to him, but if he can overcome dyslexia, [so can others]. Fortunately, I overcame it without my knowing it." He said that it proved that it is not impossible to overcome dyslexia through hard work.

Mr Lee's announcement helped remove the stigma of having a learning difference and paved the way to better public awareness and acceptance of dyslexia.

The Dyslexia Association of Singapore is grateful for Mr Lee's unwavering support since 1996. The proceeds from the sale of his book was a great help to DAS, and he continued to contribute regularly until his passing in 2015.

Many of the stories in this book mention Mr Lee as an inspiration to those trying to overcome dyslexia. His success gave them the impetus and determination to pursue their dreams and their passion. The Dyslexia Association of Singapore applauds the late Mr Lee, as well as our contributing authors, for their courage in proclaiming their dyslexia so that others can see that it does not hinder success in life.

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

DR RICHARD KWOK

Chief Technology Officer, Singapore Technologies Kinetics Ltd
Vice President, The Institution of Engineers, Singapore

"From fighting dyslexia to designing Singapore's first armoured fighting vehicle"

Many may see dyslexia as a stumbling block, but it only causes difficulties when we try to see things the way everyone sees them. When given free rein, dyslexics shine because we see and think differently, and that creativity is a huge asset in a profession like engineering.

When my son was young, he told us that the words moved about when he tried to read them. We found a significant mismatch between my son's intelligence and his ability to read and write. Our suspicion that he might have Attention Deficit Hyperactivity Disorder (ADHD) was ruled out after a test whereby he was diagnosed with dyslexia. After my son's diagnosis at DAS, I realised that I face similar problems and found out that I am dyslexic too.

Growing Up with Learning Differences

As a child, I was very curious and had a vivid imagination. To satisfy my curiosity on how things work, I would dismantle appliances and toys, even though I would be punished for spoiling them. At school, I had problems memorising words, texts, the multiplication table and names. Even when I was studying in the polytechnic, copying information from the board, which was a breeze to my peers, was a tedious exercise for me, as I was copying letter by letter instead of phrases. I remember overhearing a neighbour commenting that my future was bleak and that spurred me to work even harder.

Back then, learning facts and figures by rote was much more highly prized than thinking creatively and independently. I had to adjust by working harder and being

more disciplined, more systematic and more resourceful. Adjusting to the requirements of the educational system to perform well has helped me in life as I learned to adapt to different environments and circumstances.

As a visual learner, I think and learn in images rather than words. For tougher subjects, I sketched and drew pictures to illustrate what I wanted to show and I learned to use mind maps. I think my strong visualisation skills help me to think multi-dimensionally, which is important in engineering as it helps in designing, troubleshooting and the creation of new ideas.

From my younger days, I developed a passion for aero modelling and had the opportunity to become the chairman of the aero modelling club in school. As I also enjoyed designing, I naturally combined my two interests and designed hovercrafts and aircrafts. It was an expensive hobby, but I got creative and found ways to fund it, including hiring films to screen in the school hall. My club members and I sold tickets and even packet drinks to raise funds for club activities.

Fulfilling My Ambition

Fuelled by passion and with a keen understanding of my strengths, I decided to pursue a career in engineering, where my creativity would be valued and where I could contribute to Singapore's development and improve the lives of others. Even though it was tough at the start as I had to attend night classes after working in the day, I think it was all worth it. My engineering education gave me a good grasp of the fundamentals, and sharpened my critical thinking, information management and problem-solving skills. These are all useful abilities even if I ventured to other fields eventually.

Ultimately, I chose to be a defence engineer, one who must remain at the top of the game to protect Singapore's interest and sovereignty, and strengthen peace and stability. As an engineer, I am always excited to learn about new technologies and feel an immense satisfaction when I see the difference that I have helped to make with my work.

I remember back in the 80s, many of my colleagues did not believe that we could develop an indigenous armour vehicle. With passion, a relentless spirit and my visualisation skills, I was very determined to push forward and finally, my team and I successfully developed the very first made-in-Singapore indigenous armour fighting vehicle, now known as BIONIX. Looking back, I am thankful for the opportunity and proud to have developed the indigenous vehicle, which provided a prototype for our team members to develop many more armour platforms such as the Bronco family of articulated all- terrain vehicles, TERREX 8x8 Armoured Personnel Carrier and the

SPIDER Light Strike Vehicle.

I often share the mantra 'identify, act, become' with young people such as my son to encourage them to identify or envision what they want, to act on their passion and persevere until they become who they want to be and achieve their goal. Dyslexics may learn differently, but they have other strengths, such as visualisation skills and creativity, so I urge them to capitalise on those skills. For myself, I decided to pursue a career in an area where my strengths lie. I started work in 1973 and have been in the engineering field since then, In 1978, I joined ST Kinetics (formerly known as Singapore Automotive Engineering) as an engineering assistant and worked my way up over the years to my current role as a Chief Technology Officer.

As engineering is a field that I am strongly passionate about, I also became very active in The Institution of Engineers, Singapore (IES), and became the Fellow member and Vice President of IES. Amongst other activities, I lead the organising of the annual National Engineers' Day, when we let students experience the thrills of being an engineer.

My Son's Learning Journey

As for my son, he took classes at DAS after his diagnosis. The Orton Gillingham pedagogy approach used by DAS has helped him to read and write better, although he continues to struggle with his studies.

Fortunately, he did reasonably well and was able to go to the express stream in secondary school, where he achieved commendable results with six distinctions and B's for his English and Literature subjects for his IGCSE examination. He has now secured a place for direct entry to second year at Monash University to study commerce after his National Service.
The diagnosis of my son's learning differences was important as it helped my wife and me, as his parents, to know how to help him deal it, how to provide him with relevant support and how to help him improve. It was also good for his self-confidence. The diagnosis was also important as it enabled him to obtain time accommodation and be excused for poor spelling for high-stake examinations.

My Daughter's Dream for Dyslexics

Inspired by her brother's dyslexia, my daughter decided to pursue her studies in this field. Living with a sibling with dyslexia has helped her to understand the challenges faced by dyslexics and understand the potential that would be wasted if dyslexic children are not given the support that they need. She believes that dyslexics have unique talents and capabilities that should be tapped on and that society should

spend resources to support them to achieve their potential.

For her Masters dissertation, my daughter conducted a meta-analysis of neuroimaging studies of dyslexia in alphabetical words and Chinese characters. She is now doing her PhD, where she will focus on the use of functional magnetic resonance imaging (fMRI) to examine the underlying brain network of dyslexic children for her thesis.

Uncover your Strengths and Persevere to Succeed

Everyone is born with different strengths and weakness. I believe that if you capitalise on your strengths and change your perspective of dyslexia from a disability to a gift, you can harness your strengths and succeed in any field, such as in science, mathematics or the arts. Even if we have to take a longer time to read a book, write a good essay or comprehend a concept, once we take the learning journey positively, we will benefit from it. I always jokingly tell my colleagues that I was awarded the Lifelong Learner Award in 2006 by then President S R Nathan because I have taken longer to learn.

Dyslexics may take more time to learn but they often have higher-order thinking skills, such as logic and reasoning, multidimensional thinking skills, and they tend to be intuitive and insightful. These attributes or gifts are highly valued in a field like engineering, and will help them to excel in their chosen area if they are given the right opportunities, motivation and support. Dyslexic children could focus on their strength, persevere and aim to excel in any fields that they are passionate about. For young dyslexics who have an interest in engineering, they should learn to sketch, be more hands-on and most importantly, have the right attitude to learning and don't give up!

I am thankful to my mother who was always strict with us when we were young, as that bolsters discipline and self-reliance. I would also like to thank my long-time employer Singapore Automotive Engineering (SAE) the predecessor of ST Kinetics, who offered me a job meant for polytechnic graduates, when I was still studying for my part-time diploma and the Ministry of Defence for allowing to continue my part-time polytechnic course even during my national service. I am also grateful to SAE for providing me with the scholarships to pursue my master in Engineering, and subsequently, PhD in Technology Management. I am also appreciative that the organisation provided me many useful work opportunities for me to learn and develop. Last but not least, I am grateful to my wife who has guided me along and supported me along my learning journey.

I hope that parents who see their child struggling academically due to learning

differences can help them get diagnosed as early as possible, as these challenges, unlike physical ones, are frustrating when you do not know what you are dealing with. I also advocate improvements in teaching methodologies in school, such as multisensory teaching that is beneficial for both dyslexic and non-dyslexic children. I believe there should be classroom and examination accommodations for children with different learning challenges.

I hope that as a society we support and help recognise and foster the natural gifts and abilities of children with dyslexia, as their potential can be limitless! Just look at Sir Isaac Newton, Albert Einstein and Thomas Edison, three dyslexic heroes who are celebrated around the world for their ingenuity in science and engineering.

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

KWOK TING YU

National Serviceman
Future Actuarial Science & Econometrics Undergraduate
Monash University

Dr Richard Kwok's Son

Kwok Ting Yu is a quiet boy of 19. He shyly sits in the interview room at DAS Jurong Point, answering our questions to the point without giving much description. His elder sister Fuyu, who joined us to share more about her brother's story, fills in the details.

Because he was diagnosed and provided with intervention early, Ting Yu does not consciously remember much of his life before dyslexia. Fuyu, who has a better memory of what happened in her brother's life, provided most details.

Understandably, dyslexia (and knowing that he has dyslexia) has been a very big part of his life. Lower primary is the age when students learn the basics of literacy, which is the foundation of further knowledge.

Ting Yu seemed to have a short attention span, did things slowly and got easily distracted so his teachers tend to get him to sit in front of the class so that they can keep an eye on him. He was sent to Singapore General Hospital to be assessed but it was confirmed that he did not suffer from attention deficiency.

He first underwent an assessment at Camden Medical Centre when he was in kindergarten because his parents were worried, as their son do not have sight memory of his own surname but needed to pronounce it using phonetics.

> "... dyslexics shine because we see and think differently, and that creativity is a huge asset in a profession like engineering."

In Primary 1, Ting Yu came to the Dyslexia Association of Singapore (DAS) for another assessment and received a formal diagnosis that enabled him to take literacy classes at DAS.

He had classes at DAS Queenstown for more than 6 years. "It was just like school, just more fun and everything was about English," laughs Ting Yu. He learnt phonics, which gave him a lot of help. The exam accommodation was useful as it provided longer time to translate the words on the pages, reread questions and make sure that what was written was the same as the thought translated into English.

Studying at Nanhua Primary meant that there was a strong focus on the Chinese language. The students took Higher Chinese from Primary 1 onwards, unlike the majority of neighbourhood schools where Higher Chinese is usually offered in upper primary. Ting Yu scored very well in Higher Chinese, acing his test and exams without any apparent effort. When it came to English, however, he either failed or achieved borderline passing grades.

In a bid to let their son concentrate on English, his parents wrote to the school and asked for a total exemption from Chinese. They wished that Ting Yu could revise for his English during Chinese lessons time so that he would be able to absorb it slowly.

The school disagreed. "It was a long battle between my parents, the school and MOE," recalls Fuyu, "almost a year to settle on a solution." Ting Yu was eventually exempted from Chinese exams but was required to sit through Chinese classes. He was also exempted from PSLE Chinese, taking exams for only 3 subjects.

Although his PSLE results made him eligible for express stream at local secondary schools, Ting Yu's mother chose to let him study in Anglo-Chinese School (ACS) International, as the class size was smaller. The teachers were able to give more attention to the students, which would be beneficial. ACS International also had an Educational Psychologist, which their mother felt was a plus point in giving support to her son.

He has always been independent studying Maths, never needing much help from his parents or sister. "The answers just comes to me," he said. Not understanding why his peers just could not see the answer when it was "right there", Ting Yu experienced a lot of frustration in having to do the 'workings' for maths.

Fuyu shared an anecdote about Ting Yu when he was taking a Maths class in primary school. As he gave the answer to a math question without providing the 'working', the teacher presumed that he was cheating. Ting Yu insisted that the teacher put him into a corner alone, and he would be able to prove that he could

solve the question. Their mother spent a lot of time to convince him that yes, the answer is correct but writing down the steps is important because it earns him the marks.

Even though he took both Science and Maths subjects for his International Baccalaureate diploma, Ting Yu ultimately decided to further his studies in Commerce majoring in Actuarial Science & Econometrics, which is perfect for his talent in maths. He will be studying at Monash University in Australia after completing National Service.

Although he has a lot of fun in the Army, it is also very tiring. "I have to memorise so many Malay commands," he sighs. It is difficult for him as he confuses the commands and the actions. If he remembers the commands, he would forget the action and vice versa. His mother helps by guiding him at home and helping him remember. He trains himself at home by memorising the commands and tagging it to an action.

Even at this age, Ting Yu avoids reading unless it is absolutely necessary. He spends his time watching videos online from video-sharing sites such as YouTube. "A lot of documentaries," he says, telling us where he gets most of his knowledge.

Ting Yu has his mum to thank for helping him to learn the spelling of scientific terms. He is able to read and spell them out with apparent ease because his mother spent so much time with him to help him memorise them so he could spell the words during exams.

Ting Yu wanted to thank his parents when we asked, saying quietly that they were very supportive and he would not have studied so well without their support at every step. Looking embarrassed, he also nodded when we asked if his sister has helped him. Fuyu playfully punched him in the arm.

From her brother's experience in rising above dyslexia, Fuyu has charted her path. She is on route to a PhD in researching the effects of dyslexia on brainwaves. "Do you know how much your sister has done, all coming from your dyslexia?" we asked. "That I know," Ting Yu answered without a hint of hesitation.

"Ting Yu has his mum to thank for helping him to learn the spelling of scientific terms. ... because his mother spent so much time with him to help him memorise them so he could spell the words during exams."

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

KWOK FUYU

PhD Candidate (Psychology)
Nanyang Technological University
Dr Richard Kwok's Daughter

Having a younger sibling with dyslexia teaches the elder sibling patience and understanding. Kwok Fuyu, built her life around dyslexia, researching on the neural network of individuals with dyslexia. She is currently pursuing a PhD in psychology, focusing on dyslexia.

Her brother was too young to remember the details, but Fuyu recalls them clearly. She shared with us her perspective on Ting Yu's journey and how this has shaped her passion and career path.

Being 5 years older than her brother, she helped tutor him and gave him emotional support when he needed it. "Both my mum and I have helped him when he needs it, but it is mum that spends the most time coaching him," she laughed.

"Even though Ting Yu was struggling with schoolwork, he was very good with Maths from the very start. He couldn't recognise his own surname, forget words one day after we taught him, but when it came to maths he was so quick!" she said.

Ting Yu was diagnosed with dyslexia. He very active and could not sit still. He would get distracted and run around before finishing his homework. Their mother made him stay within 4 floor tiles to finish his work, and would punish him if he went out of the designated area. "It definitely taught him discipline!" she said as both siblings

> "Fuyu was mature at a young age and helped her brother with everything, from copying down the list of homework to finding lost schoolwork for him."

laughed out loud.

Their mother was very open about dyslexia, and sat the siblings down to explain it to them even when they were very young. She told Ting Yu "not to be afraid of it, because the family would help." The young Fuyu, at the tender age of 10, understood that her younger brother has trouble reading and that she had to help him whenever she could.

The family adjusted their expectation to reduce stress on Ting Yu. "Many mothers want their child to go into the EM1 stream, or get into Express stream; my mother just wanted him to pass each year."

It was not easy for Fuyu to accept that the expectations of her brother were lower. Her achievements were not praised as much as her brother's borderline passing grades. She once asked her mother, "Why is everything he does, good enough?"

Fortunately, Fuyu was mature at a young age and helped her brother with everything, from copying down the list of homework to finding lost schoolwork for him.

Their mother frequently took courses and workshops at DAS Academy, the training arm of DAS that provides training for educators, parents and caregivers. She went for classes that would enable her to teach her son effectively, learning practical strategies that would make learning a lot more fun for him. "She would come home and tell me about the interesting things she learnt. It piqued my interest," Fuyu shared.

After her O-Levels, she knew that she wanted to study psychology. Learning behaviour, in particular, was a special interest of hers. As she had her heart set on studying psychology, her father advised her to enter university straight after O-Levels. As psychology is a long academic path, she decided not to enter junior college or polytechnic and to go right into university.

"Because I was going in after O-Levels, my classmates would be older and more mature than me. If I could not cope with the coursework, it would be my own problem that I had to solve. Dad warned me about all these, so I took extra effort to work hard and keep up," said Fuyu. She studied at SIM, earning a bachelor's degree from the University of Buffalo.

She pursued her Honours Degree in Australia and then she went on to take her Masters at Nanyang Technological University, where she was researching on the neural activity during English and Chinese language processing and examining the

effect of dyslexia on language processing. She looked at the difference between brain activation areas when people used English or Chinese. The study of bilingualism in relation to dyslexia is extremely interesting, with Singapore a good ground for doing research.

Fuyu is currently researching on the network connectivity during verbal working memory (a core deficit of individuals with dyslexia) in children with dyslexia. The study is funded by the Ministry of Education (MOE) and the Lee Foundation. Her findings could potentially lead on to the improvement of intervention methodologies for children with dyslexia.

DYSLEXIA ASSOCIATION OF SINGAPORE

UNDERSTANDING DYSLEXIA

THE CLINICAL BRAIN LAB @ NTU PSYCHOLOGY

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ABOUT OUR STUDY:

- ✓ The prevalence of Dyslexia is higher than any other learning disability
- ✓ Verbal working memory and the cerebellum (the little brain underneath our big brain) have been found to be affected in dyslexia
- ✓ The study helps to understand how these brain networks contributes to difficulties seen in Dyslexia
- ✓ The study will also help us make the MRI experience more comfortable for children
- ✓ The findings of our study will provide information to develop better ways to treat Dyslexia

For more information please contact:
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This research study is conducted by collaboration labs at the Nanyang Technological University (The Clinical Brain Lab @ NTU Psychology), National University Health Systems (NUHS), and the National Institute of Education (NIE). This study is funded by the Lee Foundation and Ministry of Education (AcRF Tier 1 grant). The study protocol is approved by the NTU and NUS Institutional Review Board

CHILDREN AGED 7 TO 10 WITH & WITHOUT DYSLEXIA NEEDED

WHO: **Children with and without Dyslexia with the following criteria:**
1. 7 to 10 years old
2. Right-handed
3. Attending mainstream schools
4. No History of neurological/psychiatric illness or chronic medical condition

WHAT:

Phase 1: At NTU & DAS
1. Paper-&-pencil and computerised task
2. Questionnaire about attitudes towards MRI scanning

(Both tasks take approx. 30 mins each)

Phase 2: At CIRC, NUS & CLS
1. Paper-&-pencil and computerised task
2. Questionnaire about attitudes towards MRI scanning

(Both tasks take approx. 1 hour each)

WHERE: Nanyang Technological University (NTU) & Dyslexia Association of Singapore (DAS)

Clinical Imaging Research Centre (CIRC), NUS & Centre for Life Sciences (CLS)

NANYANG TECHNOLOGICAL UNIVERSITY

NUHS National University Health System

theClinicalBrainLab Psychology @ NTU

NIE NATIONAL INSTITUTE OF EDUCATION SINGAPORE

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

JENNY KHNG

Mother, Wife, Daughter and Entrepreneur
Co-founder of Trust Recycling

Jenny's extraordinary story of rising above her challenges is an inspiration to individuals with dyslexia. The happy-go-lucky 53-year-old, who failed her PSLE twice and did not qualify to enter ITE, is a mother to three children with dyslexia.

Diagnosed with severe dyslexia in her 30's, Jenny was interviewed for her personal story and she hopes that her journey will let people know that failing the PSLE is not the end of the world, as she demonstrates with her story.

Her boisterous laughter was audible even before she reached the room. She came in laughing about her pronunciation of 'Deborah'. She said, "I asked for There-boh-lah and was told there was no such person at DAS! Isn't it pronounced that way in Chinese?"

Seating herself down comfortably, Jenny said that she did not like talking about her childhood years as it was traumatising to recall the facts. She hated school as it was very difficult for her; she explained that even private tutors could not help improve her grades.

"I hate talking about school; it was a torture! Not because I was bullied, but because I could not communicate or explain myself," she said.

It was compulsory to take English and her mother

> "...talkative students would always be picked out by teachers to read out loud, she stayed quiet so that "nobody would ask me to read because it was embarrassing to read out aloud."

tongue language, and Jenny decided to take Malay as an additional subject because "it was fun". Jenny is fluent in all three languages verbally but is unable to express herself well on paper.

Maths was a subject which was absolute pain for her. Even till now, she mixes up numbers such as 26 and reads it as 59. A point of contention for her is the digit '7'. "My teacher used to write 7 with a horizontal line in the middle to differentiate it from the number '1'; it was horrible I always read it as '4' instead of '7'" said Jenny.

"I had a wonderful teacher, Mr Steven Tan, who taught history and geography. Those were subjects because I liked learning about Singapore but when it came to exams it's a different story. Science was very fun; it was the only subject where we could learn by playing," reminisced Jenny.

The exuberant Jenny learnt to become quiet and low-profile during class. Explaining that talkative students would always be picked out by teachers to read out loud, she stayed quiet so that "nobody would ask me to read because it was embarrassing to read out aloud".

To prove that she was capable of understanding the lessons, Jenny made it a point to write down anything the teacher said verbally. She would write or draw it on paper to make sure she understood the point.

She immersed herself in sports to divert her thoughts from her bad grades. Nicknamed "Xiao Fei Yu" (Little Flying Fish in Chinese), she was indeed the best swimmer in school, Jenny spent most of her time doing sports where she could excel and feel motivated to work hard.

Starting an Early Career

Jenny failed her PSLE twice and decided not to go for it a third time. She begged her mother to let her get a job and she wanted to try her hand at hairdressing, something she has always wanted to learn. Jenny then went to her aunt, who was a hairdresser, to be her apprentice.

"It was my dream; I wanted to work with people's hair," said Jenny wistfully.

At the age of 16, Jenny signed up for night classes in a bid to take her PSLE again. Imagine her shock when she met her primary school teacher Mr Steven Tan teaching the mature students. The memories of failing PSLE twice flooded back and she dropped out of the class to avoid meeting him.

Jenny was unable to undertake further studies in ITE as she did not meet the minimum criteria for entry, she didn't have her PSLE qualification. The next step for her was to go to London to take a hairdressing certificate course. She saved up enough to take a 3-month course in London and Paris. By then, Jenny was 22 and a mother of one.

"I left my baby daughter with my family and nanny for 3 months to study overseas," said Jenny.

In Paris, there was a colouring course where the students learnt to work with hair dyes. As she could not spell the colours properly, Jenny often mixed up the colours especially light and dark browns. Her solution was to take out individual strands of hair, dye them the correct colours and paste them on paper after labelling them carefully.

"I worked very hard to pass the hairdressing exam because I paid money to study. How could I fail when I paid so much money?" laughed Jenny.

Returning from her overseas studies, Jenny found work in a hair salon and worked as a hairdresser for 25 years. Although she thoroughly enjoyed her job, the demands of bringing up three children with dyslexia caught up with her. All three of her children turned out to have dyslexia; which meant that she had to balance their schedules with her own.

Hairdressers were required to work many days with long hours and she could not commit to the schedules. "Being a mother meant that you have to be available to look after your children and family, the working hours were just too long," sighed Jenny. She eventually gave up her job and become a stay-at-home mother to help them with schoolwork.

Without any other qualifications, Jenny had no choice but to apply for a night job as a toilet cleaner to supplement the family income. She was promoted to a supervisor and looked after the toilets in Changi Airport for 2 years.

She first sensed trouble when her eldest daughter Denise faced trouble in schoolwork. "She is very smart; she learnt the alphabets when she was 1-year-old," said Jenny proudly, never expecting Denise to have trouble with schoolwork at all.

The popular children's show Sesame Street started when Denise was young, and she learnt English through the show. Issues only surfaced when Denise tried to do composition in school; the marks she received were not matching up to her obvious intelligence. She also faced difficulties with algebra in Maths.

Jenny described an incident when her daughter was slapped by a teacher for being slow in her schoolwork. She was shocked by the attack on her daughter. "It was a wake-up call for me, no matter how bad I was in school I had never been slapped by a teacher," said Jenny.

She saw her own academic troubles being reflected in her daughter and decided to go for counselling. "I went for counselling because I did not understand why it was so hard for me to learn. My mother was supportive and I had the right environment for learning, I also had a private tutor after school for a long time, but why was it so difficult for me?"

Fighting hard to hold back her tears, Jenny said it was like living in a silent world where people thought she was stupid. "I know I am smart enough to achieve something, but I can't complete something as simple as a report. People expect me to do more work if I show my intelligence, so I have to hide it. Therefore they just think I am dumb, year after year after year."

The counsellor recommended a psychologist for Jenny. She sat through some tests and was diagnosed with severe dyslexia. Although she was an adult by then, the diagnosis came as a relief to her.

"They told me, Jenny there is nothing wrong with you. You have a perfectly normal life," recounted Jenny. The psychologist showed her a thick book of different handwritings and she saw that she was not alone in having dyslexia. From there, she was reassured that there was nothing wrong with her and she believed in herself ever since.

"I went for counselling because I did not understand why it was so hard for me to learn. My mother was supportive and I had the right environment for learning, I also had a private tutor after school for a long time, but why was it so difficult for me?"

Finding the Dyslexia Association of Singapore

Jenny often went to book fairs to buy books at discounted prices to read. One day, she chanced upon a forum where they talked about dyslexia. The room was filled with professionals and Jenny sat awkwardly at the back of the forum to listen to the topics. The more she listened, the more she felt struck with the symptoms they described, the more she recognised her symptoms.

After the forum, she approached a lady to ask if there was any support for dyslexics in Singapore. "The lady

said yes, we have an Association in Singapore, you can call them for help! She gave me a telephone number and a name, Dawn Brockett," said Jenny, describing the point in which her life changed.

Dawn Brockett was the first teacher hired by the Dyslexia Association of Singapore after it was officially registered in 1991. Jenny meet with Dawn where she learnt how to read all over again in the first classroom of the DAS at the Peoples' Association at Kallang.

Dawn was doing a research on adults with dyslexia at the time and she taught Jenny some strategies on reading and writing. Both Jenny and Dawn got along very well and Jenny remembers her fondly today as the first person to be able to make a difference to her learning, teaching her in a multisensory way and giving her strategies to remember spelling and reading rules.

Jenny's relationship with DAS has continued till this day and she fondly remembers the teachers and educational therapists who she has worked with especially while her own children, Tess and Kinson, received therapy at DAS.

One such teacher, Diane Spindle taught her children and together Jenny and Diane formed a life-long friendship which still remains even though Diane now lives in Hawaii.

Both Dawn and Diane have had a strong influence on Jenny and have helped her to find her voice to advocate for her children when it came to their school experiences and talking to teachers about dyslexia and how it affects their learning.

The challenges of dyslexia

Having dyslexia has affected Jenny deeply in many ways. When she was younger, she thought she had Down Syndrome or a mental disorder as she couldn't learn normally like her peers. She could not even write her name and had to think of creative ways to help her remember it. "Kangaroo, Horse, Nose, Giraffe!" Jenny recited happily, "This is how I remember how to spell my surname 'Khng'."

Jenny also uses gestures and rhythm beats to help her remember words with multiple syllables and spellings.

The resourceful Jenny would find a solution to her problems if she is unable to solve them the first time round. When Jenny took lessons at the driving centre, she failed the theory test as she could not read the questions quickly enough.
She then found out that there was an option to take the test verbally, without writing

down the answers and having someone read the questions to her. At the time, she could not remember the word "oral" so she used a gesture to tell the examiner that she wanted to take the test verbally. "You know that hand gesture you make to describe a very talkative person? I did that gesture to the examiner and he understood me immediately!" said Jenny. She passed the driving test with flying colours after taking the oral theory test.

"Of course, I now know that the word is O-R-A-L," she said.

Jenny explained that she had passed many tests in her life, and explained that she is a qualified open water diver. When Jenny went for her open water divers test Jenny was allowed to have a 'reader' for test. The reader was her daughter, Denise. Denise was able to support her mother by reading the multiple choice questions for her and then Jenny was able to tick the correct answers after 'hearing' the questions. Jenny was very grateful of the support that the Social worker from the Social Care Service at the Peoples' Association was able to provide to her family and to her personally.

She also holds a prime mover licence and can drive 55 ft. prime movers, something she is quite proud of. "You don't see too many Singaporean women driving trucks these days!" she said. She needed this qualification as part of her job that helps to keep Singapore clean, a role that she is quite passionate about.

Recently, Jenny also had to take a forklift licence test for her work. She passed the theory portion of her test but was unable to pass the practical portion due to the time limit placed on the driving practical test. In the practical driving test she had to take items down from shelves in a certain sequence and put them back onto the shelves in the reverse sequence. As she could not complete the task in the allocated time, she failed the test.

"They sent a letter saying that I was not competent. I was so appalled." Jenny said, enunciating each word carefully.

Jenny approached DAS for help with the authority. Deborah worked with Jenny at the time to write a letter to request a retest. The letter explained to the authority that sequencing was an issue with dyslexics, and Jenny would be unable to complete the task safely if she were to do the task quickly. As the most important factor in forklift operations is safety, speeding was not desired. The training school then granted her a retest allowing her extra time. This time she passed with flying colours and received her license.

All three children have dyslexia

Her three children all have dyslexia as well, albeit not as severe as Jenny. They attended classes at DAS for the entirety of their primary school years. Jenny also tried her best to teach them at home, through a variety of learning strategies she learned from her schooling days and from working with Dawn Brockett. Similar to herself, she found that they learnt best via audio and kinaesthetic teaching so she incorporated playtime into their study time to ensure that they enjoyed their learning.

Her three children have successfully completed their tertiary education. Denise overcame her learning difference to become an English teacher in a MOE school. Tess, who graduated from a nursing course at Nanyang Polytechnic, is now working in hospitality as a Director of Programme Development at an award winning Eco Resort to get more experience in the wider world before going fully into the healthcare industry. Kinson, with relatively the worst dyslexia out of Jenny's three children, has completed his polytechnic diploma and is now working in the micro and nano technology field.

Technology is her saviour

The advent of technology has unfolded a myriad of possibilities for Jenny. She has an Apple computer at home, and carries an iPad and iPhone everywhere she goes. Heavily reliant on her iPhone, Jenny proclaimed it as her best friend. She uses voice recording during meetings so that she could review them when she is home. The automated voice 'Siri' as well as the text-to-speech feature, are life-savers for Jenny; she dictates messages to her phone and triple-checks the correct spelling before sending it out.

Aside from her iPhone, her former boss, and now business partner, Mr Tan has been a great help in her life.

She first met him when she applied for a position in a waste management company. He recognised her difficulty with administrative tasks and volunteered to help her with them.

One of her main job scopes was bag collection; she had to drive around and pick up filled trash bags left on roadsides by the cleaners. The job is not as easy as it seems, Jenny explained, there was a need to come up with a plan to do her job effectively and efficiently. Already having trouble with recognising directions and road names, she also had to pick up the bags by a certain time. Mr Tan came to her rescue by helping her to calculate distances and planning out a feasible route with her.

He helps by summarising large chunks of information into bite-sized pieces that are easier for her to digest. On numerous occasions, he has tried to send Jenny to take courses to upgrade her but she refused to go for them. "I could have been promoted many times!" exclaimed Jenny, "but with promotion comes more administration responsibility such as writing reports. I stayed in my position because I am happy here and didn't have to do the report. At times I am very disappointed about that because I am unable to go for courses since I cannot write basic reports. Although, Mr Tan is still very supportive and helps me whenever he can," said Jenny.

After a 10-year stint at that company, Jenny has ventured into a recycling business with Mr Tan. Combining her passion for a clean and green Singapore with the desire to learn new ropes, she started a recycling business so that she would not have to go for interviews. "I hate going for interviews; filling in the forms are so difficult. So many things need paperwork, need to write and it is not easy for me to write. Thank god, Mr Tan will help with paperwork, so I can focus on the other aspects of the work," said Jenny.

Mr Tan is a very patient man of 62. He is in charge of handling all administrative tasks for their business and valiantly tries to teach Jenny despite her lack of interest and aptitude in writing reports and financial statements.

To not rely too completely on Mr Tan, she makes sure that she carries around dollar notes in her bag so that she can write cheques. The portion of the cheque where the amount has to be written out is always challenging, Jenny said, adding that she is learning to spell the numbers out well.

"Heavily reliant on her iPhone, Jenny proclaimed it as her best friend. She uses voice recording during meetings so that she could review them when she is home. The automated voice 'Siri' as well as the text-to-speech feature, are life-savers for Jenny.."

Lifelong learner

Jenny is a lifelong learner, believing deeply in making up for the opportunities she lost by not furthering her education. As much as she could, she watches television channels such as BBC and listens to the radio to improve her English and Chinese. She also reads the newspapers every day to learn new vocabulary and uses her trusty iPhone as a dictionary.

"When I was younger, it is okay if I didn't know English, because we could communicate in Chinese or Cantonese. When I grew up, I learned English by watching BBC and listening to the radio. It is brain torture when I know how to say out the word but

cannot spell it out on paper," she laughed.

To practice, Jenny uses as much new words in her conversation as possible. Her speech is peppered with words that she enunciates carefully, repeated to ensure that she gets the pronunciation and meaning correct. Even if the word is rarely used verbally such as "appalled", she still uses it to build up her vocabulary bank.

"I learnt how to write in cursive; now I can sign my name easily!" bubbled Jenny happily.

Jenny has been grateful to DAS for helping her learn to read, therefore she volunteers and raises funds for DAS whenever there is an event. Aside from volunteering with DAS, she is interested in fauna and hopes to work with DAS and National Parks one day and conduct trips to Pulau Ubin for fauna-observing for the children at DAS. "Children can touch the plants and feel the different textures, good for sensory issues. That is how I taught my children when they were younger," she said.

Jenny said "Today I am here to tell people; what happens if you really cannot pass your PSLE? Never give up learning. Even if you learn one new sentence a day, it will help you to communicate better."

"It is okay to not know how to spell, technology can help you! It can make you successful. It doesn't matter that you don't know how to spell K-I-T-E. One day you can make your own kites your learning will fly like a kite. Play games and use your imagination to de-stress. It is better to learn slowly than never to learn at all."

When talking about her family she is very thankful for their support over the years. Initially her husband, Keith Wong, didn't understand why Jenny needed to be so involved and focused on finding out what dyslexia was all about. He also found it difficult to understand why she was so vocal about dyslexia. Jenny says, "He couldn't understand why I had to be so outspoken about my learning problems, but when he found out about dyslexia and saw the problems his children where having he started to understand. Now he knows why I am so loud about this—I need to be an advocate for my children."

Keith has come a long way to understand Jenny's life struggles and now through his children's experiences he understands her better now.

When asked for a message for parents that have children with dyslexia, she said that they have to find the correct time and appropriate materials to help their children. Many parents want quick solutions to solve their children's learning issues,

but each child is different, which makes it a learning journey for the parent themselves. "Some children learn when they are being punished in a corner and forced to learn. Some children learn by playing games by themselves. Do not pressure them too much, let them learn at their own pace so they can enjoy learning," said Jenny.

Embrace a Different Kind of Mind

PERSONAL STORIES OF DYSLEXIA

ZALINA ZAKARIAH-ISMAEL

My Daughter—"Deanna in Wonderland"
DAS Parent

Deanna is the middle child between two brothers. Being the only girl, she has always found it difficult to get her brothers to join her in the games that she would prefer to play. However, being blessed with the gift of the gab, she would usually manage to convince them to join her in a short stint of make-believe; baking, cooking, teaching and role-playing. Still, many a times she would lament on how lonely she was, not having other girls to play with.

As such, Deanna was elated when she went to school when she was almost five. She was Miss-Goody-two-shoes, trying hard to do everything right; and Miss Eager-beaver, always excited and wanting to please everyone around her; especially her teachers. Deanna was confident and chatty and very happy in school until her late nursery years. She became less chatty and not as eager to go to school. I did not worry too much about it then, as I had assumed that the rigour of a Montessori syllabus was taking its toll on her, especially since she was also trying to cope with Mandarin as a second language.

"She would 'forget' everything that she had tried to remember just the hour before, resulting in her usually failing her weekly spelling exercise."

On days that I am home late from work, I would find Deanna fast asleep with her spelling list as her constant companion. She would try really hard to remember the words and would get them right when tested right after. However, she would not be able to get them correct after a short time lapse of about an hour. She would 'forget' everything that she had tried to remember just the hour before, resulting in her usually failing her

weekly spelling exercise. This discouraged her greatly and she became more reserved and hesitant as the days passed. I highlighted these changes in Deanna to her teachers but was informed that there was nothing amiss. The teachers commended her conscientious attitude towards her school work and advised me not to worry unnecessarily and to let things be. Although, it troubled me, there was nothing else I could do besides supporting her in her spelling, reading and writing.

As the days passed, Deanna became less confident and would usually keep to herself. Gone was the chatty, bubbly girl I knew. We tried sending her to numerous enrichment centres to assist in her reading but her development was still way behind her peers. The last straw was when Deanna came up to me one day, when she was in kindergarten. She asked me why she was so stupid. I fought hard to hold back my tears and valiantly espoused her merits and intelligence but to no avail. I could see in her eyes that she did not believe me. She commented on how all her classmates had moved on to the higher colour scheme in reading while she was the only one still stuck in the lower level. She informed me of how hard she tried but was always dumfounded by how she was always unable to get it together. Things just would not click. They did not fit and she did not know why.

I decided to take things into my own hands and got her an appointment at the Specialist Clinic at the Kandang Kerbau Women's and Children's Hospital. Every step forward, brought us two steps back. After assessing Deanna, the consultant told me that she could be a 'late-bloomer' and that I should just let her be so that she could develop at her own pace. I disagreed. I know my daughter better. I could sense her frustration. It felt like she had so much inside that was just dying to be set free. Something was preventing her from reaching her full potential.

After further consultation with the child specialist, she suggested we go for an assessment at DAS. At our wits' end, we decided to give it a try. That decision changed Deanna's life forever. Reading the psychological report after Deanna's assessment made me cry. The memory of what her psychologist, S.B Maheswari said will forever be etched in my mind. She explained that although Deanna functions at a high range of intellectual ability, her reading and spelling attainments were discrepant to what was expected of her, given her intellectual functioning. Thus, although she has the ability, she is unable to express all that is going on in her mind well, leaving her frustrated and feeling incompetent, ravaging her self-esteem and confidence along the way.

I cried as I felt guilty over the days I spent reprimanding her and not understanding how disheartened and embittered she must have felt. I cried over the nights she spent trying to learn her spelling words, albeit in vain.

Every cloud has a silver lining. To appreciate the rainbow, one must first go through the rain. After falling through the rabbit hole and coming out stronger on the other side, Deanna has grown so much under the guidance of DAS, especially under the tutelage of Miss Tuty Elfira; without who Deanna will not be the eloquent and confident person that she is today.

After learning of her dyslexia, my husband and I vowed to do all we could to pick up the pieces of what was left of her esteem and to slowly but surely build it up again. We learnt that she had an affinity for dance and spared no expense in allowing her to develop her talent in that area. With God's grace and a lot of hard work and sacrifices, Deanna has achieved numerous awards and recognition both at the national and international level for dance; the most recent being the inaugural Asia's Got Talent Competition on the AXN channel.

Every parent wants the best for her child. To me, the development of character takes precedence over academic excellence. Deanna has a passion for dance and is amazingly blessed with the talent for it. Nevertheless, the choice of allowing her to participate in the Asia's Got Talent and missing a month of school in her PSLE year was not an easy one. However, she has gained so much from the experience and has developed to be a more disciplined and determined individual.

Deanna said of her Asia's Got Talent experience, "I feel privileged to have had the opportunity to participate in the inaugural Asia's Got Talent competition. Being the only act representing Singapore on the Grand Finals, I was both elated and humbled. I enjoyed the camaraderie amongst the participants most as although we were competitors, we were also friends, motivating one another through the daily rigour of our training sessions."

She has also received the DAS OCBC-GTIB Scholarship in recognition of her holistic achievements. As icing on the cake, Deanna has recently received offers from the School of the Arts and Tanjong Katong Girls' School through Direct School Admissions-Dance category. She is indeed blessed and will not be where she is now without all the support given to her through her journey in Wonderland.

"Every parent wants the best for her child. To me, the development of character takes precedence over academic excellence. Deanna has a passion for dance and is amazingly blessed with the talent for it."

Embrace Dyslexia Update: Matthew Fawcett

Angela Fawcett
Research Consultant
Dyslexia Association of Singapore

Matthew Fawcett, aged 40, and now known as Matt, is the son of Professor Angela Fawcett, and the driving force behind her passion for dyslexia at every age. Following an unusually early diagnosis of dyslexia, at age 5, Matthew worked hard to achieve his potential, despite the difficulties he experienced. These led to a proposed placement in special school, the development of a stutter in junior school, placement in the special needs class in secondary, and grades lower than predicted at 'A' Levels in secondary school because he was not awarded extra time. Despite these difficulties, Matthew achieved a good 2.1 in politics at the University of Leeds, with Angela frantically reading up on Chairman Mao for his specialist subject and making notes to help him with the vast quantity of reading involved. A critical factor in his success was the support of his family, but more importantly at age 6 Matt had made a conscious decision that he would carry on taking extra lessons, for 2 hours weekly, and completing the homework he was set, although he found it a constant struggle.

"A critical factor in his success was the support of his family, but more importantly at age 6 Matt had made a conscious decision that he would carry on taking extra lessons..."

Matt then worked for some years as a researcher for the Ethical Consumer journal, using his academic skills while taking advantage of the long lead time for publication. Although he had not taken languages in school, because he was taken out of French to do extra English, he set out to work for the Peace Brigade

International, but first needed to learn Spanish. He was able to obtain a 3-month placement with a local Guatemalan woman to learn Spanish, and fortunately enough, his hostess was passionately obsessed with politics, whereas his girlfriend, who had accompanied him, learnt only the vocabulary for romance and boyfriends from her hostess! Together, they worked as international mediators in Guatemala for 18 months. His work there included accompanying people under death threat, and the widows of Guatemala while they buried their husbands who had been 'disappeared' and were found in mass unmarked graves. In liaising with ambassadors here he needed to be so proficient in Spanish that he could read legal documents, and eventually he even dreamed in Spanish. Matt gave Angela a book on the work of the Peace Brigade in Guatemala when he left for his placement there, but she was unable to deal with it, because 4 people were killed in the very first chapter, and she was frightened for his life. However, the whole family went back to tour Guatemala and visit Matt's many friends there, once he had safely returned home. It was sad to hear that some of his friends, a young couple just married who also worked for the Peace Brigade, were killed in an explosion there shortly after.

On his return to the UK, Matt became a founding member of the Kindling Trust, http://kindling.org.uk/ igniting passion and fuelling action for social change. Their successes include setting up locally sourced food in schools, hospitals and universities in Manchester. More recently he has been involved in the Manchester carbon co-op, which was shortlisted for a major award by energyshare for a proposal to empower people to take control of their own energy needs. During the course of this work, Matthew was invited to present to Prince Charles on environmental issues, not bad for a boy with a stutter who ran away from verbal presentations at university because he was so stressed, and who needed to be hypnotised by his support worker to overcome his anxiety! He was invited to present a lecture at the launch of the environmental film 'The Tipping Point' in the Natural History Museum, surrounded by dinosaurs as a reminder of the fragility of life.

Matt is an activist for peace and sustainability and he has trained colleagues in the CND and in the Peace Brigade in peaceful resistance. He was arrested for his role in the Drax 29 as part of a group who stopped a train taking coal to a highly polluting power station, in order to highlight the damage this inflicted on the environment. So on her 60th birthday, Angela attended court to witness Matt and his friends being convicted, although without any sentence or fine attached to this conviction, not even community service. It was one of the most stressful days of her life, and Matt and his friends were disillusioned by the negative attitude of the jury. The conviction was later overturned, and so, much to Angela's relief, Matt no longer has a criminal record for following his beliefs. Matt continues to be an advocate for a lifestyle based on non-consumption, he does not fly and rides a bike to protect the

environment as best as he can. Up until this stage, Matt had never earned more than £6000 a year, ($12000 Singapore dollars), working for charities setting them up with freeware for their computers, and earning just enough to maintain his voluntary work, and he was content with this income, attaching more importance to the continued freedom to work in his areas of passion.

Most recently, Matt has been appointed as Northern director for the campaign for Nuclear disarmament (CND) against renewal of the Trident submarine. This is a nuclear submarine that patrols UK waters, and will cost many millions of pounds to upgrade. He has taken this appointment at 50%, sharing the role with a colleague and friend with greater expertise in administration, leaving Matt to deal with the public face of the campaign. This is the fulfilment of a lifetime's ambition! He also plays a leading role in a series of International workshops that are trying to harness the output more effectively from alternative energy such as wind and tidal barriers. He continues to adopt an ethical approach to flying, and travels across Europe by train to attend these workshops. The combination of these two roles adds up to far more than a full time job, and is not something he can sustain for much more than the next 2 years. He then plans to move to Spain with his partner to reclaim an abandoned village, repairing the properties and leading a life of sustainability, growing their own food, and carrying on his projects by Internet.

Overall, Matt's success represents a major triumph in overcoming dyslexia, difficulties in learning languages, and a stutter, to become a force for ongoing change. Matt is living his dream, embracing his strengths, and with support from others, has developed strategies to overcome his weaknesses. In his mother's eyes, no-one could be more successful than Matt! He is a charming, personable and ethical man, tolerant of the weaknesses of others and a support to his whole family, who are so proud of his ongoing success.

Learn how you can support children with Specific Learning Differences

The DAS Academy is a Private Education Institution (PEI) registered with the Council for Private Education (CPE), and has achieved a 4-year validity period, under the council's Enhanced Registration Framework.

Led by a multi-disciplinary team that has extensive experience in providing direct support to people with specific learning differences (SpLD), the lecturers are able to use their skills and expertise in the design and delivery of the programmes offered by the DAS Academy. These programmes provide an academic pathway in the field of SpLD from foundation to postgraduate levels.

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INTERNATIONAL PERSPECTIVES

Dyslexia, Bilingualism and Screening

Emeritus Professor Angela Fawcett
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In this chapter we shall consider the potential benefits of bilingualism for learning and how these are impacted by dyslexia. Interestingly, for many years there has been controversy over whether children who are bilingual are more efficient and effective learners. Clearly this has strong implications for Singapore, where all children will learn English in school, in combination with their native language that might be Malay, Chinese or one of the Indian languages. Much of the literature shows that in the early years of schooling, this impacts on the speed of acquisition of English, but once the child has reached 10, this early shortfall is easily overcome. On the other hand, children who are multilingual can benefit from an extended period as very young children in which they can access a wide range of sounds, before focusing on the most frequently occurring sounds of their native language, as monolingual children do.

"...for many years there has been controversy over whether children who are bilingual are more efficient and effective learners. Clearly this has strong implications for Singapore..."

Moreover, it seems that their executive skills, such as memory and attention are enhanced by the need to switch between languages, so these strengths may well offset any limitations in language. In comparison with monolingual children, their executive skills are better at age 2, and their memory at age 8 will be superior. So bilingual children are better at inhibition, task switching and working memory, for example in a card switching game for 3-6 year olds, the bilingual group were better able to inhibit incorrect responses, and discard information which was no longer relevant.

This is a major factor in school readiness, and so the benefits of bilingualism may well outweigh the costs in normal development. Bilingual children are more able to co-ordinate visual and auditory information, as well as perform with greater accuracy and speed in non-verbal tasks. Greater complexity in memory tasks produced stronger and faster results for bilingual children, even taking into account low economic status and poor language that usually impair learning outcomes. In fact a meta analysis of 63 studies confirmed this advantage, and ths should give bilingual children an advantage in learning to read (Sandgren and Holmstrom, 2015).

So what about dyslexic children or those with other language impairments? Interestingly, a recent study of card sorting and memory in bilingual and monolingual children with Speech and Language Impairment (SLI) showed that the bilingual children with SLI were less impaired than monolingual children with SLI, showing some degree of protection from bilingualism for this group (Sandgren and Holmstrom, 2015). Support for executive deficits in dyslexia has come from a range of studies, but most have looked at just one aspect in the children studied.

An exception is a recent study from Varvara et al., (2014), who examined a whole range of skills in 8-17 year old dyslexic children and controls. These included verbal phonological and categorical fluency, spoonerisms, visual-spatial and auditory attention, verbal, visual and spatial short-term memory, verbal WM, and visual shifting. Deficits were found in 8-17 year old dyslexics in comparison with controls in all tasks but visual shifting non-verbal errors (Varvara et al., 2014), and spoonerisms and both auditory and visual spatial attention were related to reading. This study confirms the role that executive functions play in dyslexia across the age range.

BILINGUALISM AND DYSLEXIA

Of course, it is more difficult to identify dyslexia in a child who is not a native English speaker, because most screening and diagnostic tests are written in English. Bilingual dyslexic children may be doubly impaired, with a delay in neural commitment related to bilingualism, in addition to delayed neural commitment that can be traced back to their dyslexia. It therefore becomes even more important to put support in place early on, for both language and executive function skills.

In the following section I shall deal first with using screening tests in English and then move on to translation. The tests described here are the DEST, for 4-5-6.5 and the DST-J for 6.5-11.5.

USING SCREENING TESTS IN SINGAPORE

A study by See and Koay (2014), showed that the DEST-II was predictive in identifying Singaporean children at risk for dyslexia, with particular problems identified in rhyming. The preferred test for use currently in providing free screening for children is the computerised COPS test.

DEVELOPING SCREENING TESTS FOR INDIA

The situation for dyslexic children in India has been particularly dire, and there has been little recognition despite sterling work in Mumbai, (MDA, Karande and colleagues) and the Taare Zamen Par film that moved so many people. Dyslexia is not yet legally recognised in India despite a push in this direction in 2011.

Patchy provision has been led by Mumbai with entitlement to provisions in exams since 1996, now applicable between grades 1 to 11. This has led to a 22% improvement in scores in those receiving exam provisions (Kulkarni et al., 2006). There remains a lack of specialist trained teachers and training courses. Following concerns that standards were too high, most dyslexic children are not diagnosed until age 11, although their difficulties have been recognised at age 5.

Because of the stigma still attached to dyslexia and other special needs, most parents will not seek remedial support for their children. There is great anxiety amongst children and mothers over the outcomes for dyslexia, and this has led to a spate of suicides in adolescents newly diagnosed with dyslexia. This was the background against which the DST-J was renormed for India, and greeted with great enthusiasm at the launch in 2012. It is possible to compare the norms for Indian and English children, and this suggests that use of the English norms would be suitable for many countries.

COMPARISON OF INDIA AND UK ON DST-J NORMS IN ENGLISH

Performance of the Indian children is generally comparable or slightly higher than in the UK for all but the vocabulary test, which is slightly lower

Comparable –

- Backwards digit span
- Bead threading
- Verbal and semantic fluency
- Rhyming

Slightly higher or better –

1 minute reading (older groups lower)
Phonological segmentation (younger groups lower)
2 minute spelling
Postural stability (lower score = better performance)

Higher

1 minute writing

Slightly lower

Vocabulary

DYSLEXIA IN WALES

Welsh is now considered a key language for development in Wales, and many parents prefer their child to attend a Welsh speaking school, although they themselves may only be English speakers. There are no reliable statistics available on the number of dyslexic children in Welsh cluster schools. PLASC 2014 identified 6400 Welsh 1st language pupils in Primary (1816 ALN) but this is not including children with Welsh as a second language in Welsh medium schools.

The problem is that there are very few Welsh language screening tests to identify children at risk. The solution here was to develop accredited tests for the Welsh language – in this case the DST-J W. The Welsh National Reading (2013) test has filled a need to measure progress, but more resources are still needed.

In terms of the outcomes from Welsh speaking schools, the Estyn (2009) report identified particular problems in Welsh language schools for oracy in 75% of Welsh second language pupils. Despite recent improvements 'Pupils are making excellent progress in acquiring Welsh second language skills in fewer than one in ten primary schools' (Hill, 2013). There can be an initial advantage for young children in learning to read in Welsh, which is more transparent and regular than English (Spencer and Hanley, 2003;2004). But spoken vocabulary is key to good reading - so the Estyn report is particularly worrying for second language learners in Welsh medium schools.

Considerable care was taken in the translation and adaption of the DST-J to form the DST-JW, a screening test that was launched in October 2015 in Cardiff. The significance of the test for Welsh speakers was evident from the launch in the National Assembly of Wales, the Welsh parliament building.

RISK LEVELS FOR THE WELSH STUDY

Home Language	Mild Risk	Strong Risk
English	34	65
Mixed Welsh and English	5	6
Welsh	17	9
English / Polish	0	2

Over 400 children were screened for norms, and 66.6% of these had English as a home language. We found 29% risk level overall, with 14.4% risk in Welsh first language pupils, with only 3% of these strong risk. Interestingly, by age 9.6 of 50% of the cohort had Welsh as a first language and differences between the language groups have evened out. This is in line with the literature.

In comparison with English norms, Welsh speaking children are 30-40 seconds longer overall for rapid naming, a finding based on the length of Welsh words. This was also evident in slower writing up to age 8.6.

There are a number of benefits of the Welsh language

- Reading more fluent (up to 26 words per minute faster in top achievers)
- Spelling slightly more fluent
- Nonsense reading also slightly more fluent

All of these again are as predicted from the literature.

We calculated separate norms for the native Welsh speakers, because the literature suggested that skills might be lower in children whose parents do not speak Welsh and do not have practice at home:

- Naming speed faster for native Welsh speakers up to age 8.6
- Strikingly Vocabulary scores at 6.6 for this group are equal to the overall group at 9.6 – shows gap for English native speakers
- Wider range of reading skills in younger children at both top and bottom end and advantages in most sub-tests

We now have tools for screening children learning in Welsh medium schools. This allows teachers to identify children with risk of ALN. The profile provides information on the pattern of strengths and weaknesses. The data shows that early vocabulary support is necessary for English speakers attending Welsh medium schools. Wales Dyslexia plan to translate and adapt the DEST-2 and DST-S to cover the age range with permission from Pearson.

BUILDING ON THE POTENTIAL OF SCREENING

In Pembrokeshire, I am working with Nichola Jones to screen and intervene with children at risk in reception, a free structured intervention linked to the screening is delivered by teachers for 1 hour weekly sessions for 1 term in small groups in three 20 minute sessions in 60 schools. Exciting results from 450 children show 91% improve their risk scores, and 83% are no longer at risk!

In Bridgend this has transferred to reading for 75% of the children on the National reading test at 7. This model is planned for Welsh medium children with the DEST-2 to address vocabulary and early predictors.

DYSLEXIA IN MALAYSIA

The work in Malaysia has been led by Dr Sharanjeet Kaur, from Universiti Kengbansaan, Malaysia, who has translated and adapted the DST-J for use in Bahas Malay. Dr Kaur is currently translating the DEST-II and spear heading the research and norm collection for Malaysia.

Data has already been collected on over 500 5-year-olds, to establish whether or not the test is valid for Malaysia, with all of the tests proving valid. Similarly to the UK test, around 15% of children were identified to be at risk. In addition to the DSTM, measures of visual and auditory perception were collected, as well as language and literacy measures and internalising and externalising features in the target group and controls. This is consistent with findings of lowered self esteem in the dyslexic group and relates to whether they blame themselves or the difficulty of the work for their failure.

CONCLUSIONS

The issues of bilingualism and dyslexia have been largely neglected in the literature, although this is being to some extent addressed by recent publications in the Asia Pacific Journal of Developmental Differences. A new book in the area, Multilingualism, Literacy and Dyslexia: Breaking down barriers for Educators' edited by Lindsay Peer and Gavin Reid, will be published in 2016, from Routledge

Publishers including a number of chapters on this issue.

Screening tests have great potential in identifying deficits in this group of learners, particularly when they are translated into the language that children are learning in school. DAS provides a number of specialist services tackling these issues, including their Chinese language programme, and are continuing to focus on the area of multilingualism in their future plans.

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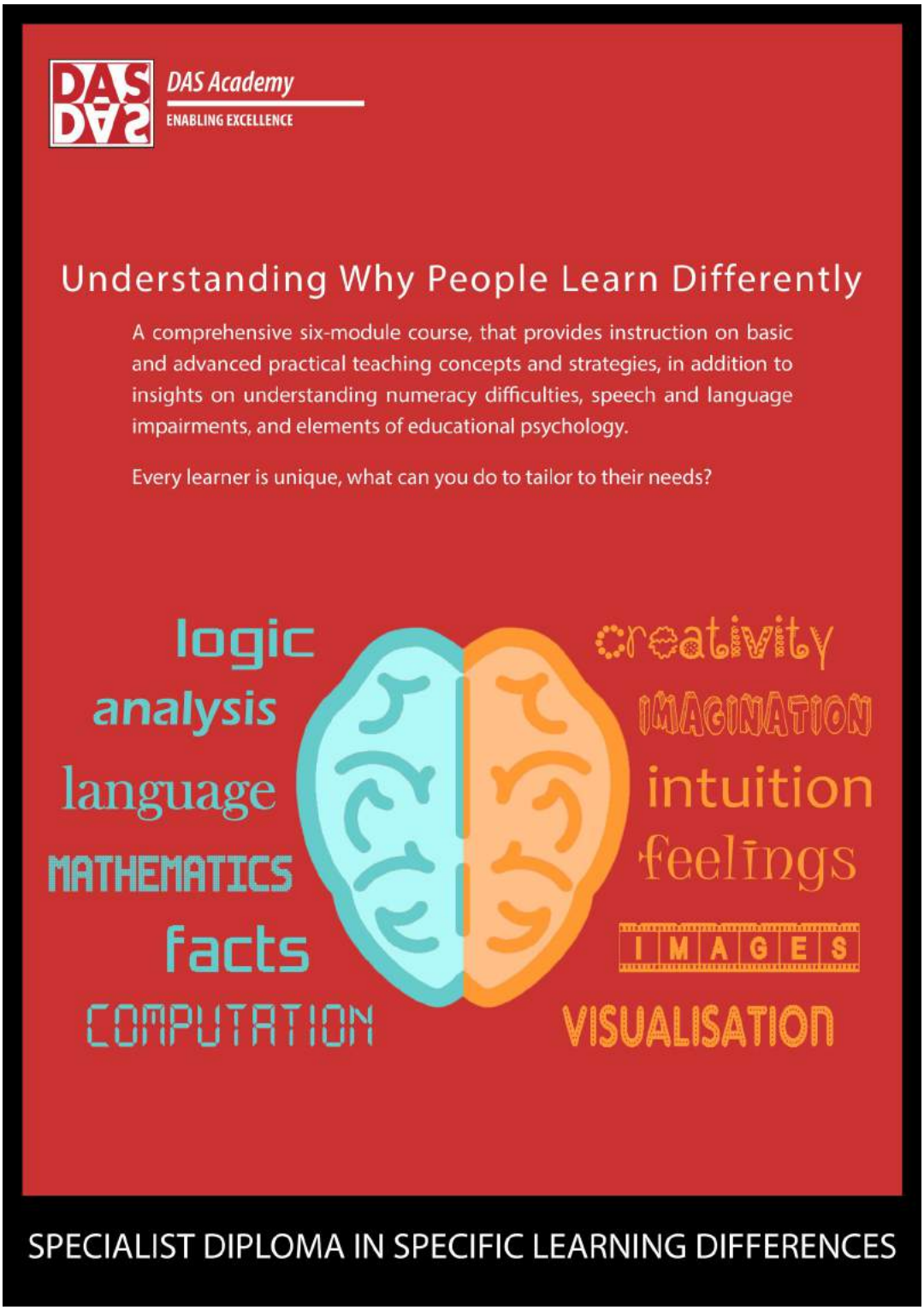
Emeritus Professor Angela Fawcett is a leading international researcher into dyslexia and other developmental disabilities, encompassing a range of theoretical and applied contributions to this field. Angela is also an Honorary Professor at the University of Sheffield. Her approach is broad and interdisciplinary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

Angela has worked with the Dyslexia Association of Singapore for a number of years and is currently a Research Consultant to DAS. She is currently the Editor-in-Chief of the Asian Pacific Journal of Developmental Differences.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Dyslexia, and Co-occurring Difficulties

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ADHD – ATTENTION DEFICIT HYPERACTIVITY DISORDER
A term used to describe children who exhibit inattentive and/or hyperactive and impulsive behaviour more frequently and to a greater degree of severity than their peers.

DCD – DEVELOPMENTAL COORDINATION DISORDER
A disorder characterised by movement difficulties that are out of line with age and developmental stage, that are not explained by neurological deficits, and significantly interferes with a child's academic achievement or activities of daily living. (In the UK this is often also referred to as Dyspraxia)

SLI – SPECIFIC LANGUAGE IMPAIRMENT
A disorder in which oral language skills are impaired, but non-verbal ability is within the normal range.

DYSGRAPHIA
A term used to describe writing skills that are substantially below those expected given a person's age, intelligence, and education. This is a subset of difficulties typically assumed to be a component of dyslexia.

DYSCALCULIA
Difficulty which affects the ability to acquire arithmetical skills, despite sufficient intellectual ability and motivation.

Adapted from Research into dyslexia provision in Wales, 2013

The definition of dyslexia identifies a number of potentially co-occurring difficulties, known as co-morbidity. Most children with Specific Language Impairment (SLI) go on to show signs of dyslexia, there's a high overlap between dyslexia and inattention, there's an overlap between dyslexia and developmental coordination disorder (DCD/dyspraxia), and of course there's a high overlap (in terms of reading difficulty) between dyslexia and general learning impairment.

Many practitioners lament that the diagnosis you get seems to depend more on who tests you and when than your actual ability profile. Take dyspraxia for example, previously known as 'clumsy child syndrome'. The definitions of dyspraxia and dyslexia seem almost interchangeable, but for dyspraxia you may have a reading disorder, and of course for dyslexia you must have a reading disorder.

Consequently, evidence from research studies (O'Hare and Khalid, 2002) shows a high overlap, with 70% of children with DCD also showing evidence of dyslexia and phonological problems, and Iversen et al., (2005) showing that 60% of dyslexic children also showed evidence of DCD. Moreover, Haslum and Miles, (2007), showed that children drawn from the National Cohort study of 1970, showed more evidence of dyslexia in relation to a higher number of motor skill deficits. This fits in well with research from the Sheffield group, Nicolson and Fawcett (2004), that showed evidence for motor skill deficits in dyslexia across the age range from 8-17.

Handwriting difficulties or dysgraphia are known to be associated with dyslexia, but there is surprisingly little research into this aspect (Berninger et al., 2008). However, the most compelling evidence is drawn from the Finnish family studies (Viholainen et al., 2006) that show evidence for motor difficulties pre-school in children who are later diagnosed as dyslexic.

In terms of the individual deficits associated with dyslexia, Attention Deficit Hyperactivity Disorder (ADHD) is one of the most interesting, and with recent modifications to the US Diagnostic Statistical Manual (DSM–V) classification system, we are likely to find many more children with dyslexia diagnosed with Attention Deficit Disorder, via a version of ADHD without the hyperactivity which is associated with inattention. These changes will allow ADD to be identified in children based on evidence of inattention up to 12, whereas in the past it was evidence of inattention prior to age 7, and a range of severity will be introduced.

As many of the questions on which a diagnosis is based include slowness and difficulty in completing school-work, many more dyslexic children are likely to be included. This may be secondary to their dyslexia, but clearly a different approach is needed in teaching these children to ensure they remain on task. Evidence can be found in both clinical samples and samples drawn from the general population.

Willcutt and colleagues in 2007 showed that 40% of a sample of twins with either Reading Disorder (RD) or ADHD was co-morbid for the other disorder. 54% of children with ADHD in a clinical sample showed reading problems (Stevenson et al., 2005). Interestingly, in a school based study (Kadesjo and Gillberg, 2005), 40% of children with ADHD showed reading problems and 29% writing problems. It seems that children with both ADHD and RD show a distinctive deficit in rapid naming speed, so it may be that processing speed underlies the link (Bental and Tirosh, 2007). Research now is looking at different aspects of attention and learning in children with dyslexia, in order to understand these areas of processing more clearly.

There is a commonality between some aspects of Specific Language Impairment (SLI) and dyslexia, so it is hardly surprising that most children with SLI go on to show the type of dyslexia associated with poor language development. Much of our early reading is based on guesswork, knowing what words might fit into the sentence you are reading, and clearly the more fluent your language, the more likely you are to be successful. Reports of the prevalence of dyslexia in cases of early language impairment range from 25-90% (Tomblin et al., 2000). Snowling, Bishop and Stophard (2000), checked on the reading and phonological skills of children with preschool diagnoses of SLI, and found significant impairments for these children at age 15. Interestingly, in her family studies, Snowling and colleagues (Muter and Snowling, 2009), have shown that vocabulary knowledge can be a protective factor for children with phonological difficulties, which seems to prevent the development of dyslexia.

Visual processing deficits in dyslexia have been found in two thirds of children attending the Oxford Visual Processing Labs run by John Stein and his colleagues. (e.g. Stein and Walsh, 1997). They note that many children experience symptoms of blurring when trying to maintain their focus in reading. It has been suggested that many children will be helped by using a coloured overlay to soften the glare from the paper, and this includes children who experience migraine as well as those who are dyslexic. The proportion of dyslexic children experiencing symptoms within the general population may well be lower than those identified in clinic, nevertheless, it can be an important contributor to dyslexic type difficulties.

> "Many practitioners lament that the diagnosis you get seems to depend more on who tests you and when than your actual ability profile."

Some children and adults with dyslexia may also experience dyscalculia, a specific difficulty with Maths, and not simply in reading and interpreting the instructions. The leading researcher in the area,

Brian Butterworth (2003), reports that 40% of dyslexics have difficulties with mathematics, although only 7.6% of children with dyscalculia also show poor reading (Dirks et al., 2008). This bears out the early work from Tim Miles in his 1983 book which identified problems with subtraction, multiplication, division, times tables and other aspects of maths. Problems may include mixing up symbols, and problems in the direction of working out sums, as well as understanding written questions. This may be based on phonological difficulties in accessing problems (Simmons and Singleton, 2008) or may be separate cognitive profiles (Landerl et al., 2009).

A smaller number of children may experience Asperger's type symptoms in addition to their dyslexia, and this has been linked to SLI. But a more common problem for children with dyslexia is misinterpretation of spoken language, which can also manifest itself in comprehension. This may impact on the social skills of the child who has difficulty interpreting jokes. A research study which pinpointed difficulties of this type in dyslexic students, (Griffiths, 2007), showed they were impaired in making inferences from a story and choosing the right punch-line for a joke. This of course can have implications for written language and examinations under stress, as well as for a range of social interactions. Similar difficulties in non-verbal skills may be found, for example for my son Matthew, (a verbally able boy) in identifying when a social situation changes gear, and so missing subtle non-verbal cues and getting hurt in the playground.

So there is clear evidence for a range of overlapping difficulties in dyslexia, as outlined above But it seems that it may be even more common to find an overlap between several different overlapping disorders and dyslexia. A high overlap between symptoms of different developmental disorders has been identified in a number of studies (e.g. Bishop, 2002; Gilger & Kaplan, 2001; Jongmans et al., 2003). There is an international consensus on this overlap. Studies from Canada, the UK, USA and Scandinavia all show how hard it is provide an unequivocal diagnosis, leading to the quote (from Kaplan and her colleagues, 2001). "in developmental disorders co-morbidity is the rule not the exception'.

This analysis highlights the importance of secondary symptoms in distinguishing different causes (and the problem in basing diagnostic procedures on behavioural symptoms). Kaplan et al., (2001) studied a population-based sample of 179 children receiving special support in Calgary: If the children met the dyslexia criteria, there was a 51.6% chance of having another disorder. If the children met the ADHD criteria there was an 80.4% chance of having another disorder.

Studies from our the Sheffield research group have identified motor and speed difficulties in dyslexia, in addition to their literacy and phonological difficulties, and this applies not just at the group level, but at the level of individuals, with over 80%

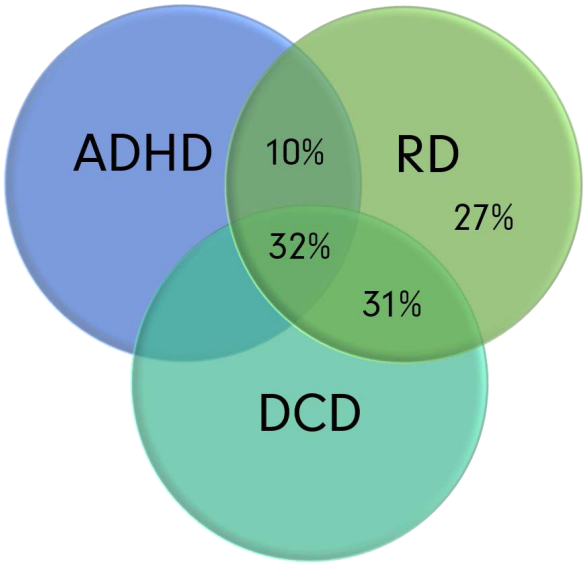

Figure 1. Overlaps between developmental disorders (Kaplan et al., 2001)

of our panel showing deficits in all of these areas in a series of studies addressing a broad range of areas.

Interestingly this approach has now been taken up by other research groups, (e.g. Ramus et al., 2003) and has considerable potential for identifying overlaps and providing appropriate support. This approach led us to consider the brain regions which might be involved in dyslexia and to focus on the cerebellum, which gives a good explanation for a range of difficulties, including problems in automaticity, speed of processing, and phonology, all learned skills (Nicolson, Fawcett and Dean, 2001).

Most recently, Snowling and colleagues (Gooch et al., 2014) have identified deficits in children with family risk for dyslexia. The authors note that co-morbidity can be seen in the preschool years: children at family risk were weaker than typically developing children in motor skills and executive function, and this particularly significant for those with language impairment. Children's early language and motor skills are predictors of children's later reading skills.

In terms of Singapore, the Specialised Educational Services (SES) programmes developed by the Dyslexia Association of Singapore (DAS), are based on the recognition that for most children their dyslexic problems are compounded by other issues, including those such as low self esteem, that may be a consequence of dyslexia and difficulties in keeping pace with their peers.

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For further information on research into dyslexia provision in Wales
http://wales.gov.uk/statistics-and-research/research-dyslexia-provision/?lang=en

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

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Rhythm, Tempo and Enhanced Academic Performance

Mary Mountstephen
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KEY WORDS

RHYTHM
A strong, regular repeated pattern of movement or sound.

TEMPO
The rate or speed of motion or activity; pace.

NEUROMOTOR IMMATURITY
The retention of immature patterns of movement control.

EXECUTIVE FUNCTION PROCESSES
These include: planning, organising, prioritising, and working memory.

EMBODIED COGNITION
A concept that proposes that the brain's systems of understanding are rooted in bodily awareness.

In this article I would like to draw the reader's attention to research and practice in the use of physical, rhythmic movement programmes as part of interventions to improve literacy skills. This draws on the work of practitioners internationally, including Dr Elizabeth McClelland of Oxford University in the U.K. and Professor Crispiani of The University of Macerata in Italy.

I have been researching this field since 2005, and have trained in a number of approaches, in order to evaluate their effectiveness both in terms of the research available and to explore the ethics and practicality of using academic time for, it can be argued, non-academic purposes.

The programmes referred to in this article are primarily aimed at students aged 4 and above whose academic progress is causing concern. They share an understanding that exercise does not replace systematic phonological training, rather it harnesses the research on embodied cognition where the hypothesis is that improving attention and self-control through physical and visual bodily activities and auditory tasks can lead to enhance academic attainment.

'Schools still largely regard the mind and the body as two distinct things, with teaching designed to train only the mind. However, recent developments in cognitive science suggest that there is much more to thinking and learning than previously supposed... and has given rise to a radically different model of how the human brain thinks and learns. In the 'embodied cognition' model, the body and brain work together in an inextricably linked brain-body system' (McClelland, 2015).

Instead of having to represent knowledge about the world and using that knowledge to simply output commands, the brain is, according to this theory, part of a broader system that critically involves perception and action as well. Higher-level learning is seen as grounded in sensory awareness, which needs to be trained as a foundation for the development of higher-level learning. Thus programmes that require attention, inner focus, self-direction and physical coordination are being researched to establish whether they produce long-term and sustained improvements in academic performance.

The concept of using physical approaches to improving classroom performance has a long history, from the benefits of exercise to bringing improvements in overall health to more specific claims for improving cognition and behaviour. More recently the practice of relaxation exercises and mindfulness has re-focused attention on teaching students how to pay more attention to how they experience stress and emotions in their bodies.

Teachers in the UK, for example, have, over the years, been encouraged to integrate physical activities into their timetable, but the theory and research underpinning this type of approach has not been particularly extensive.

"Teachers in the UK have, over the years, been encouraged to integrate physical activities into their timetable..."

Usha Goswami of the Centre for Neuroscience in

Education at the University of Cambridge in the UK, has written about the potential associations between music and dyslexia and in the perception of rhythm. She cites a study involving pre-school children in Germany that found significant links between rhythm training and phonological awareness. The training took place for 10 minutes daily over a period of 20 weeks. It included joint drumming, rhythmic exercises and dancing.

The outcome suggested that the group showed significant gains in phonological awareness. Several further examples are provided to offer 'strong support' for a link between musical rhythm perception and reading in 10-year old children with and without a diagnosis of dyslexia.

Scientists have shows that good rhythmic abilities are closely linked to good phoneme awareness and fluent reading. Dyslexic children often have poor ability to clap to a rhythmic beat and children's phonological awareness and reading ability can be improved by regular rhythmic exercises. Brain scans show that listening to music with a highly rhythmic melody actually helps the brain to organise other incoming information and improves attention.

The underlying link between rhythm and literacy is that it is essential to be able to hear the rhythm in speech before progressing to phonemic awareness and reading. Furthermore, it has been suggested that young infants need to learn tightly timed, rhythmically organised body movements in order to provide the underpinning foundations for the development of language.

The role of tempo, the rate or speed of the physical movements, is an interesting area that I intend to explore further in future publications in terms of the following programmes:

- The Crispiani Method: Professor Crispiani
- Move4Words: Developed by Dr Elizabeth McClelland
- Move To Learn: Barbara Pheloung

Each of these programmes aims to improve literacy skills and executive function through a daily set of physical movements that operate within the context of embodied cognition. All three programmes have been developed as a means to address those students whose literacy skills are cause for concern, and all share an approach that is rhythmic, although the tempo varies.

So how can physical, movement-based activities with rolling on the floor, bouncing balls, marching and cross lateral activities influence literacy skills and executive functioning?

What these programmes share is the structured development of:

- Visual attention and eye tracking skills
- Training in developing focused, precise, rhythmic movement
- Short daily (or regular) input for whole class or more specialist groups/ individuals
- Spatial awareness and a mindful awareness of physical sensations
- The use of varying tempo in relation to the activity
- The role of the teacher/ clinician as a support, enabling the children to plan their physical actions and effectively to teach themselves the sequences.

By working on these foundations for learning, the programmes appear to recalibrate brain-body interaction through addressing neuromotor immaturities. There is a growing body of evidence that physical activity interventions do have a positive impact on academic performance. Tomporowski, Lambourne and Okumura (2011), carried out a large review of evidence to date, and found significant impact of physical activity and exercise on children's intellectual function, cognitive abilities and academic achievement.

There are also some indications that physical activity performed in the classroom may have a greater impact on academic achievement than exercise done outside/ in other settings (Donnelly and Lambourne, 2011). McClelland (2015) also makes reference to research in the links between students' phonological awareness and reading and participation in rhythmic exercise.

'Received wisdom would say that the only thing which will improve reading skills in children with SEN is literacy teaching. However, recent developments in cognitive science suggest that it may be time to reconsider this perspective... The underlying link between rhythm and literacy is that it is essential to be able to hear the rhythm in speech before progressing to phonemic awareness and reading.

The effect of poor rhythmic ability is to produce an experience of spoken language for a child, which is similar to listening to a non-native speaker speaking your language with the stresses in the wrong places. ' (McClelland, 2015)

WHAT IS THE EVIDENCE?

Crispiani's programme can be seen as the most intensive, with sessions taking place on a 1:1 basis with a specialist trained practitioner, unlike the other two programmes. The method involves the student in 3 x 1 hour sessions per week for a 12-week period, using highly structured rhythmic activities at a fast tempo. Each session is physically demanding. Professor Crispiani has published extensively and his work is now beginning to be translated into English. The Crispiani Method conceives of Dyslexia as a disorder of timing and the intervention addresses this systematically.

His method is in use extensively across Italy and is linked to the training of teachers in the recognition of dyslexia and methods of support.

McClelland's findings and longitudinal data indicate that the exercise programme schools used 'had significantly enhanced academic performance levels' compared to pupils who did not use the intervention, which lasted for a 12-week period. Activities developed in complexity, being delivered in short, highly prescriptive video segments. The tempo of these movements was moderate, with an emphasis on paying attention to physical sensations. The activities take place either seated or standing and the teacher is expected to participate as the class follow the moves on screen.

In the article written by McClelland, Pitt and Stein (2015), the authors describe pilot trials which they claim were very successful in terms of the impact for pupils performing below the 20th percentile in literacy assessments, although higher achieving pupils also achieved smaller, but still significant improvements. These improvements were long lasting and were achieved within an inclusive context, with all pupils participating. In terms of practicality, this is seen as a low-cost addition to school provision that can be justified over the time spent.

These improvements were long lasting and were achieved within an inclusive context, with all pupils participating. In terms of practicality, this is seen as a low-cost addition to school provision that can be justified over the time spent.

Pheloung has published several books about the Move To Learn approach and research has been carried out in Poland, South Africa and Australia. Move to Learn

is unlike the other two programmes in that it is primarily floor based and comes from a joint perspective of learning differences and occupational therapy. The exercises are performed very slowly and with a stress on rhythmic precision. Move to Learn is used in mainstream classrooms and it is an inclusive programme 'aimed at addressing some of the functional deficits that are commonly present in children with various learning differences. Sequenced to follow the natural stages of human development experienced by children in the preschool years, the program is designed to increase learning readiness.' (Pheloung, 2014)

The evidence suggests that the students who participate in the year long programme make improvements in terms of executive functions, behaviour and focus in the classroom. More research is needed to establish more precisely the extent of improvement across specific skills and whether the gains are long-term.

FINAL POINTS

This continues to be a fascinating debate and I have seen interest grow in the relationship between the physical and cognitive dimensions of learning. The programmes described here suggest that working with the body offers a valuable tool to improve cognitive functioning in a very broad sense. The key concepts of tempo and rhythm would benefit from a greater analysis and I am currently working with the creators of all three programmes to explore this in greater depth.

My understanding is that the programmes develop the pre-requisites for learning more effectively and remove some subtle barriers to classroom performance. Whereas Move 4Words has the most data on literacy improvements, Move to Learn appears to produce more developmentally age appropriate skills and processing. The Crispiani Method shares many similarities, but is a more specialist approach for students with dyslexia. In learning more about this method, it will be interesting to see how much overlap there is between the three programmes and to make recommendations for a structure which incorporates the most effective elements for use in schools.

We know there are many students who do not access the support they need for undiagnosed dyslexic difficulties. There are also many students whose literacy skills are failing them, but who do not necessarily meet the criteria for a specialist intervention. My goal is to provide mainstream schools with a programme that can begin to produce a greater impact on these students within an inclusive, ethical and cost-effective paradigm.

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PRESCHOOL PROGRAMME

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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.

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OUR APPROACH

Our 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 have the option to continue with the MOE-aided DAS Literacy Programme.

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Specialised Educational Services (SES) is a division of the Dyslexia Association of Singapore.

The Importance of Early Intervention: A Review

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This article was originally published in the DAS Handbook of Early Intervention 2015

The issue of what age is best to intervene to provide support for children with dyslexia or at risk of dyslexia has been a fruitful topic for some years now. In this review we draw together material from a range of sources. We include the review (Fawcett, 2002) for the UK Department of Education, the findings of the US National Reading panel; Greg Brooks (UK) 2002, 2007 and 2013 papers 'What works for pupils with literacy problems', Chris Singleton's (UK) 2009 review of interventions for the Rose Report; and recommendations from the 'What works Clearinghouse', Robert Slavin's (US) 2009 systematic review of US interventions, as well as a systematic review of the current literature. We have also included an updated search for research by Joe Torgesen, who is a key figure in US intervention research (Torgesen et al., 2014).

Our conclusions are that early intervention is the most effective and cost effective in terms of reaching a child's potential and reducing the impact of failure on their self-esteem.

WHAT ARE OUR CRITERIA FOR INCLUSION?

It is important to note that we started with stringent criteria for what we would accept and planned to include only studies undertaken with children with diagnoses of dyslexia or language disability, which would meet the 'gold standard' of randomised controlled studies including pre and post tests with standardised tests. However, this would exclude studies which aim to prevent failure with 'at risk' children prior

"...early intervention is the most effective and cost effective in terms of reaching a child's potential and reducing the impact of failure on their self-esteem. ."

to diagnosis at age 8. This would be in line with the Rose report (2009) that moves away from early screening and intervention in years 1 and 2 to focus on children with known difficulties.

Nevertheless, many of the most successful studies are conducted at any early age, before formal diagnosis has taken place. We will also try to keep to rigorous standards for the studies presented, all of which will have been published in a peer-reviewed journal, apart from the recent report on 'No to failure' that is included for information on the difficulties which can be experienced working in an educational setting, even for those who are experts in the field.

For a review of the issues in designing intervention studies, see Haslum (2007), who notes that it may not be possible or desirable to adopt the gold standard randomised controlled double blind study in educational research.

THE REVIEWS

It should be noted that although these reviews are comprehensive and well received, none are peer reviewed and published in journal form.

Note here that the impact of interventions is usually measured by effect size analyses (ES) (Cohen, 1969) that suggest an effect size of 0.20 is small, 0.5 is medium and 0.8 is large.

i) Slavin (2009)

These reviews taken from the website Best evidence encyclopedia examine the impact of different reading approaches with beginning and struggling readers, and include interventions of 12 weeks or longer which represents strong medium or weak evidence, with effect sizes of at least 0.20.

The method is known as Best evidence synthesis, and uses well-justified standards to evaluate studies and pool effects, in an approach similar to the What works clearinghouse. Slavin included 96 quasi experimental-control comparisons, 39 of which were randomised and five quasi experimental.

ii) Singleton (2009)

Singleton notes that there is a dearth of well-controlled studies with children with known difficulties, and acknowledges the need to recognise 'silver standard' studies using quasi- experimental designs including pre and post

tests, some of which may not include controls. Singleton (2009) has included a large number of unpublished studies presented at conferences or published in book chapters in his review.

iii) **Brooks (2007)**

Brooks has similarly presented unpublished material, more specifically studies that have investigated intervention approaches that he finds promising.

iv) **What works clearinghouse (2007)**

This website maintained by the US department of education includes sections on beginning reading (ages 5-8) and adolescent reading, as well as achievement more generally. This website allows searches for specified interventions, and includes single case studies as well as randomised trials and quasi-experimental studies. (http://ies.ed.gov/ncee/wwc/reports.)

v) **Fawcett (2002)**

This review for the DfES website included an analysis of current publications plus the findings of the US National Reading panel.

vi) **US National Reading Panel.**

It is particularly interesting to cross reference across these reviews and identify strong UK intervention studies which have been highlighted in a range of US and UK reviews.

In 2002, Fawcett (2002) noted that even well evaluated traditional therapies were not proving as successful as had previously been hoped, despite the development of costly long term controlled studies in the US by the National Institute for Child Health and Human Development (NICHD) designed to help children with dyslexia and other reading difficulties costing between 10 and 20 million dollars a year.

The problem is that training leads to improvements in the area which has been trained, but it is much more difficult to ensure that this generalises to reading skill overall.

The most difficult task is to improve children's standard scores in literacy, because these take age into account, and are often based on irregular words that do not

improve with phonological training. Therefore the results from the US National Reading panel (2001) showed improvement in phonological skills, but this did not always generalised into accurate reading, nor typically has this improvement generalised into more fluent reading, and spelling is even more difficult to remediate.

However, there are a number of critical issues that need to be resolved before progress can be evaluated properly, and many of these were addressed in the US analysis. These include:

- What age is likely to be the best to intervene?
- Is it better to allow children 'at risk' to fall behind and then intervene with children with recognised difficulties?
- Are there significant differences between training programmes and what is the best type of training.
- How long should a programme be administered for?
- Is it most effective to give it for weeks or is it necessary to provide a year of intervention?
- Does it matter how intelligent the children are, or can the same approach be used with children of all types?
- What is the significance of a poor start for children from a low socio-economic background?

The approach adopted here is to use the insights from the US research, to combine these with best practice in UK research, and present the evidence within a framework that emphasises not only effectiveness but also cost-effectiveness.

THE BACKGROUND

Although most educationalists would agree that understanding is the key, research in the area has largely focused on the ability to improve single word reading. This is mainly because it is the easiest to measure objectively. There is solid evidence that this can be improved, although typically it is easier to improve skills in a normal reader, or an 'at risk' beginning reader, than it is to help an older disabled child.

The major area of debate here has been which method is the most effective? The major focus of US research has therefore been a series of comparative evaluations of the effectiveness of each method, with a general consensus among researchers that phonological training is likely to be the most effective. This has led to a series of longitudinal studies, spanning 3 years or more, with some programmes of research adopting a 10 year perspective in order to consider long-term outcomes.

The results of these US interventions have, embarrassingly, been somewhat disappointing, with no significant differences between any of the remediation methods evaluated, although phonological approaches are more successful overall. On closer analysis, a general dissatisfaction with the impact of intervention studies led the US government to commission a National Reading panel into reading remediation (2000). For the first time for over a decade, it became clear to policy makers that interventions that target phonological skills alone or even in combination with single word reading may not be enough.

Despite an improvement in these component skills, the reading of disabled readers remained laboured, which impacts on their understanding of what they are trying to read. It was still not clear what could be done to effect change. This change in emphasis prompted the US National Reading panel's critical analysis of the effects of intervention worldwide. This will be augmented with material from ongoing and recently published UK and US research, in an attempt to establish which techniques are most useful. In line with a balanced approach, it should come as no surprise to find that a judicious mix of techniques tuned to the individual needs of the child is the approach that will be advocated by this review.

THE EFFECTS OF INTERVENTION

When considering outcomes from an intervention study, it would be hardly surprising if children improved on the skill they had been directly trained in. However, there may also be evidence of near transfer or far transfer. Near transfer means that there are improvements in skills only indirectly related to the skill trained. Intervention studies seek evidence of far transfer, so that a skill held to be unrelated to the trained skill, is improved. Naturally, this is the most difficult to achieve, and so most studies of phonological intervention look at near transfer to reading, and possibly far transfer to spelling. Note that complementary techniques that are not based on phonological or reading intervention are by definition evaluated on far transfer.

Finally, it is useful to establish that improvements are not just a general Hawthorne effect of the greater interest taken in the child. This means that evidence should be specific to the skill in question, rather than just a generalised improvement (good as this might be!).

Interestingly, phonology and fluency are almost invariably separated in the US literature, but in the UK a more pragmatic approach is normally taken, possibly based on the limited funds available for large-scale research of the type common in the US that evaluates controlled studies Intervention A versus Intervention B.

Note also that educational interventions in the US are highly competitive, each state has their own system and can specify their own intervention packages, and those which are well-evaluated and widely used stand to generate significant amounts of money. Amongst the articles selected for the National reading panel review the following key UK intervention studies were featured; Hatcher Hulme and Ellis, 1994 and Solity (2000). These are discussed below.

WHICH PROGRAMMES WORK BEST?

In Table 1 we present a review of effective studies with the highest effect sizes at the top, split into primary and secondary age studies. It is interesting to note amongst the most successful interventions for the UK are a series of studies from Hatcher and colleagues with an effect size of from 0.69 to 1.6 for a 10/20 hour intervention which delivered a combination of reading and phonology (Hatcher et al., 1994, 2006a and b), and a series of 10 hour phonics and fluency interventions from the Sheffield group (Nicolson et al., 1999; Fawcett et al., 1999, 2000).

These studies with children aged 5-7 were highlighted in Fawcett (2002) in Brooks (2007), and remain amongst the most successful in Singleton 2009 and in the current review. The approach adopted for the Sheffield studies used a scheme known as Interactive assessment and teaching, a photo-copiable scheme by Reason and Boote (1994) recommended by the UK literacy strategy. This approach was based on classic comparisons of intervention and control groups matched on reading age at pre-test, and with intervention in small groups for 20 minute sessions three times weekly.

In more recent studies, Hatcher et al., (2006), have compared the UK Early Literacy Support (ELS) and their 'Sound Linkage' program with 128 six year olds, and found that both schemes produced significant gains in reading and spelling which were maintained at follow-up. The authors note the limitations of this study, in which there was no untreated control group, and allocation to treatment was not random. In a further study (Hatcher et al., 2009b) a randomised controlled trial was undertaken which overcame these limitations, with children working in groups of 3 with a teacher, or individually with a teaching assistant in daily 20 minute sessions.

However, there are also issues of cost-effectiveness to take into account here, based on the amount of teacher input needed to achieve the effect. There can clearly be very different costs and benefits involved in projects of this type!

Even interventions with equivalent effect sizes may not always be directly comparable. The ideal scenario would be an intervention which produced the

Table 1. Summary of Intervention Studies in Decreasing Order of Effect Size, Showing Effect Size of 0.8 or greater

Study	Sample	Effect Size	Source
Solity, et al. (2000)	370	3.5	Brooks, 2007
Juel (1996)	6	3.15	Elbaum, 2000
Nicolson, Fawcett & Nicolson (1999)	16	1.34	Singleton, 2009
Hempenstall (2008)	206	1.22	Slavin, 2009
Ehri et al. (2007)	102	1.08	Slavin 2009
Santa & Hø ien (1999)	49	1.04	Slavin 2009
Brown et al. (2005)	59	1.03	Slavin 2009
Nicolson et al. (1999)	116	0.98 (spelling)	Brooks, 2007
Foorman et al. (1998)	68	0.91	Ehri, 2001
Torgesen, et al. (1997)	65	0.90	Slavin 2009
Ehri et al. (2007)	96	0.89	Slavin 2009
Meier & Invernizzi (2001)	55	0.89	Slavin. 2009
Center, et al. (1995)	56	0.86	Slavin 2009
Morris, Tyner,& Perney (2000)	186	0.86	Slavin. 2009
Blachman et al. 2004	69	0.85	Slavin 2009

maximum benefit at reasonable costs in terms of teacher time, using teachers with no specialist training, the effects of which could be shown to persist after the intervention ends. Interestingly, Hatcher (Hatcher et al., 2006b) found no significant differences between outcomes for children who received either 10 or 20 weeks intervention.

i) **Phonemic awareness training**

What is phonemic awareness training? It is understanding the concept of phonemes (the smallest sounds of spoken language, either single letters or sounds like sh or ch). This is difficult for children to grasp without some explicit instruction, because in speech words are usually co-articulated. This means that the way letters are pronounced is influenced by the sounds before or after, so that it is not easy for children to identify the component sounds.

Phonemic awareness can be measured in a variety of ways. Separating out the first phoneme in a word (c in cat), blending sounds to make the word (c-a-t makes cat), or segmenting sounds within a word (say cat without the c).

When phonemic awareness is measured using letters as well as sounds, it becomes phonics training. Interestingly, the findings on phonemic awareness training from the National Reading panel suggest that it is most effective when combined with letters (**0.67** around twice as effective as without letters), which makes it essentially **phonics** training.

ii) **Phonics training**

When evaluating phonemic and phonics training, the National Reading Panel note that it is important to realise that the development of phonic skills is not an end in itself, but simply provides the tools which a child can use to read more effectively. It seems likely that this has been largely forgotten in the debates on the merits of rival approaches in the US!

APPROACHES USED

i) **Analysis and synthesis.**

Analytic phonics uses the onset (First letter) and rime (rest of the word) - so the onset of cat is c, the rime is 'at'. It also breaks the word down into syllables or segments the word. Synthetic phonics starts with the sounds of the letters and avoids whole words. This is currently the major approach favoured in the UK, but interestingly despite the publicity this approach has received through the work of Rhona Johnston over the last 7 years in Scotland, we could not find published peer reviewed articles by Johnston evaluating this technique.

ii) **Embedded phonics**

This uses phonics as they appear in text. This is not a planned and structured approach like the others, but is based on a more natural experience of reading.

WHAT AGE SHOULD WE INTERVENE?

Strikingly, moreover, there were clear implications from the National Reading panel for special needs from an analysis of the results of phonics intervention on literacy. This was most effective when delivered to 'at risk' preschoolers, with the impact on reading for children with known difficulties declining as the children grow older (grades 2-6, ages 7+), and with no impact on spelling after 1st grade (with an effect size of only **0.09**).

Declining effectiveness for children at junior school level is displayed graphically in the figure below. Studies in the UK have confirmed that younger children are more likely to 'accelerate' to keep pace with their peers than children at junior school level, (Nicolson & Fawcett 1999, Fawcett & Nicolson, 2000) possibly because problems at junior level are based on real difficulties rather than lack of exposure to the skills in question. These results suggest that early identification reflects good practice in the field, and that this approach should be adopted more universally in Singapore and the Asia Pacific region..

Contrast the effect size gains for 'at risk' and normal children in the 1st grade in the figures below, with children with difficulties. Problems are much more intractable, and it is unusual to produce a strong effect size, even with quite intensive support. Indeed, intensive support can prove counterproductive in improving skills, although this may simply reflect the severity of the difficulties experienced by children who are offered this intense support.

In his 2013 review, Brooks adopts a different approach, assessing work in terms of the reading scheme used. Unfortunately, for many of the studies reported, the data to evaluate effect sizes is not available, and ratio gains are reported in preference. Here, exceptional impacts are found for Reading Recovery in year 1, with effect sizes of 1.67, with good but less striking impact in year 3, at 0.84. Catch up Literacy in year 3 shows an effect size of 1.11 and Paired Reading 0.87. Brooks concludes that the majority of effect sizes are between 0 and 1, and anything exceeding this level is very strong impact indeed.

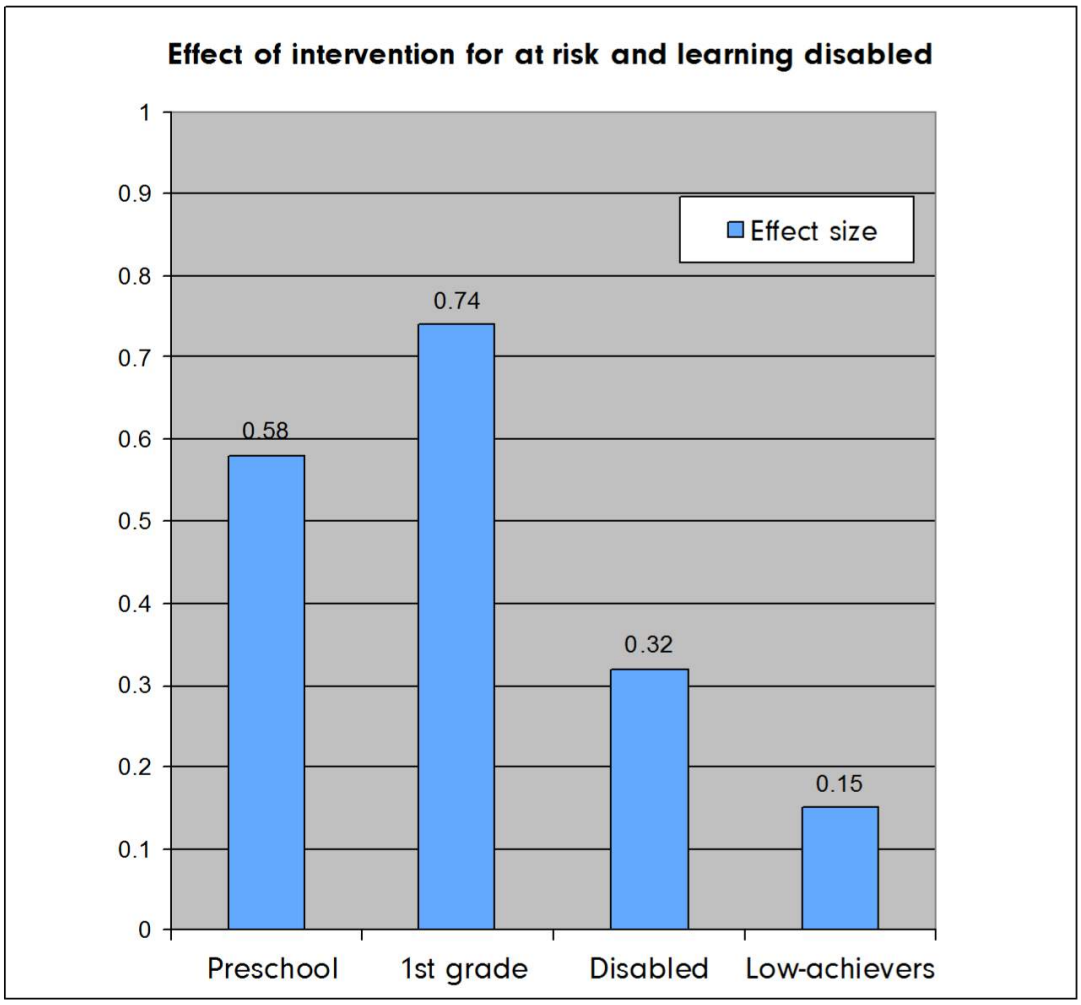

Figure 1. Phonics intervention is most effective for reading in 1st grade and less effective for older children (data from the National Reading Panel).

FLUENCY

This aspect of reading has largely been overlooked for some years, with the emphasis being placed on training in phonics and phonology. The idea that you need to become automatic in skills in order to free resources has been known since the 1970's, but not necessarily recognised in the context of reading. The idea that this analysis should be applied to reading was an important conclusion of a recent influential overview and analysis of the teaching of reading: " ... Laboratory research indicates that the most critical factor beneath fluent word reading is the ability to recognise letters, spelling patterns, and whole words effortlessly, automatically and

visually. The central goal of all reading instruction - comprehension - depends critically on this ability." (Adams, 1990, p. 54).

This issue has now been universally recognised as important in the US, following a report (Pinnell et al., 1995), from the National Assessment of Educational Progress, which showed that 44% of 4th graders (9/10 year olds) were not fluent even with material appropriate for grade level that they had already read in class. These students may find it difficult to understand what they read.

It is clear that fluency develops with practice, but what is the best kind of practice? If poor readers are considered, they naturally tend to have less practice than good readers, because they are not fluent enough to read for enjoyment. Moreover, different techniques have been recommended, with two main approaches; firstly variations of 'guided oral reading', where students read out loud and receive systematic and explicit feedback and guidance from a teacher; and secondly, 'independent silent reading', which simply encourages readers to read more, based on a known correlation between the amount of reading undertaken and the development of reading skill.

Interestingly, the silent reading approach does not attempt to evaluate any changes in children's word reading accuracy or speed, but monitors increases in vocabulary and comprehension skills. Poor readers needed an average of 25 hours repeated reading, compared to 18 for the average readers. Overall, this is encouraging because repeated reading requires no particular training or materials, and can be delivered by parents or peer tutors. It is therefore both effective and cost-effective, and can be carried out in the classroom, rather than withdrawing children for costly individual support. By contrast, studies that simply encouraged children to read more had no effect on outcomes in terms of fluency, accuracy or comprehension.

DIRECTIONS FOR FURTHER RESEARCH

A series of points have emerged from the analysis above that suggests that there may be a critical time for intervention. It does not seem to matter whether children are taught individually, in small groups, or as a class. As their reading skills develop, guided oral repeated reading is more successful than simply practicing reading silently. It is clear that children's skills can be improved with a range of interventions, but this becomes more difficult as the child becomes older. The most effective approach would be to identify children as 'at risk' in the early years of school and provide a short structured intervention.

It is clear that providing support at this stage is much more successful than waiting

for children to fall behind. This early support would 'accelerate' the literacy skills of the majority of the children leaving a few children whose difficulties are particularly intractable. This could then be followed by a longer targeted intervention, which addressed the specific needs of the individual child. This would prove not only more effective, but also more cost-effective, providing tailored support for children with real difficulties.

EDUCATIONAL SAVINGS

Intervention can be provided in small groups, and the evidence suggests that this can be just as effective as working with children individually, particularly with younger children. Cost effectiveness can be estimated based on the added value effect size, and the number of hours teacher input per child. This is a true measure of overall cost-effectiveness.

SUMMARY AND CONCLUSIONS

It is clear that the timing of the intervention is more critical than the type of intervention, with an eclectic mix which links sounds and letters producing the best effects overall. The evidence suggests that early intervention (Nicolson et al., 1999, Hatcher et al., 1994, 2006) can reduce the severity of impairments, allowing some children to keep pace with their peers and others to move into a category of milder deficit. This should not only impact favourably on educational costs but also improve standards within education, based on the greater malleability of skills noted in this review in the early years of primary school.

However, it should be borne in mind here that there remain a constant number of children with severe and profound difficulties who will demand higher levels of resources for their educational provision. Moreover, there will be a core of children who fail to improve despite the early years input and will continue to need specialised help in school. Nevertheless, the numbers of these children could be significantly reduced by early intervention, thus ensuring that funding is concentrated on those children with entrenched difficulties.

The implications of these findings on the importance of early intervention should be considered in countries such as Singapore where standards are high, school does not start until age 7, and there will be strong individual differences in the levels od achievement even within children starting school. Pre-school intervention can level the playing field for those with dyslexia and related difficulties.

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Angela has worked with the Dyslexia Association of Singapore for a number of years and is currently a Research Consultant to DAS. She is currently the Editor-in-Chief of the Asian Pacific Journal of Developmental Differences.

A Practitioner's Perspective: Increasing Effectiveness of the Linus Program with Phonics-based Multisensory approach

Dr Aziz Abu Hassan
Executive Committee Member
Persatuan Dyslexia Malaysia

INTRODUCTION

The Literacy Numeracy Screening (LINUS) program was introduced in 2010 to replace a preceding early intervention program known as Kawalan Intervensi Membaca Menulis (KIA2M), which was introduced in 2006. As the results were not too encouraging since its inception, the program was extended initially to Year 2 and eventually to Year 3 such that all schools can achieve their Key Performance Indicator (KPI) in relation to eliminating poor literacy and numeracy skills in all schools. The Ministry of Education (MOE) also raised the minimum requirement for each Year 1 through 3. As at the end of 2014 there is an estimated 1.3 million pupils in the LINUS program in Years 1 through 3.

Persatuan Dyslexia Malaysia (Dyslexia Association of Malaysia) has conducted 6 case studies of pupils in the LINUS program in schools of several states. PDM conducted group educational assessments on these students from Years 1 to 3 with each group ranging from 40 to 60 students. PDM found out that eighty percent (80%) of these students were dyslexics. If we were to extend this same percentage to the total number of pupils in the LINUS program, it would mean that there are 1.04 million pupils with dyslexia in the LINUS program of Malaysian primary schools. This is an alarming data, which must be addressed if Malaysia were to achieve the specific objective of improving the literacy and numeracy skills of primary school students in the LINUS program.

The purpose of this paper is to recommend a suitable and more appropriate and effective approach for implementing the LINUS program in the Malaysian primary schools based on the success of PDM's remediation program that began in 1999.

SUCCESS OF PDM PROGRAM

Before proceeding to the recommendation it seems appropriate to record the success of PDM's remediation program at its centres in many states in the country. Beginning with 6 students at its first centre in Taman Titiwangsa in 1999, PDM has remediated, as of the end of September, 2015, almost 6,700 children with dyslexia in overcoming their reading and writing difference. PDM currently has 13 centres in Malaysia with 4 in Kuala Lumpur (KL) Federal Territory, 3 in Selangor, 1 each in Penang, Kedah, Perak, Pahang, Johor and Terengganu.

Many of the centres, especially those in Klang Valley, in the area of Kuala Lumpur and Selangor, operate a 4-hour intensive educational session from 8:30 am in the morning as well a 4-hour session in the afternoons starting at 1 pm. We also run Saturday classes for our "graduates" (those that have completed their intensive remediation programs) as a tuition program to assist the children with the schoolwork. The Ampang centre initially began with a Saturday morning session but had to set up an afternoon session as well due to the increasing demand from parents.

Before children are admitted into PDM's intensive program they first undergo an educational assessment to diagnose and determine the severity of their learning difference. The purpose of the educational assessments is to determine each child's ability in:

1. recognizing alphabets and numbers (dyslexia and dyscalculia),
2. their awareness of phonics and how to blend phonemes,
3. the legibility of their handwriting (dysgraphia),
4. spelling acumen,
5. ability in constructing sentences and
6. comprehension.

Examples of the outcome of these assessments are illustrated here in the ensuing pages.

The first thing the child has to be able to do is to arrange the alphabets onto the board as shown in Figure 1. The alphabets are taken out and scrambled on the table and the child's first task is put them back onto the board according to the

Figure 1: Alphabet Board

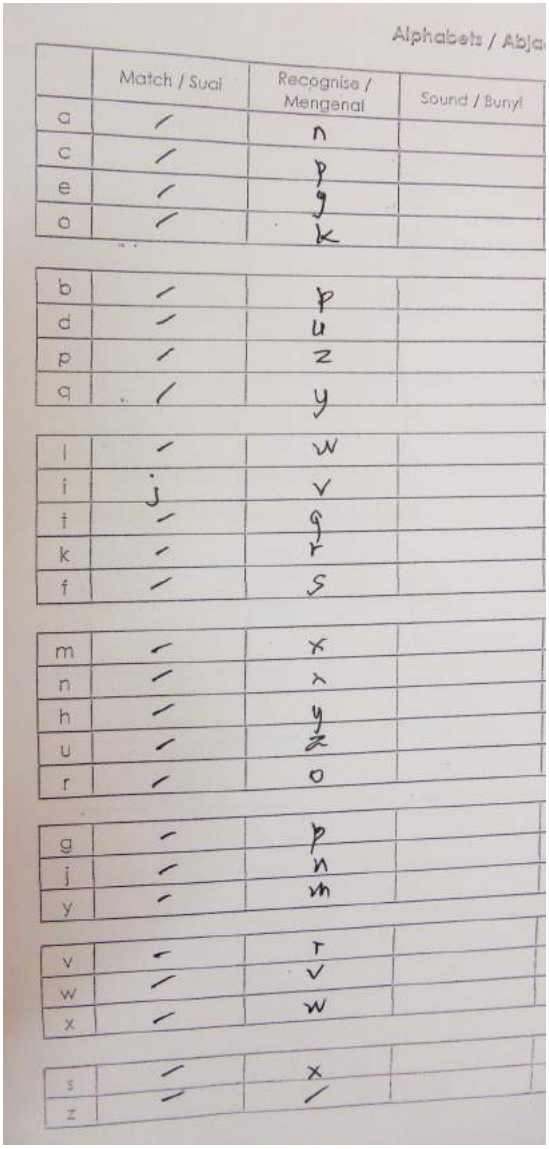


Figure 2: Sequence

shapes. If he recognizes the shapes of all alphabets he should be able to assemble the alphabets in less than two (2) minutes. We have had children who took as long as 6 minutes as they were unable to match the shapes. From this exercise we can already gauge their cognitive ability with regard to alphabets.

We test their recognition further by asking them to point out the alphabet letters. They are asked to identify the letters randomly lest they memorize their alphabets. For those that memorize, they would have to recite beginning with "a" until they reach the letter they have been asked to show.

The sequence is shown in Figure 2. The example shown in Figure 2 is that of a child who had no idea what letters are! In this case he/she could only identify the

alphabets "v" and "z" and that is probably because they sounded the same.

The third step of recognition is the children's ability to write the alphabet out. We also observe the manner in which they hold their pencils and the legibility of their writing. Children with dyslexia often have poor handwriting.

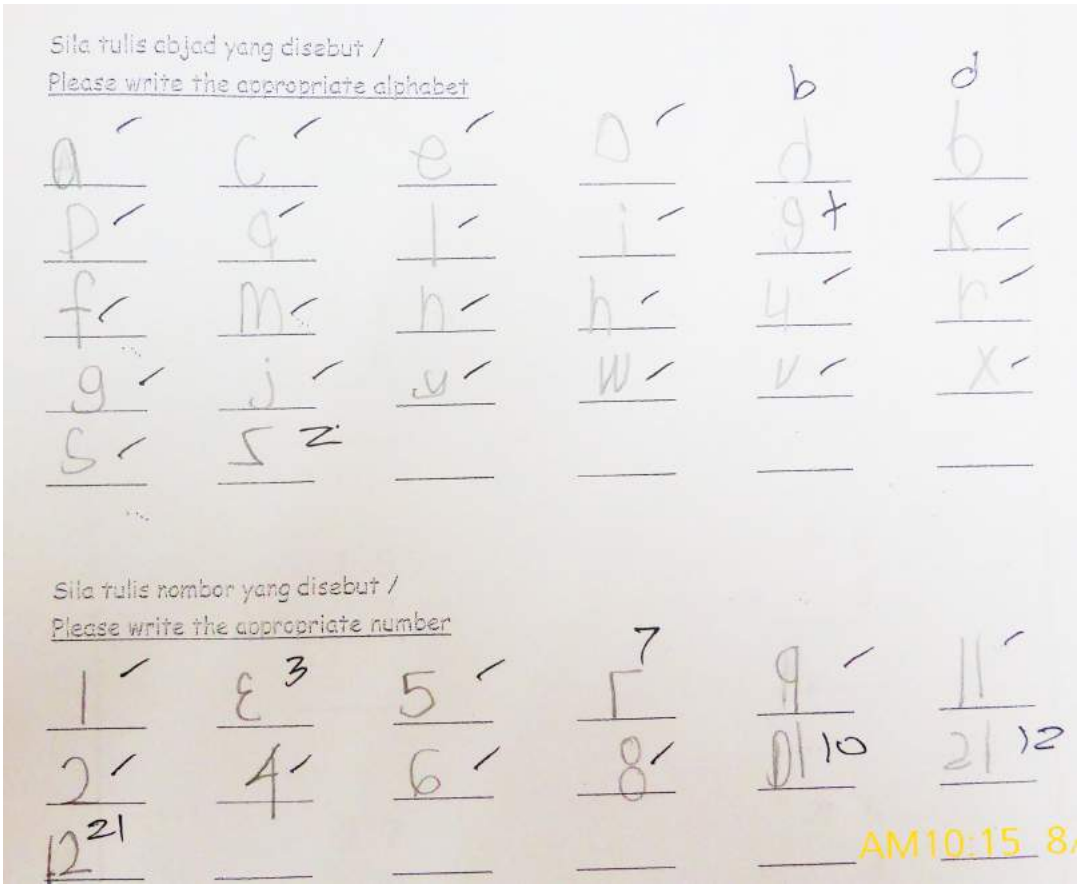


Figure 3: Sample 1 of Handwriting

Figure 3 is a sample of student's writing. Although he can write most of the letters, he has a tendency to write mirror images not only of letters but also of numbers.

Figure 4 is that of a child who could only write 6 out of 26 letters correctly. The rest of the letters he was just merely guessing but being smart enough to repeat them too often.

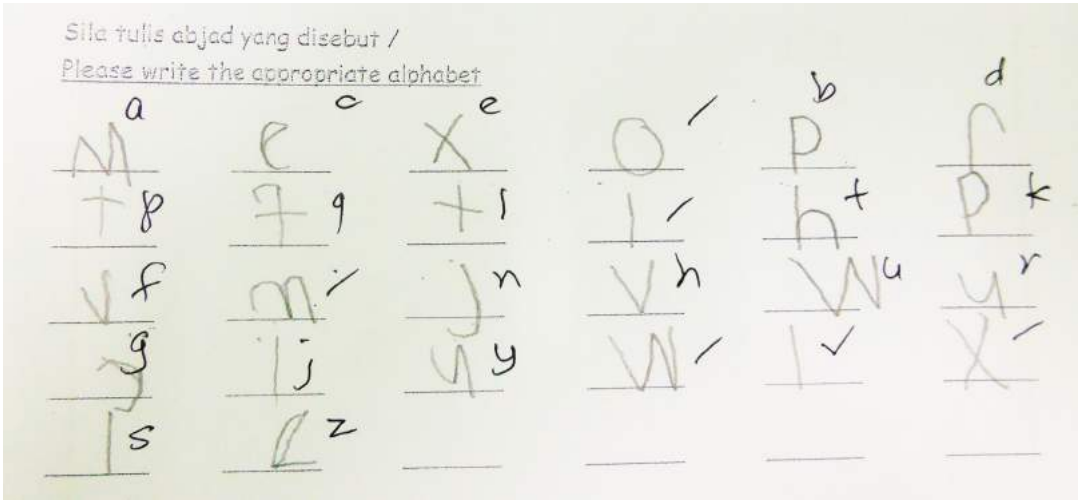


Figure 4: Sample 2 of Handwriting

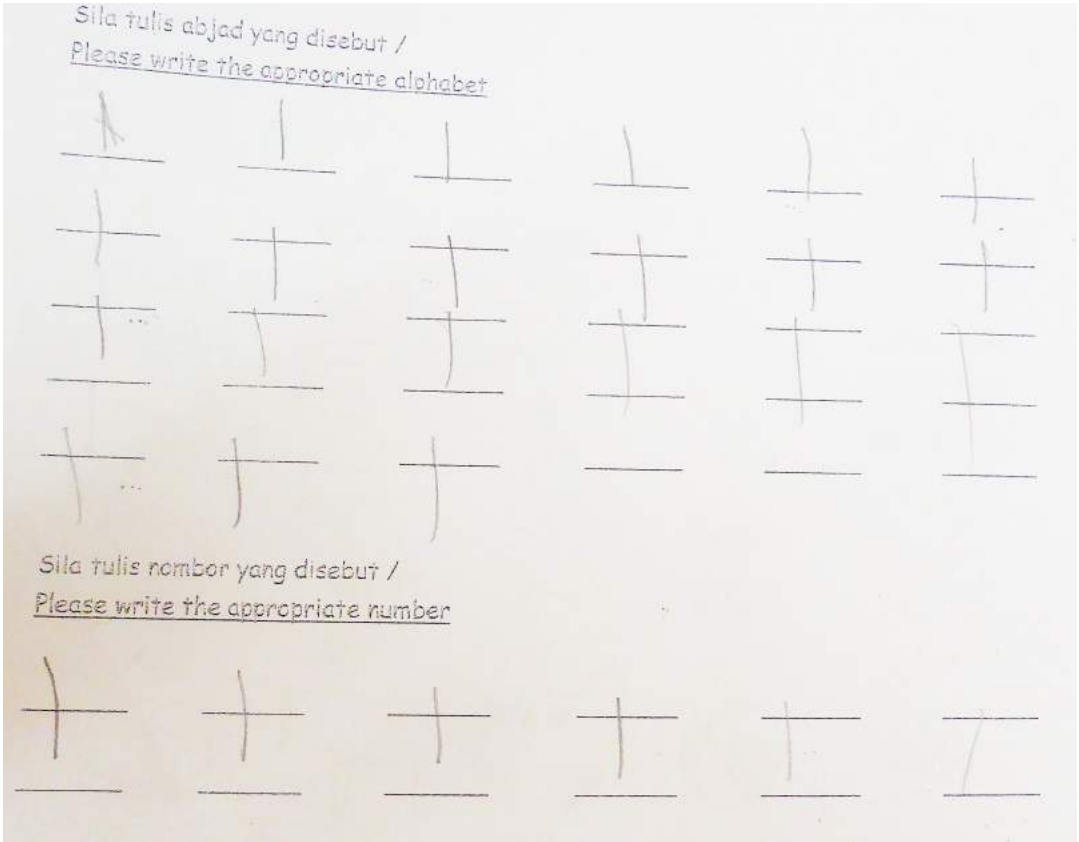


Figure 5: Sample 3 of Handwriting

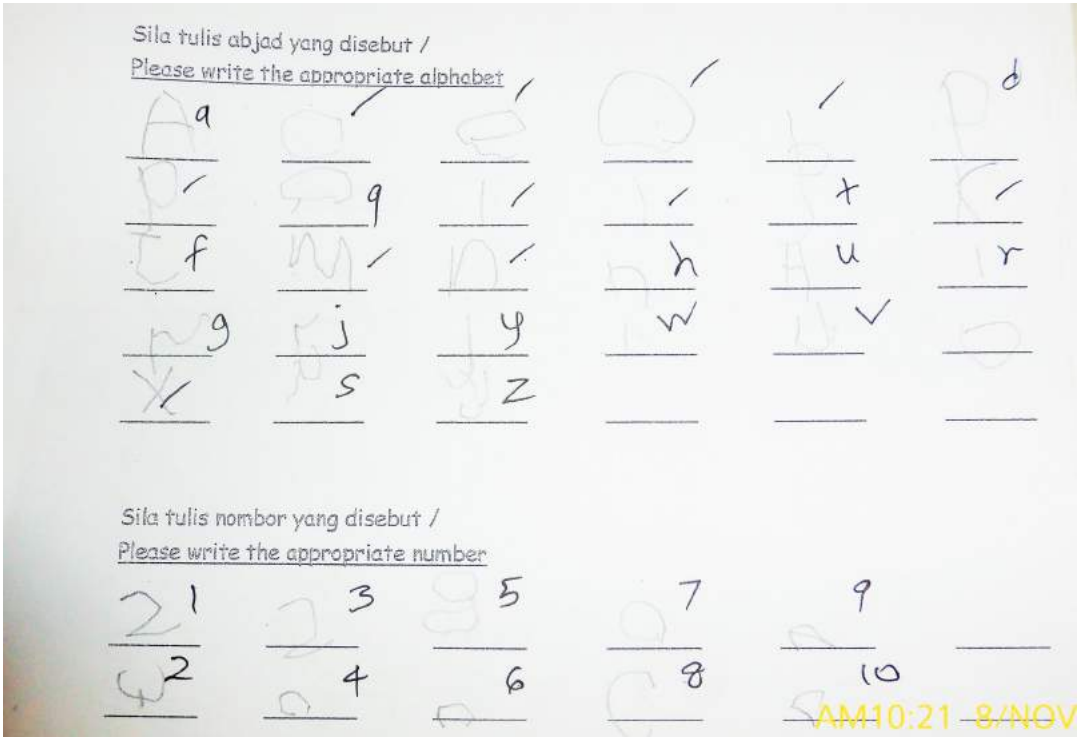


Figure 6: Sample 4 of Handwriting

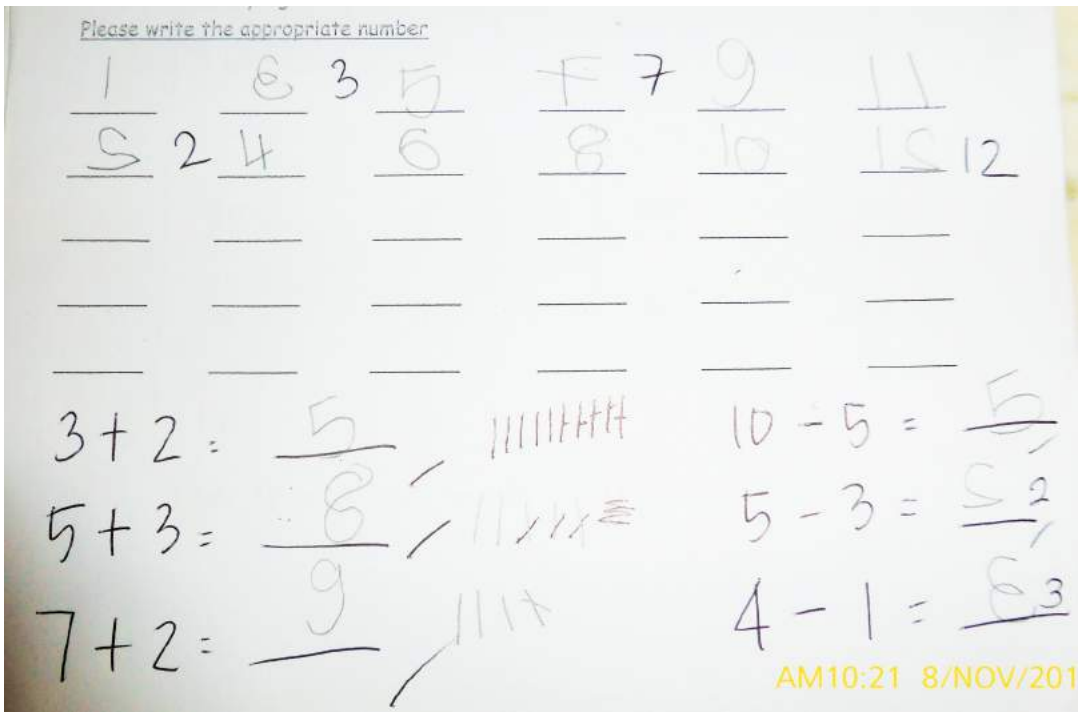


Figure 7: Sample 5 of Handwriting

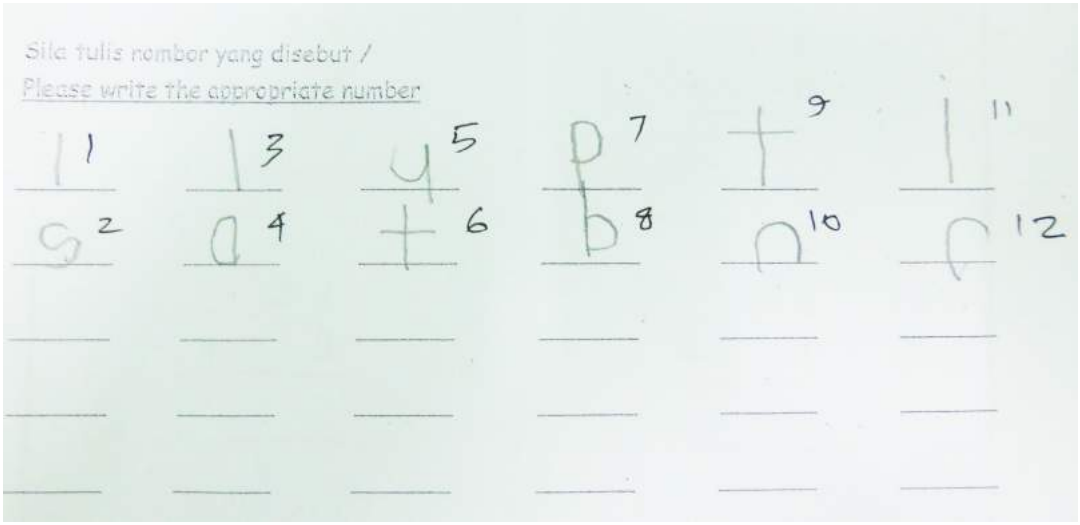


Figure 8: Sample writing numbers

Figure 5 is the writing of a severe dyslexic who couldn't write any letter or number. He merely wrote vertical lines for every single letter or number that he was asked to write.

Figure 6 is a sample of the writing of a child who didn't know how to write any number. He merely copied letters from the instructions, writing a different letter for each number he was asked to write.

Figure 7 is a sample of a child's mirror image writing of many numbers.

Figure 8 is a sample of the handwriting of a child who did not know numbers. He merely copied letters from the instruction thinking of them as numbers.

Once their recognition and writing abilities have been recorded, the children are then tested on their spelling and comprehension skills. We record how fast they can read and whether they are capable of reading the passages with the correct intonation.

If they are capable of reading we then subject them to answering questions without referring to the passage. This is in part done to test their memory as well as their comprehension.

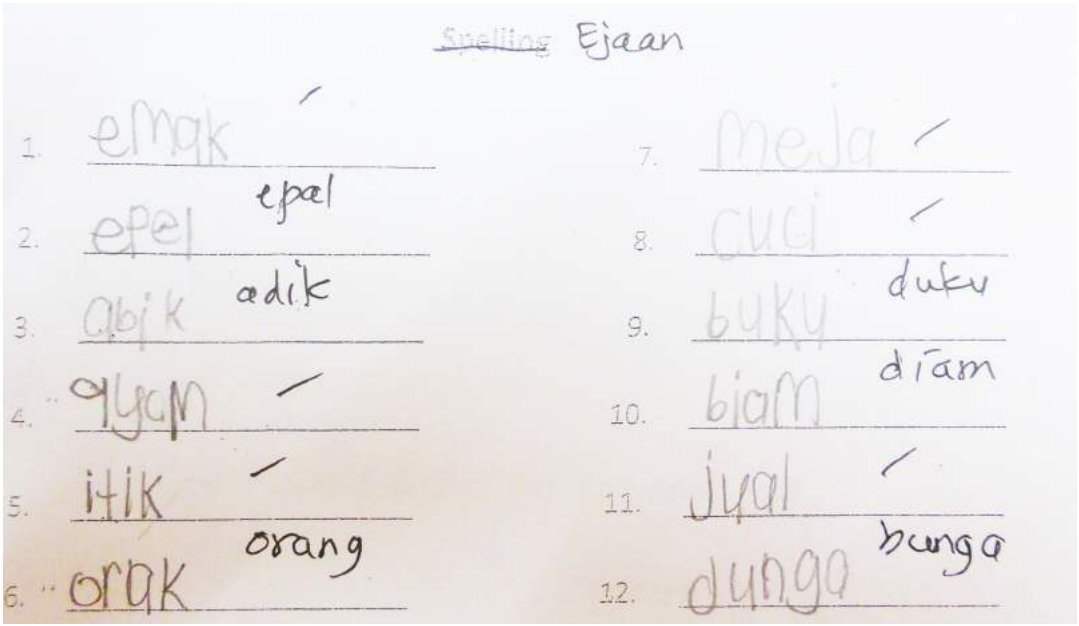


Figure 9: Sample spelling Malay words

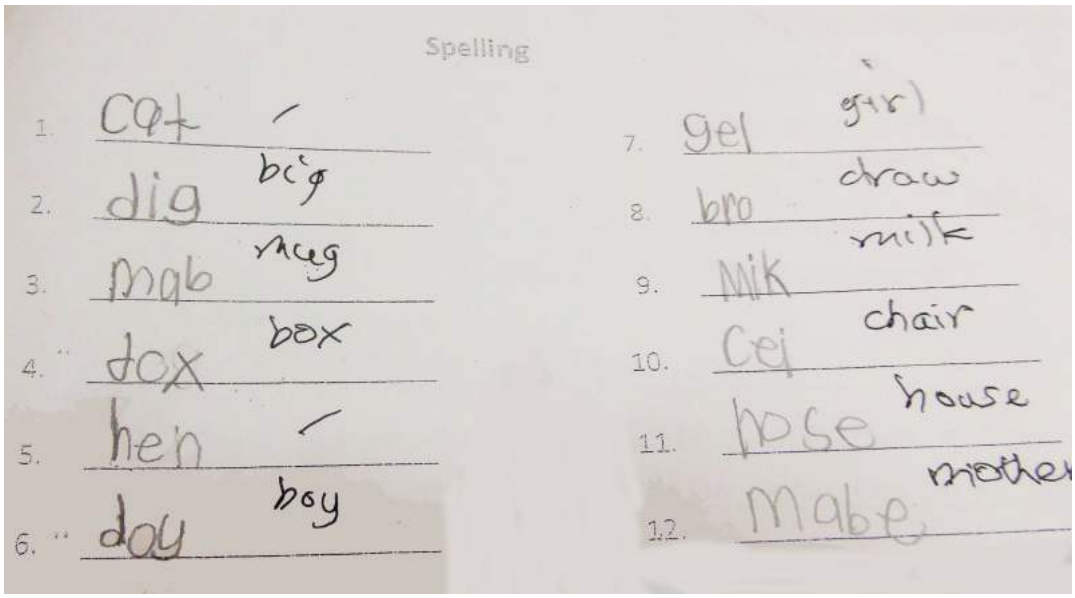


Figure 10: Sample of English spelling

EJAAN

Standard 1 - 2

1	emak	7	meja
2	epal	8	cuci
3	adik	9	duku
4	ayam	10	diam
5	itik	11	jual
6	orang	12	bunga

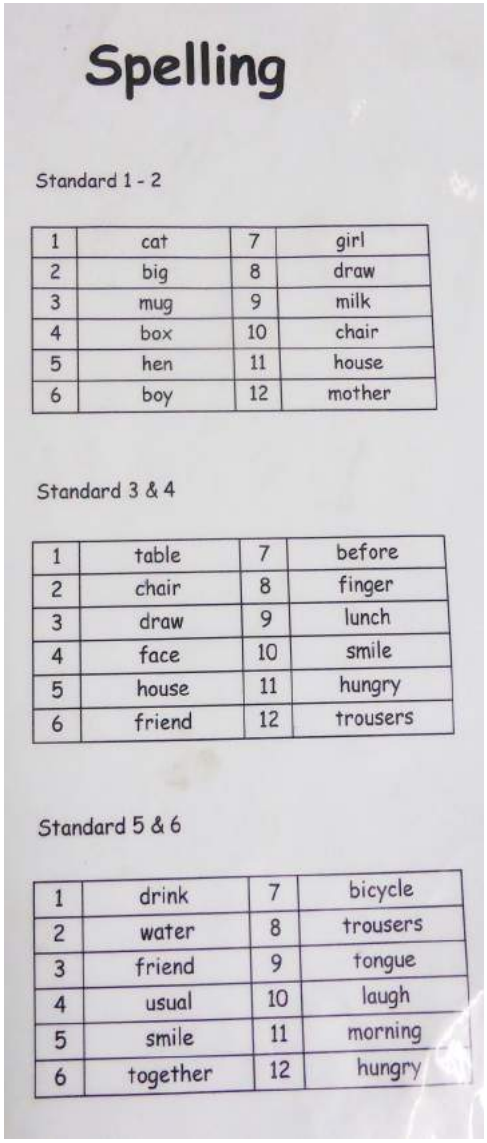
Standard 3 & 4

1	meja	7	ambil
2	duri	8	angkat
3	beri	9	dengar
4	diam	10	sunyi
5	jual	11	pakaian
6	naik	12	nampak

Standard 5 & 6

1	jual	7	kecuali
2	diam	8	kedengaran
3	naik	9	mesyuarat
4	dengan	10	berlainan
5	bangun	11	mengangkat
6	sunyi	12	penyertaan

Figure 11: A list of Malay words for various levels



Spelling

Standard 1 - 2

1	cat	7	girl
2	big	8	draw
3	mug	9	milk
4	box	10	chair
5	hen	11	house
6	boy	12	mother

Standard 3 & 4

1	table	7	before
2	chair	8	finger
3	draw	9	lunch
4	face	10	smile
5	house	11	hungry
6	friend	12	trousers

Standard 5 & 6

1	drink	7	bicycle
2	water	8	trousers
3	friend	9	tongue
4	usual	10	laugh
5	smile	11	morning
6	together	12	hungry

Figure 12: A list of English words for various levels

Figures 9-13 show samples of spelling in both Malay and English words written by the children assessed.

Figure 14 is that of a child being assessed by one of our assessors.

Once the assessment is completed, we have a debriefing with the parents as

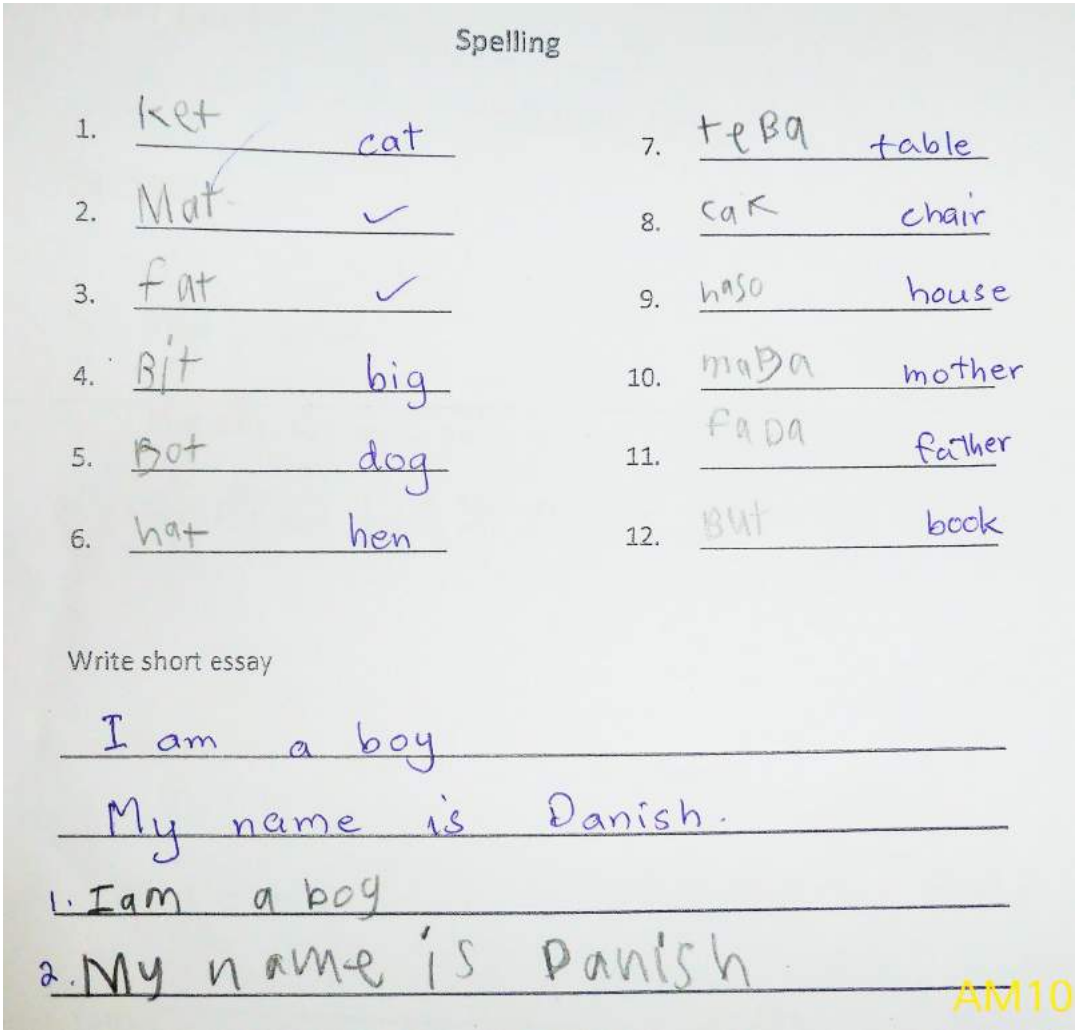


Figure 13: Sample of copying

shown in Figure 15. In this case, the grandmother also wanted to know the outcome of the assessment.

Teachers then prepare individual educational plan, based on the assessments, for each child in her class.

Each class is limited to 5 students per teacher. Classes are categorized as:

(1) beginner, where children are introduced to alphabet recognition and

Figure 14: Conducting an assessment

phonics;

(2) intermediate, where children are taught how to blend sounds; and

(3) the advanced class where students are coached on sentence construction as well as comprehension.

Students are taught only three subjects namely English, Malay and Mathematics, the core subjects in the LINUS program.

Aside from these subjects, students also participate in extracurricular activities that include music, art, concert participation, horse riding and camping; activities which are meant to build up their self-esteem and confidence.

Figure 15: Post assessment briefing with parents

PDM practices a multisensory approach in teaching and teachers make it a point that learning is a fun endeavour. PDM uses the Fitzroy books to teach phonics and reading in English and the Mylexic , an interactive program to learn Malay. We also make intensive use of the alphabet board to introduce alphabet recognition, phonics as well as blending of phonemes. Both the Fitzroy and Mylexic programs are installed in the computers available at all of our centres. Children love the interactive nature of learning as they are usually oriented visually and audio. Furthermore, children have to notice that alphabets are near real too.

At our headquarters, we have two beginner, 2 intermediate classes and 1 advanced class.

Figure 16: Beginner 2 Class

Each class will only have five students to a teacher. The names of each are clearly displayed on the door of each class. Since we also have afternoon sessions, the names of these children are also displayed. In the beginners class each child is given an alphabet board where they will be tested on their recognition, writing and knowledge of phonics. Unless and until they know all of this they will remain in this regardless of their age.

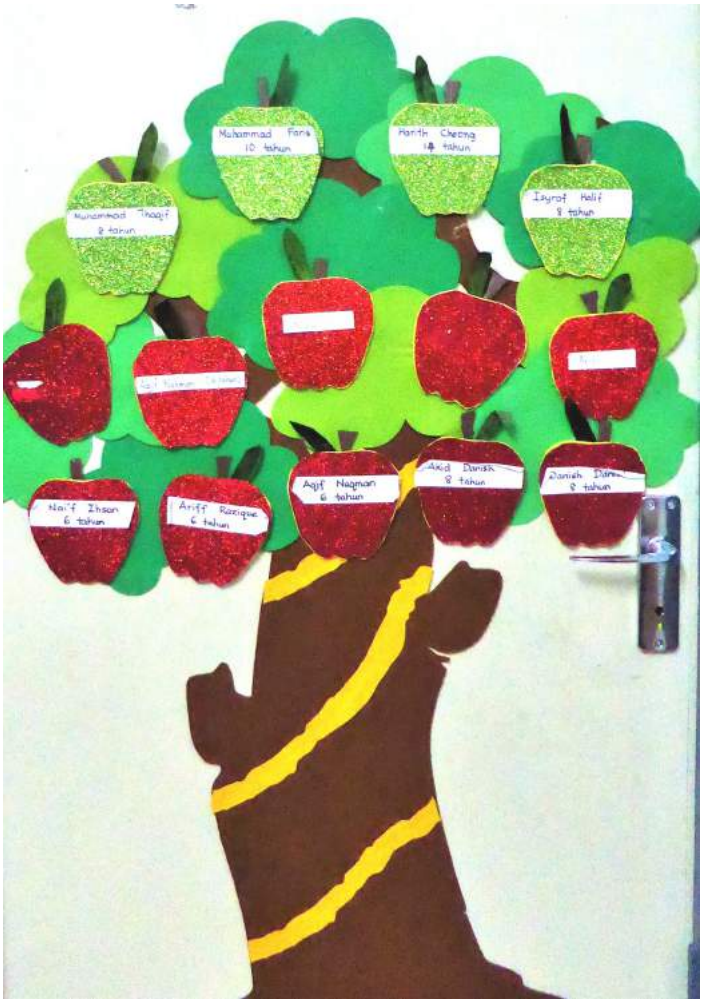


Figure 17: Beginner 1 Class

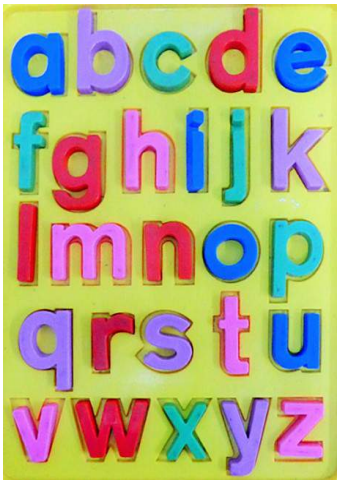


Figure 18: Alphabet board

Figure 19 Forming words with ending sound "at"

Figure 20: Forming words with ending sound "in"

Figure 18 shows one of the alphabet boards used. We have a less expensive one too which is currently being used for all students.

Once the students have mastered the alphabets they then progress to the intermediate class where they will learn blending of phonemes and how to form words and at the same time spelling.

Figures 19 and 20 demonstrate how students will be asked to form words from the sound "at" and "in" by changing the first letter.

Figure 21: Forming words with ending sound "in"

Similarly, they will be asked to form Malay words either from the ending or starting sounds. By doing this they will understand that by simple manipulations of sounds they can form new words which will also increase their vocabulary. Playing games is always the best way to learn and this is how they learn to form words as demonstrated in Figure 21.

Once the students have mastered spelling and eventually reading they are promoted to the advance class. Here the students are taught how to form sentences; once again playing around is the best approach to teach. Teachers also will ask students to read a passage and write complete sentences as answers. Writing essays will be the most difficult for dyslexic students when they eventually return to the national school. Hence we have to ensure that the students are not afraid to do so.

Two-thirds of students who enrolled in our program overcome their learning difficulty within 3 months and almost all within a period of 6 months. Severe dyslexics often take close to year to overcome their difficulty hence PDM cannot make a claim of one hundred percent (100%) within 6 months.

LINUS Program

The program for English is broken down into 12 constructs as follows:

1. Able to identify and distinguish the shapes of the alphabet.
2. Able to associate sounds with the letters of the alphabet.
3. Able to blend phonemes into recognizable words.
4. Able to segment words into phonemes.
5. Able to understand and use the language at word level.
6. Able to participate in daily conversations using appropriate phrases.
7. Able to participate in daily conversations using appropriate phrases.
8. Able to understand and use the language at phrase level in linear texts.
9. Able to understand and use the language at phrase level in non-linear texts.
10. Able to read and understand sentences with guidance.
11. Able to understand and use the language at sentence level in non-linear texts.
12. Able to understand and use the language at paragraph level in linear texts.
13. Able to construct sentences with guidance.

The above is obtained from the Operationalization Book LINUS 2.0 published by MOE in May 2015 for English. In Year 1 students are expected to be fluent with a minimum of 200 words and simple phrases, Year 2 with minimum of 300 words, simple phrases and sentences and Year 3 minimum of 400 words, phrases, sentences and short paragraphs. Note that emphasis wasn't given to awareness and knowledge of phonics and the blending of phonemes, which is not surprising since phonics has only been included in May 2015. Students must understand and know how to blend phonemes first before they are able to be fluent with words. This is why there are so many students in the LINUS program as they have not crossed the first hurdle of knowing phonemes and how to blend them.

Phonics was only included as one of the constructs in 2015. While the program is successful in early intervention, it is less successful in overcoming the students' difficulty mainly due to the high student-teacher ratio of 20 and not adopting a multisensory approach in teaching. Instead, Linus adheres to the rote learning approach, an approach that is bound to fail for children with dyslexia simply because most of them have a poor short-term memory. Dyslexic children learn best by understanding what they learn and this is easily achieved with an orientation towards visual, audio and kinesthetic. Hence our proposal that a program akin to the one practiced at PDM is adopted in schools to ensure a more effective program.

Although Strategy 4 of the LINUS 2.0 included consultation and collaboration of Persatuan Ibu Bapa & Guru (PIBG) or the Parent Teacher Association (PTA), I believe this has not been implemented extensively across all schools in the country as many

parents are at a loss when they seek guidance on how to handle their children with dyslexia. While the Operationalization Book is rather comprehensive we believe that it hasn't been communicated well along the line. Recently a Parent Support group has been formed and we hope that through this group the concerns and shortcomings can be made known and discussed with MOE officials. Consultation with PIBGs, PDM and parents of children with dyslexia should be strengthened so that the LINUS program is not done in isolation at the MOE level only but with feedback from parents of students. A new post has been created known as FasiLINUS in 2015 and this should facilitate a better implementation of the program.

No doubt the MOE will have to allocate more funds or re-arrange their allocations around to adopt our recommendations but we are of the opinion it should be done so as children with a learning difference are entitled to an appropriate education as enshrined in the Federal Constitution. I would like to make the following recommendations.

First, educational assessments for dyslexia should be made mandatory for all students in LINUS classes. Once identified as being dyslexic they should then be assigned to a dyslexia class. Although there are 65 primary schools with dyslexia programs currently, with this requirement more schools will now have dyslexia programs. A child or clinical psychologist should then do an assessment on the children who are identified as not being dyslexic. More likely than not, these children are slow learners which are more suitable for the existing pemulihan (remediation) classes.

Second, on the premise of our estimate of 1.04 million children with dyslexia in primary schools, MOE would have to assign 208,000 special education teachers if the student teacher ratio of 5 is adopted. (This estimate was made in our letter to the Editor of The Star, a Malaysian newspaper, which was published on 28th October, 2015). This implies that a curriculum for dyslexia must be included in the teacher training colleges if this number of teachers is needed. Currently there are barely enough teachers in the dyslexia programs. Should a teacher be on leave or transferred or promoted to another school, there will not be a replacement teacher.

Third, as we feel the alphabet board, which costs RM20 each, is an integral part of overcoming LINUS then a further RM 20.8 million is need to supply each dyslexic student with an alphabet board. Although there is mention of "instrument saringan" or a screening instrument, we are not clear if there are any additional teaching materials and equipment for use in LINUS classes.

Fourth, schools should install the interactive Mylexic and Fitzroy programs so that students would enjoy learning better. Dyslexics tend to learn better by seeing,

hearing and manipulating rather than through rote learning.

Fifth, pencil grips should be supplied to each of the 1.04 million children to ensure they know how to hold the pencil properly and also to improve their handwriting. Children with dyslexia are known to have poor handwriting and this is a part of the problem of why they are slow in writing or are poor in copying.

CONCLUDING REMARKS

Although the LINUS program is a successful early intervention program in identifying students with difficulty in literacy and numeracy skills, it is not as successful in aiding children with dyslexia. Success can be further improved and at a faster rate if a phonetic based and multisensory approach, which has been successfully implemented at PDM's 13 centres, is adopted.

ACKNOWLEDGEMENTS

I wish to thank Puan Sariah Amirin, President, PDM for her guidance, understanding and collaboration in carrying out responsibilities for and on behalf of the association. I also would like to thank Ms. Poongkody Pallail for agreeing to edit this paper. Mistakes are mine alone.

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"LINUS needs more resources", letter to the Editor, The Star, 28th October 2015.

ABOUT THE AUTHOR

Dr. Aziz Abu Hassan has a PhD in Agricultural Economics and spent most of his working life in the finance industry in Malaysia. After discovering his son is dyslexic in 2008 and his daughter a dyscalculic in 2010, he left work and has devoted his spare time doing voluntary work with PDM in various portfolios. In 2010 he created www.facebook.com/dyslexia.malaysia to create awareness in Malaysia and also www.facebook.com/dyscalculia.malaysia in 2013 to create awareness for dyscalculia. Currently he is promoting a parent support group to lobby for a legislature on dyslexia in Malaysia, www.facebook.com/groups/my.dyslexia. He is one of the assessors for PDM.

Screening and Intervention for Dyslexia in Indonesia – Developing the LexiPal Program

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ABSTRACT

In this article, we outline the background on education and dyslexia in Indonesia, establishing that there remains much still to be done, despite recent efforts to improve outcomes. A key issue identified world-wide is identification and support for dyslexia in the early years, in order to improve outcomes. A computerised screening and intervention test developed in Bahasa Indonesia for use in the area is outlined, that may be applied widely for 5-7 year olds without the need for heavily trained personnel, in recognition of the limited resources available to many schools in this region. The program is designed on well-established multi-sensory principles, and allows a baseline of performance to be established, prior to the intervention process, with data stored to measure achievement. The program is designed to be engaging and fun, as well as to address a breadth of key issues for dyslexia, including memory, categorisation, direction, similarities and time, in addition to literacy. Further research is needed to demonstrate the effectiveness of this approach with Indonesian children, that has been modelled on best practice world-wide.

Keywords: Computerised Screening, Bahasa Indonesia, dyslexia

Education in Indonesia continues to struggle to increase the rates of literacy across the area, despite recent improvements in availability of schooling and recognition of the importance of good teaching. In the early years of school, children attend for just 3 hours daily, and pre-school education between the ages of 4 and 6 is not yet available to all (Suryandarma and Jones, 2013). The difficulties Indonesia has experienced are reflected in the latest PISA figures, which show that this country is 61st out of the 65 participating countries for reading, although Indonesian children are the happiest in the world on this survey. This is by contrast with other Asian countries, such as Singapore, that fall in the top 5 for literacy, but similar to the results from Malaysia, their neighbours. How can we increase the levels of performance, while maintaining the good results in terms of overall wellbeing?

The situation is more complex for those 10-20% of children who suffer from dyslexia, who are currently poorly served in general, despite the excellent work of the Indonesian dyslexia association. This means that there are few standardised tests available and no formal concessions for children in examinations. Children with dyslexia are misunderstood by their teachers, their peers and their parents, and may be mistakenly assumed to be stupid.

Currently, only middle class children who can afford to pay for specialised schooling can access the support available through the paediatric special school and clinic run by the authors. A search of the literature reveals few publications in English from Indonesia, and more research is needed to address these issues. This contrasts with Malaysia, where a move towards early screening has been supported by NECIC, and a number of researchers have published data linked to the screening tests developed in the UK for dyslexia, specifically the DST-J with 8-year old children (Kaur, 2012) as well as locally devised tests (Lee Lay Wah, 2008).

Moreover, there are concessions available for dyslexic children in Malaysia, that are not yet forthcoming in Indonesia. Identification of the number of dyslexic children in Indonesia and the need for support can help to fuel the case for legislation to level the playing field. However, there seem to be no intervention approaches developed yet for use in Bahasa.

Research from across the world has identified the importance of early screening and intervention for dyslexia, with Torgesen in the USA showing that if intervention was left until a child was 8 or over, 67.5 hours of individual intervention would be needed to bring the child up to the level of their peers. Research from the UK, by the editor of this journal and her colleagues has shown that screening followed by small group intervention for one hour a week for 10 weeks can bring the performance of 5-6 year old children up to the required level (Nicolson et al, 1999), whereas 7 year old children have fallen further behind and need further support in order to progress

(Nicolson et al, 2000; Fawcett et al, 2001).

Interestingly this approach, using only 10 hours intervention in all has proved one of the most effective and cost effective in reviews of intervention (Brooks, 2007) and has been shown to be effective when teacher or computer led. This model has been widely used in Wales, with local schools working with more than 700 children in reception and 75% of the children catching up with their peers.

In order to undertake this type of screening and intervention, it is necessary to develop materials that can be targeted to the local language, given that many young children do not learn literacy in English. Until now, there have been no instruments available in Bahasa Indonesia. Moreover, it is particularly important where resources may be lacking to ensure that these materials are available in a computerised format, to reduce the demands on teachers' time in delivering these tests.

This model will work by gathering initial data on each child's performance, in the pre -intervention evaluation phase, followed by intervention, the 2nd evaluation following mastery training. In this approach each child's performance will be compared with their performance after intervention, allowing a naturally occurring experiment to be undertaken on the impact of the program.

THE DEVELOPMENT OF LEXIPAL

LexiPal is a "learn-to-read" application especially designed for Dyslexic children in Bahasa Indonesia. This application is developed for dyslexic children in the age of 5 to 7 years or pre-school or first year of elementary school. LexiPal has been designed to be used not solely by children, but with guidance from parents, teachers, therapists, and others. A key feature is that the program may be used with minimal initial training and is therefore suitable for all levels of adult guidance.

KEY FEATURES

LexiPal has four main features, namely:

1. Children Database

   The database contains of a list of children who are using the application. The data entered in the database system are name, age, gender, and photograph. In this feature, the users can add, update, or delete data of the children.

2. Scheduling

Scheduling is used by the users to arrange the learning schedule of children. The schedule can be correlated with the Individual Educational Plan (IEP) that is made by the users based on the results of the diagnosis of the doctor or psychologist. This schedule does not intend to limit the flexibility of the users to improvise what they are learning. (See figure 1)

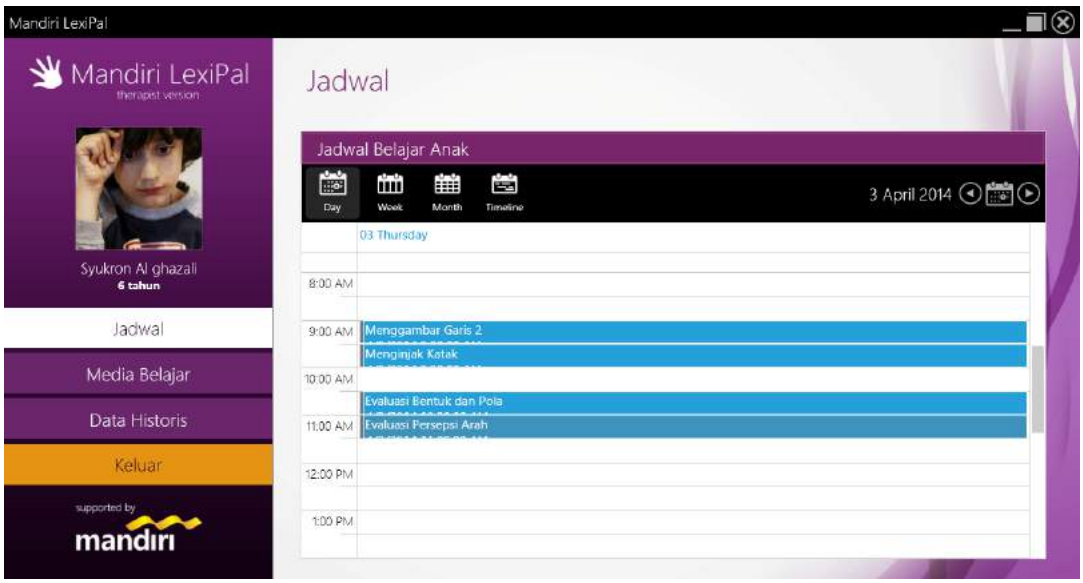


Figure 1. LexiPal Schedule

Learning Media

This feature contains learning material of pre reading skills to reading skills that can be used by the users to teach. The material has been specially designed based on the specific needs of dyslexic children and in accordance with the stages of learning that has been validated by doctors and therapists.

3. Historical data

Record keeping is by means of Historical data used to maintain a record of the children's learning progress. The records stored come from the training and evaluation media, providing a baseline for starting performance. In this feature, the users can see the list of badges "achievement unlocked" that can be obtained when the children master a particular category. This badge can be printed in the form of certificate. (See Figure 2)

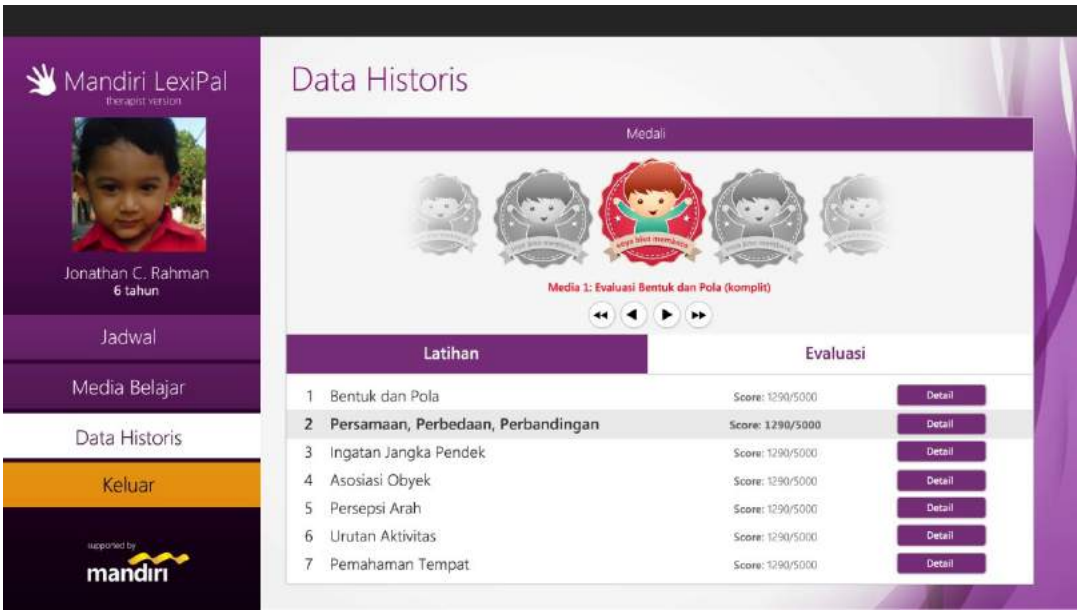
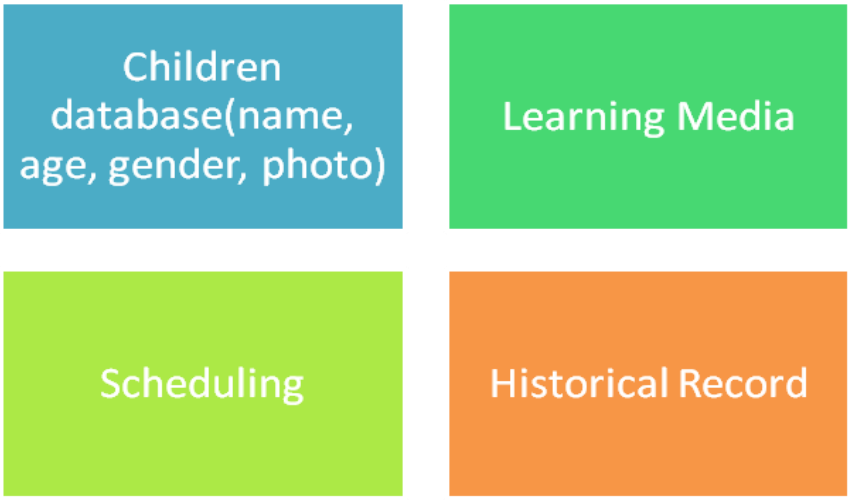


Figure 2. LexiPal Data History

In the table, the feature can be seen as follows:



MEDIA TYPES AND CATEGORIES

This feature is designed based on three of the most important approaches in teaching dyslexic children, namely:

1. **Multi sensory method**

   In this approach, the material taught to dyslexic children involves various senses of the body so there is more information than they can catch from the eyes (to see), ears (to listen), hands (to touch) independently, or followed by range of motion. So it always includes visual, auditory, tactile, and kinaesthetic. Therefore, the learning media designed by the NextIn Indonesia attempts to accommodate those needs. (See Figure 3)

2. **The use of different media to teach 1 (one) material**

   Based on research, the dyslexic brain is different from most other people, especially in regards to receiving and interpreting information. To tackle this problem, doctors or therapists usually attempt a variety of therapy methods with various media so that children can understand and ultimately find the best way of learning for them. Doctors and therapists at the Dyslexia Association of Indonesia said that sometimes to teach one material, they have to use 20 different methods. Therefore, LexiPal mimics that approach by providing a variety of media to teach one item of material to the children.

3. **Prioritise motivation rather than punishment**

   Dyslexic children are already heavily burdened with their problem. If they get punished often and frequently experience failures, they will look down on themselves and get stressed, and their self esteem will plummet. Thus, motivating them and giving them recognition for any success they achieved, no matter how small it is, is necessarily important. The point is to minimize the experience of failure. Furthermore, the learning media is always incorporated within a game design (gamification) to motivate the children to keep learning.

Based on the above considerations, learning media features are divided into three different types, namely: learning media, practice media, and evaluation media. The comparison of those three media can be seen in the following table.

Table 1. Learning Media Features

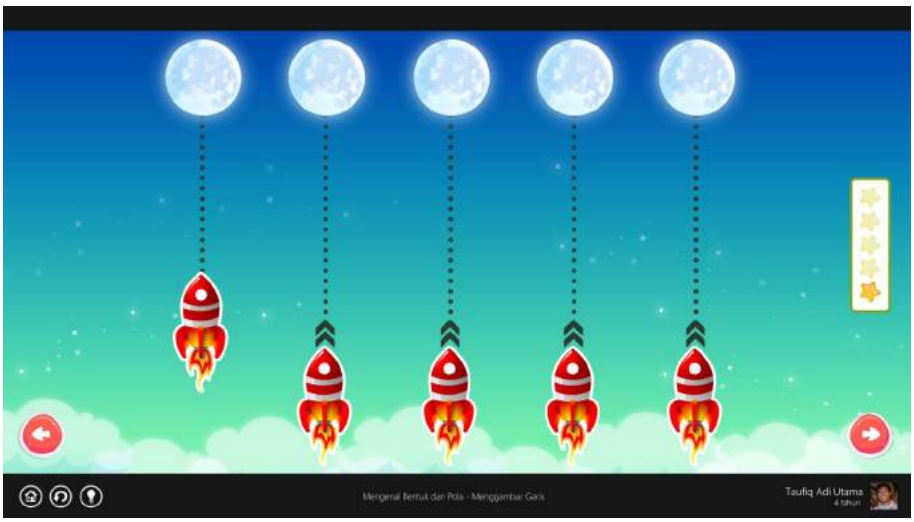
Comparison	Learning	Practice	Evaluation
Guide involvement	High	Low	None
Scoring	None	Available	Available
Result Summary	None	None	Available
Historical data	Not saved	Saved (Daily and per-Media)	Saved
Approach	Visual, Auditory, Kinaesthetic, Tactile (touch screen)	Visual, Auditory, Kinaesthetic, Tactile (touch screen)	Visual, Auditory, Tactile (touch screen)

In addition to having different types, the learning media is also divided into 12 (twelve) different categories, with all those categories stating the ability that has to be mastered by the children between the ages of 5-7 years. Moreover, those abilities are closely related to reading abilities or the difficulties often faced with dyslexia.

Those 12 (twelve) categories are:

1. Shapes and Patterns
2. Similarities, Differences and Comparison
3. Short-Term Memory (adapted from Nicolson and Fawcett, 2003, Fawcett and Nicolson, 2005)
4. Object Association
5. Direction Perceptions
6. Activity Sequence **
   Activity Sequence category related to the ability to sort some steps of activities. In this category the children practice to take actions showed by activity pictures based on appropriate order/sequence, such as sequence actions while taking bath, sequence actions while preparing meals, etc. It helps children to identify actions from the beginning, the middle, and the last step of one kind activity. And stimulate them to think carefully before they execute activation spontaneously.
7. Understanding Place
8. Time Concepts

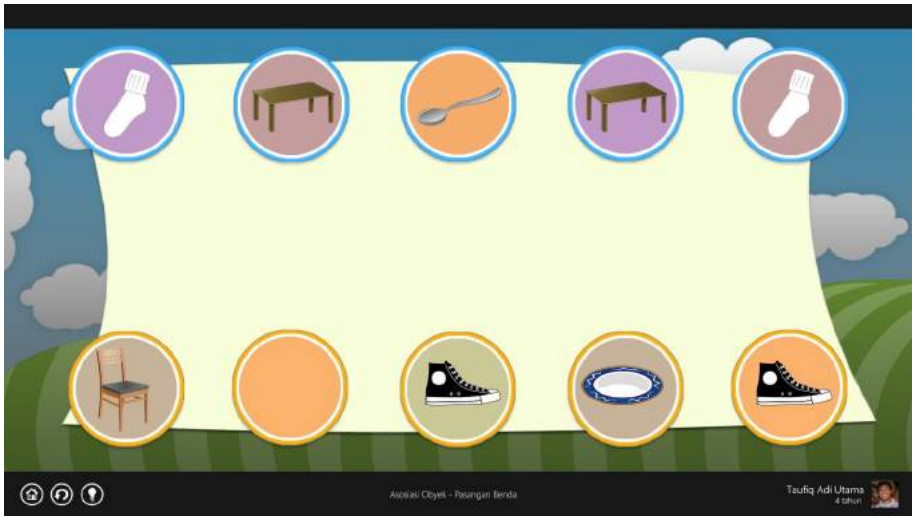
9. Functional Skills ** Many dyslexic children find difficulty in identifying social language such as body gesture, body posture and facial expression, so then they often mention inappropriate comments or show inappropriate body gesture/posture as response to social situation. Functional Skill category teaches the child everything needed in functional activities. In this category game, children practice to identify some facial expressions such as happy, sad, angry, scared, surprised, and they practice to associate proper facial expression to certain condition accordingly. It helps children to widen their understanding of social clues so then they were able to socially response more properly in terms of verbal and behaviour.
10. Letters
11. Syllables and Words
12. Simple Sentences



1. Shapes and Patterns

2. Similarities, Differences and Comparison

3. Short-Term Memory

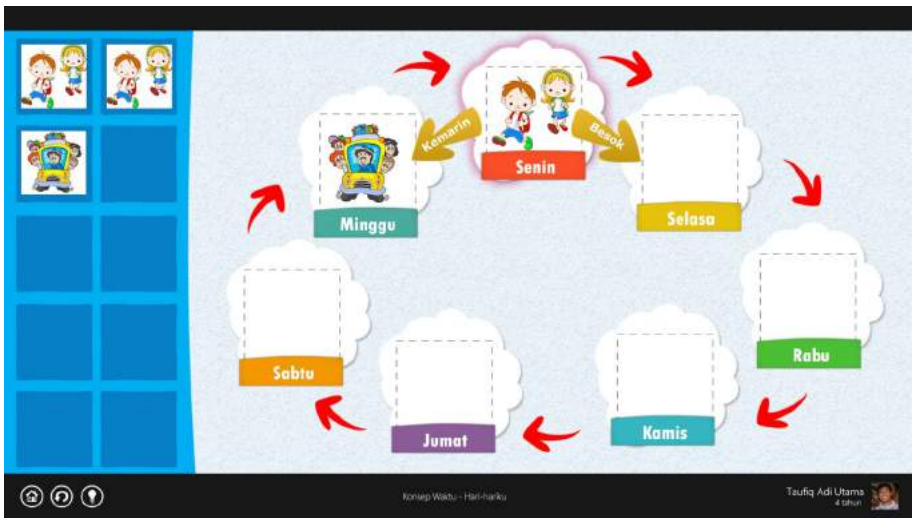


4. Object Association

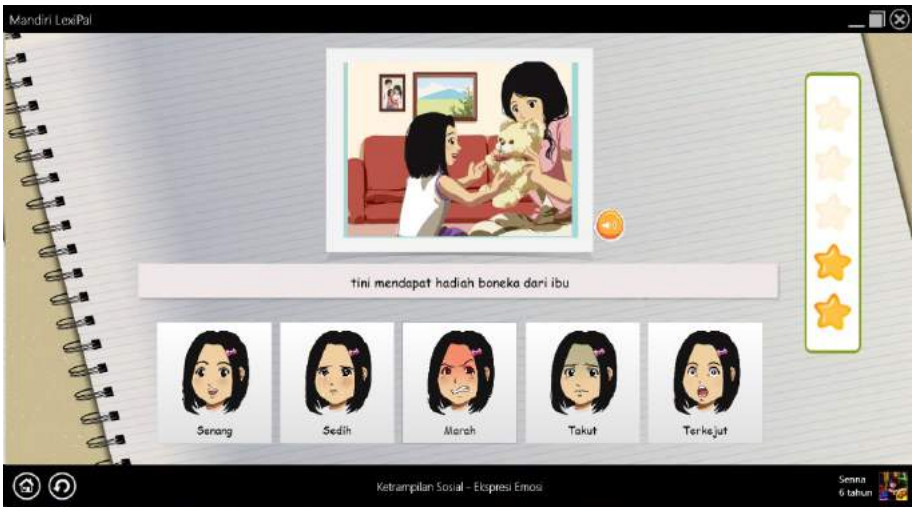
5. Direction Perceptions

6. Activity Sequence

7. Understanding Place



8. Time Concepts



9. Functional Skills

10 Letters

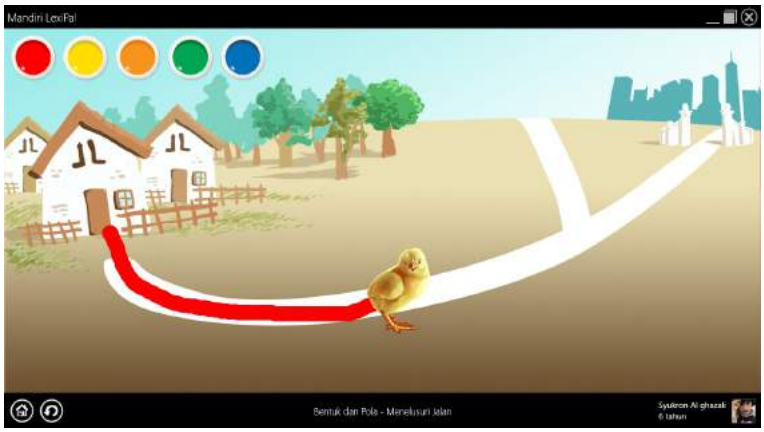
11. Syllables and Words

12. Simple Sentences

THE STRENGTHS OF LEXIPAL

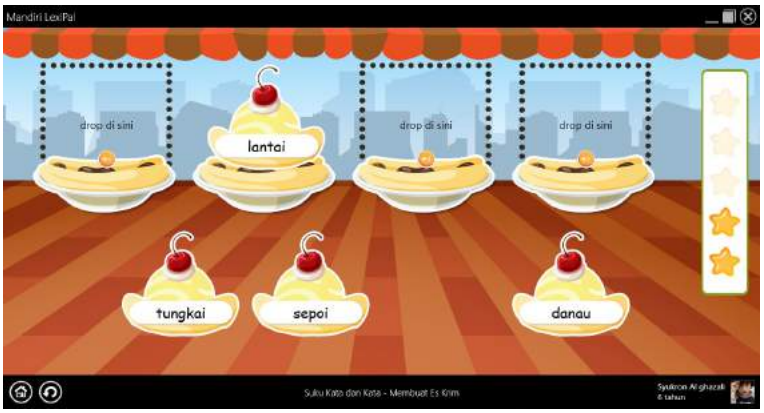
Attractive and Fun

The learning media in LexiPal is designed to be close to the world of children which is full of games and colours that make it more attractive and fun.



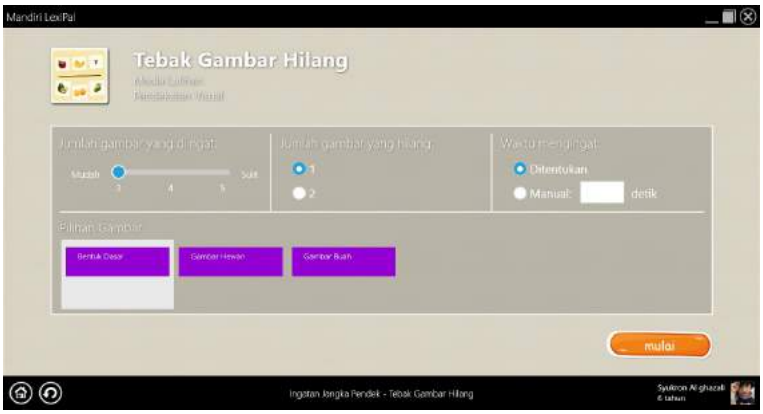
Motivating

With scoring system, rewards, and certificate, LexiPal can encourage or motivate the children to learn more.



Suitable with the children's ability

Every child is unique and different. Almost all the learning media in LexiPal provide a menu that can be used to arrange in accordance with the needs and abilities of the children.



Multisensory Method

LexiPal adopt that approach by involving as many senses as it can so that the children are able to catch the information better, through visual, auditory, and also kinaesthetic processing.

Scheduling

The users can create the learning schedule as the reminder of studying time of the children.

Historical Record

Monitoring the children's learning progress is the responsibility of parents and teachers. LexiPal provides historical data to help the users to monitor and to see the children's learning progress in details.

Originally from Indonesia to Indonesia

LexiPal is purely developed by Nextin Indonesia together with Dyslexia Association of Indonesia, sponsored by Bank Mandiri.

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EDITORS COMMENTS

A recent informal evaluation of the Lexipal programme was undertaken at Indigrow Children Development and Autism Centre, a special school in Bandung, Indonesia run by the Dyslexia Association of Indonesia, by the journal editor, Angela Fawcett.

The school itself caters for a small number of children with dyslexia and a number of older children with autism. The whole atmosphere is very family orientated, with parents clearly welcome to participate, and the whole family, including grandparents where available, taking part in the counselling sessions associated with the school. Children are taken out of mainstream school for placements here, and returned to their original school once a satisfactory level of progress has been achieved. There is strong attention to aspects of pastoral care and self-esteem, as well as the educational outcomes for the pupils. A key aspect is the use of music to improve overall functioning.

The children participating were aged between 7 and 11, were largely boys but included one girl, and all held formal diagnoses of dyslexia from the authors. The children clearly enjoyed participating in the program, vying for their turn to take part. A choice of methodology was used, either working with the touch screen or using the whole body as a tool to work the computer program in an interesting demonstration of the multi-sensory whole child approach.

The aspects of the program evaluated included letter and grapheme recognition, judgements of time, and direction. The first two aspects used the touch screen, and the direction program used the whole body. So for example, the instruction would be to turn right or left and the child would move accordingly. The program used both whole body and hands, so that the children taking part could jump and stretch out their hands to indicate the direction the programme required. This was clearly highly satisfying for the children involved, and looked as if it was great fun.

The researchers who had developed the programme for use within the school and elsewhere had taken place in observation sessions over several months, observing the children and what they struggled with. These researchers understanding of the difficulties involved in dyslexia was informed by the rich level of understanding the children received within the school itself.

A programme of systematic formal evaluation is now underway, with baseline information maintained by the software, and programs that are adaptive to the progress of the children. Data is now in the process of being collected from across Indonesia, and the pre and post performance of a substantial group of children will be evaluated and reported in a later edition of this journal.

In summary, the authors have been instrumental in developing a new computer based program that will address many of the issues troubling education in Indonesia. Built into the program is a knowledge of dyslexic children and the areas they find difficult. It is designed for use without high levels of training, and addresses some of the issues of scarcity of resources and lack of skilled teachers outlined in the introduction. Informal evaluation by the editor, Fawcett, suggests this is an impressive and useful tool for Bahasa Malay and a first in this language.

Inhibitory Control and Literacy Outcomes in Preschoolers With and Without Risk of Reading Difficulty

Siew Hui Li, June
Head of DAS Academy
DAS Academy Ltd

INTRODUCTION

Inhibitory Control (IC) has been identified as a central feature of the development of executive function in early childhood (Diamond, Carlson, & Beck, 2005). It has been also been argued to underlie the development of the other executive functions (Barkley, 1997). It is the ability to inhibit automatic impulses and actions, and suppress instant gratification to do what is most appropriate and necessary. For a frustrated young child whose toy has been snatched away, IC would allow the child to resist the urge to bite or fight his friend. For an adult dining with a friend, IC would allow the adult to resist the urge to check the mobile phone when it buzzes.

> "Executive function, including Inhibitory Control, predicts early mathematics, early reading ability and learning related behavior. Conversely, poor executive functions, including IC, at an early age predicts poor school readiness and problem behaviours in preschool."

Particularly, performance differences in IC in children as young as two years of age have been reported (Hughes & Ensor, 2007). It continues to show major changes between four and six years of age (Hughes & Ensor, 2011) and IC differences in early childhood can be predictive of outcomes throughout life in longitudinal studies (Mischel,

Shoda, & Rodriguez, 1989). Executive function, including IC, predicts early mathematics achievement (Blair & Razza, 2007; Clark, Pritchard, & Woodward, 2010), early reading ability (Blair & Razza, 2007) and learning related behaviour (Denham et al., 2012). Conversely, poor executive functions, including IC, at an early age predicts poor school readiness (Hughes & Ensor, 2007) and problem behaviours in preschool (Hughes & Ensor, 2008). Thus, the early development of IC has far-reaching consequences in the life of a child.

The role of IC in children, especially those who are at risk of reading difficulty, is worth investigating. Currently, research regarding the causes and predictors of children's reading success and failures abound and the topic has evoked researchers' interest mainly because of influences from other reading research. It has been suggested that a child's reading ability is highly constant from a young age; a good reader tends very much to continue to be a good reader and writer later on (Juel, 1988). Additionally, researchers have also established that early intervention leads to greater reading gains than late intervention (Torgesen, 2000).

Literature on reading failure has approached it mainly from an angle of cognitive processing, viewing poor readers as a stereotypical group who have the same cognitive processing deficits such as poor phonological processing, rapid naming, and working memory. These have been referred to as cool executive functions.

THE NEED TO CONSIDER HOT IC

There is data emerging from few studies suggesting that children with reading difficulty have been found to be impaired in IC compared to typically developing children (Helland & Asbjørnsen, 2000; Reiter, Tucha, & Lange, 2005; van der Schoot et al., 2004). However, in those studies, the traditional and conventional approach of measuring IC is dominant. The conventional approach is heavily influenced by cognitive psychology which explains the reliance on abstract and artificial test batteries to tap cognitive processing and measure executive function, thus reducing the affective human brain to an inert computer system.

These tests batteries are referred to as "cool" cognitive tasks which do not reward or punish and hence do not evoke personal significance for the participants. Nevertheless, the attention on cool IC is reasonable. In a meta-analysis study of 75 peer-reviewed studies of preschool children, cool IC tasks have been found to be more related to academic skills than hot IC tasks (Allan, Hume, Allan, Farrington, & Lonigan, 2014).

Despite the above, more recently, researchers from a variety of disciplines have

called for "hot" features of IC to be recognised and emphasised (Zelazo & Carlson, 2012). The hot distinction which recognises the contribution of motivation and emotions in behaviour, has also been supported by neuroscientific research on the functions of the orbitofrontal cortex (Rolls, 2004). In spite of the contributions of hot IC, hardly any studies exploring IC in children with reading difficulty have adopted this. For this reason, it will be appropriate and timely to approach the construct of IC in at-risk children from a hot and cool perspective.

In addition to the neuroscientific research, lesion studies involving human and nonhuman animals have also suggested that hot executive function can be dissociated from the cool aspects of executive function. For example, hundreds of cases of pre-frontal cortex injury that did not affect cognitive functioning but planning and social functioning have been recorded (Dimond, 1980; cited in Barkley, 2012). More recent support for the distinction between hot and cool executive function comes from a study which found that children's development of hot and cool executive function show different patterns of relation with each other (Hongwanishkul, Happaney, Lee, & Zelazo, 2005). In the same study, the hot-cool distinction was made even more evident when cool executive functioning, but not hot executive function was shown to be related to general intellectual functioning.

In summary, evidence points to a hot-cool distinction in executive functioning. It is timely that both performance-based and ecologically valid measures are used to index executive functions. When used in isolation, each measure provides a different and piecemeal representation of executive function. However, when used in unison, these two different underlying mental constructs of executive function measured by the two different measures work together to present a comprehensive and thorough understanding of executive function.

COOL IC AND LITERACY ACHIEVEMENT IN AT-RISK CHILDREN

Cool measures of executive function have been criticised for reducing the human brain to a passive computer system because they merely measure cognitive processing (Barkley, 2012). Despite that, cool measures of executive functions, including IC, are a good predictor of literacy outcomes in preschool children (Blair & Razza, 2007; McClelland et al., 2007) and even better predictor of mathematics outcomes (Willoughby, Kupersmidt, & Voegler-Lee, 2012). Common measures of cool IC in preschool children require children to inhibit their immediate and natural responses and instead, execute the experimenter's desired response. Examples include the Shape Stroop, Simon Says, Head Toes Knees Shoulders task (Carlson, 2005; McClelland et al., 2007).

There is general consensus amongst researchers that cool executive function is impaired in children with reading difficulty, compared to typically developing children (Helland & Asbjørnsen, 2000; Reiter, Tucha, & Lange, 2005; Van der Schoot et al., 2004). In another study that compared executive functions and literacy in typically developing and language delayed children, predictive ability between executive functions and literacy outcomes were weaker for the children with reading difficulty than those without reading difficulty (Altemeier, Abbott, & Berninger, 2008). The authors have suggested that this could have resulted from the inability of children with reading difficulty to apply their executive functions to reading and writing compared to typically developing children.

Executive functioning processes (including IC) referred to in the above study predicted literacy outcomes the most during the early school grades where basic reading skills were paramount but was relatively weak in predicting reading comprehension. The authors suggested that certain measures of executive function, such as IC, contributed more to lower level literacy skills such as decoding and word reading than higher level literacy skills such as reading comprehension and writing which can be better measured by executive function that taps on planning and organisation. Hence, the specific executive function process can moderate the relation between cool IC and literacy outcome.

The relation of cool IC and literacy outcome can also be moderated by the stage of literacy at which literacy outcome is measured. During the very early stage of reading when phonemic decoding of single words is important, inhibition is needed to suppress irrelevant codes during the phonological retrieval of sounds for letters in the word (Altemeier et al., 2008). At the later stage of reading which involves reading sentences in context, inhibition continues to be important because of word substitution tendencies in the less experienced readers. 'Impulsive reading style of guessers' need to suppress an immediate and misleading response to a word until all the letters in the word stimulus have been analysed (Van der Schoot et al., 2004, p. 173). Finally, while inhibition could possibly be important for reading comprehension because it limits potentially distracting and irrelevant information (Cain, 2006), a relatively weak ability or inability of inhibition to predict reading comprehension has been found in other studies (Altemeier et al., 2008; Christopher et al., 2012). However, these differences in findings could possibly be explained by the differences in comprehension text demands (Cutting et al., 2009).

In view of the above, it is increasingly apparent that the predictive relations between cool IC and literacy outcomes depends very much on the type of executive function that is being measured, as well as the specific literacy outcome that is being studied (Booth, Boyle, & Kelly, 2010; Foy & Mann, 2012).

HOT IC AND LITERACY ACHIEVEMENT IN AT-RISK CHILDREN

Hot executive function is known to be more complicated than cool executive function, because it involves both behavioural and emotional regulation (Zelazo & Carlson, 2012). Unlike cool executive function which has a longer history, the inclusion of hot executive function is relatively recent. Several executive function researchers (e.g. Barkley, 2012; Zelazo & Carlson, 2012) have recognised and advocated for the inclusion of hot executive function. Cool executive function processes can be seen as the cognitive capacity of the individual to reach the goal, but hot executive function provides the basis for choosing the goal in the first place and the motivation to get there. Hence, it is logical that the hot and cool executive function complement each other in goal attainment and must be considered together for a holistic view of executive function. While cool executive function is examined using abstract cognitive tasks without tapping on emotions or motivation, hot executive function is conventionally examined using affective tasks such as the 'marshmallow experiment' or any of its variation to measure delayed gratification, also known as IC (Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009; Hongwanishkul et al., 2005; Willoughby, Kupersmidt, Voegler-Lee, & Bryant, 2011) .

'Delayed gratification' is the ability to postpone instant enjoyment for the sake of later but better outcomes. It has also been recognised as an enduring individual difference in self-control (Mischel et al., 1989). In the classic marshmallow experiment, delayed gratification has shown to be a good predictor of positive life outcomes (Mischel et al., 1989). When left alone with marshmallows in the room, two kinds of four-year-olds surfaced. Some resisted their urge to consume the marshmallows and waited so they could be rewarded, while some succumbed to instant gratification and were willing to forgo the reward. The gratification-delayers with more IC later developed into adolescents who have higher SAT scores, more socially competent, and cope better with stress, frustration and temptations. The ability to delay gratification and inhibit impulses is vital to their later development. Other longitudinal studies have also shown similar findings (Mischel, Shoda, & Peake, 1988).

Unfortunately, recent efforts to show the links between hot IC and academic achievements in non-longitudinal studies have been comparatively disappointing. In a one data-point study that examined the contributions of hot and cool executive function, including IC, to disruptive behaviour and academic achievement, only the cool executive function was uniquely related to children's performance on academic achievement tasks, including literacy tasks (Willoughby et al., 2011). In another one data-point study that studied few components of executive function, including IC, hot executive function also failed to predict achievement outcomes when examined together with cool executive function, but it managed to predict learning-related

behaviours when analysed separately from cool executive function (Brock et al., 2009).

There can be several reasons as to why performance on hot IC task is not linked to academic outcomes in those studies. First, the differences in contributions of hot IC might have to do with the time lapse between the point of assessment of hot IC and the point of assessment of academic achievements. Perhaps, the 'fruit' of hot IC has a longer 'gestational period'. After all, the good learning-related behaviours found related to hot IC in the study by Brock et al., (2009) and Denham et al., (2012), might take time to translate to real academic achievement outcomes. Good learning-related behaviours can produce academic results eventually. However, if measured too early, it might not show. Second, hot motivating tasks capture the child's optimal performance through while optimal performance is often not captured in academic outcome measures (Allan et al., 2014). The mismatch may have resulted in the inability of performance on hot IC tasks to predict academic achievement.

While individual differences in hot IC have been widely studied amongst young preschoolers below five, it has surprisingly been unstudied in older children, as well as in children with learning difficulties. Hot IC has been suggested to improve as a child gets older. A two-year-old exhibits much less self-control than a five-year-old (Hongwanishkul et al., 2005). Although the original or variation of the delay of gratification experiment (Mischel et al., 1989) has shown to be a popular measure of hot IC (Beck, Schaefer, Pang, & Carlson, 2011; Hongwanishkul et al., 2005; Razza & Raymond, 2013), many children reach ceiling levels on most available preschool executive function tasks by five years of age. In four year-olds, the passing rate of the hot-delay gratification task was a high seventy percent (Carlson, 2005). Using this task on six-year-olds participants (in the context of this study) will result in a ceiling effect, as well as a low variability of scores. An alternative to measure hot IC in older children is needed.

CONCLUSION

Given a lack of research examining inhibitory control in children with dyslexia using ***both*** performance-based and ecologically valid measures, pursuing research in this direction will richly enhance our current understanding of dyslexia and inhibitory control.

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Experiences of Dyslexic University Students in the UK

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In this article, I report the experiences of nine students who were identified as dyslexic in the UK and have mainly successfully completed an undergraduate degree. The article identifies some of the issues emerging for these students in relation to early assessment and support, with material extracted from informal interviews. The article makes interesting reading, confirming that even in the more able dyslexic who achieves university entrance, dyslexic problems are still uppermost in their thoughts, and continue to effect their self esteem and achievement. The implications for support for dyslexia are discussed.

ASSESSMENT OF DYSLEXIA

There are clear individual differences in when the students were originally assessed, and this impacts on their educational performance and self-esteem, with some identified and supported as children and others more recently.

Three students were assessed for dyslexia in primary school. Adam had difficulty with reading and it was suggested by his Head teacher that he might be autistic. Harry had problems with English and was assessed with dyslexia and dyscalculia and George was easily distracted, clumsy and, had difficulty with fine motor control; George thought the Educational Psychologist was not interested in him, but spoke to his parents saying that George's difficulties would pass and gave

"...the more able dyslexic who achieves university entrance, dyslexic problems are still uppermost in their thoughts, and continue to effect their self esteem and achievement."

an assessment of having cross-lateral difficulties. In secondary school his dyslexia teacher said that he was more dyspraxic than dyslexic but he was never formally assessed with dyspraxia. At College more of his problems were identified, most notably the difference between his Verbal and Performance IQ and a couple of teachers sorted him out. Harry was subsequently tested throughout his schooling.

Two students were assessed at secondary school: Bridget went through the process of assessment twice but was given a negative result and Ian was not initially assessed with dyslexia but with a SpLD due to increased pressure on the brain possibly due to an hormonal imbalance. At college Bridget was given a 4 hour computer based test and was given a positive assessment of dyslexia. Six students (including Bridget) were assessed at university:

Charlotte had difficulty with reading and writing at primary school and according to her, "her Headmistress thought she was thick". In Middle School she was tested for aural and visual difficulties but not till she was in university was she tested for dyslexia; Edmund always had problems with English, spelling and achieving a flowing written argument at School but only in the second year of university did anyone (in this case a lecturer) suggest he might have dyslexia.

Fiona was assessed in her final year at university and chose to suspend that year and re-take the final year but subsequently (a few weeks after her interview with the researcher) she chose to withdraw. The Educational Psychologist who assessed her said she had probably got so far with intellect rather than remembering basic facts.

Daniel was assessed at university because his Mother started a postgraduate course as professional development and dyslexia was part of a module and she recognised that her son had similar difficulties. Adam was assessed in the second year of his university course because he decided not to disclose his dyslexia and as LEAs require a recent assessment, he had to pay for one. The Educational Psychologist stated that his dyslexia prevented him from attaining his true potential.

Ian had learned to read at an early age and read quite a lot but by about 11-12 years he had difficulty reading. He was developing severe headaches and had to undergo medical tests which indicated that the headaches were related to his writing by hand and he was given a laptop and taught to touch-type. He also developed extreme tiredness due to a malfunction of his pituitary gland, which allowed fluid to build up on his brain which was relieved by a lumbar puncture. There was a history of headaches at puberty in his father's family. Ian was recognised as having a learning difficulty, which was not classified and it was only at university that Ian was assessed as having dyslexia.

It may be seen from the data on time of diagnosis that a number of the students show issues of co-morbidity, which have made their original diagnosis more complex. On the other hand, outcomes and self esteem seems higher in those supported in primary school.

FAMILY HISTORY

There is evidence that family history is an important risk factor for dyslexia, with around 50% incidence for those with a family history. If parents have experience of difficulties themselves, this may facilitate the development of the child, or they may deny their difficulties and make life more complicated for their children. So it is important to establish how these students fare on this criterion, and whether this has impacted on their outcomes.

Charlotte said her parents and brother have signs of dyslexia but no one has been formally tested.

Edmund said that possibly his Mother may have dyslexia but she was not academic nor was anyone else in the family and it has not been picked up in anyone.

Fiona said that her Mother was really good at spelling and spots her and her sister's mistakes. Her Mother was baffled by her daughter's inability to read and spell.

George had two cousins who were suspected of dyslexia and another relative on his father's side who has dyslexia, and a half brother on his Mother's side also has a mild SpLD.

Ian said his mother finds reading numbers difficult but she is a computer programmer and very maths literate.

Clearly, from the information here, we can see that life is more difficult for those such as Fiona, whose mother is not necessarily sympathetic to her difficulties, but can easily spot her mistakes.

SCHOOL EXPERIENCE

One of the most important issues identified in research is the importance of the age at which children are diagnosed and whether or not they are given effective support. Particularly significant is the attitude of parents and schools towards the difficulties that children experience, and this can be key to their self esteem.

Again there are individual differences in experience from the student responses.

Daniel remembered reading a book at primary school. His spelling was bad and there was a designated dyslexia teacher at the school. And he used mnemonics for spelling at age 11.

George was not keen on drawing at primary school and said that he had a lazy hand but he found it difficult to learn with 27 other pupils. He was sent to a hospital when he was about 10 years old and "treated for clumsiness" by walking straight lines and doing ball exercises. Subsequently he did a lot of sport and has no problem catching a ball now.

Daniel was good at Maths and English at primary school. At Grammar school he was mixed academically, maths and science were good and English was all right but languages..."I hated languages vehemently". Daniel lived in France for 3 years and could speak some French but forgot it. He got an A and B in GCSE but he did not enjoy it. He did not like trying to define the words – nouns, verbs –that language is built on. He worked specifically on spelling but his handwriting is much worse. In the Sixth Form science coursework assessment was easier but exams were "hit and miss".

Edmund was bad at spelling at primary and secondary school, which his teachers put down to laziness but he did not think he was lazy. His comprehensive school had 2000 pupils and there was not an expectation for all to get an A* - if people trundled along teachers were happy. During his A level studies laziness was inferred – a teacher said that he should be more careful with his use of language – but there is a difference between being careful and needing help.

Fiona said with sarcasm that she had a "really nice" primary school. Pupils were taught if they were clever but if not, you were ignored. She could not remember learning to read and write; it was too long ago. Her teacher said she was too stupid to sit the +11 and told her Mother that she was not clever enough, but she thought she was clever enough to pass except for spelling. She could only remember reading one book of "the cat sat on the mat" kind. Her secondary school was in a poor area and most of the pupils were disruptive, although she was in a group that wanted to learn. This school failed its Offsted and so did the Sixth Form. She feels that she left a trail of bad education behind and it was hard to learn. So her dyslexia was not picked up. As regards spelling –she enjoyed doing the tests – she could learn words but then forget them 10 mins later. She misbehaved at primary school ("a terror") but also sneaked a look at her next-door neighbour's work who was a genius.

Harry sat the 12+, though he knew he would not pass. He thought his parents put him in for the experience so that he would have a better chance of passing the Common Entrance Examinations. They thought a state school would be no good as he might be at the bottom of a big class. He got in to private school. They wanted him to go into year 8 but the Headmaster said come back into year 9. He did that and went back for Senior School. Sixth Form – no complaints. Had a gap year as a teaching assistant and if children asked for spellings (which he found embarrassing) he pointed to the dictionary.

At primary school Bridget found spelling difficult and presentations (she slurred her words). There was very little help at primary school and she was told that she was lazy, although on the whole she enjoyed primary school. Bridget and her Grandfather knew she was dyslexic but writing to school etc made no difference because of targets and target setting. Bridget struggled and got along but with help could have realised her potential. Bridget had a major illness halfway through and based on her GCSE results, the Headmaster said "You will never make a degree". As her GCSE grades were not good enough she had to fight to get on an A level course. At a school evening her Mother and Grandfather had to fight to get her on A level History and A Level Religious Studies. During A level exams her Grandfather died and her teacher wrote to the A level Board about this and she was awarded a B, C and D which gave her confidence.

At College Bridget took A Level German and A Level Travel and Tourism. She was the oldest in the class but consistently passed exams and passed them well. She was top of the class and also Student Union President and on the academic board disciplinary panel. Her reading improved greatly, although her handwriting was atrocious. History and Geography was her "bag". She won the atlas quiz and "hoovered" up all new knowledge. She tended to be mid-range but knew she was more than that but she just had to hang in there. At primary, secondary school and college it was a battle to get any help.

George was not that needy so his parents put him into private education and he did really well in his GCSEs. The state school knew he would pass 5 GCSEs so they had to send resources to other more needy pupils. However, in private school everyone bent over backwards to help the pupils. At college it was 50:50. It took time to learn the system and how to get the help.

After the age of 12 Ian was tutored at home and then a pupil referral unit, but he found High School very helpful and found that staff were willing to be understanding. It can be seen from these comments that the experience of the students is highly varied, ranging from those who were protected and supported to those who felt ignored and disregarded. Again there is clear evidence here of co-morbidity from

many of the students, and evidence that the breadth of their difficulties was a puzzle for those trying to identify their needs.

INTERVENTION

A key issue is the type of support children received, and the experiences of the students is again very variable here. Those with a firm diagnosis of dyslexia have received support, but others have been treated as low achievers throughout their school careers.

Adam spent time at a special day-care centre (at primary school age) for children with learning difficulties. He had lessons outside class, possibly once a day (1 or 1.5 hours) on writing and spelling, and he also had elocution lessons, mainly one -to one at first. Throughout primary school and middle school he had some extra sessions, mainly small group sessions. He also had his reading recorded and then had it played back. Adam did not have as much help in High School as in Primary School. He also had someone to take Science lesson notes and some notes in English classes but Adam said he wanted to take his own notes so as to be independent which on reflection was not a good idea. He studied quite a bit especially for English. He got D for English Literature and C for English Language. At Sixth Form he had an interview and was offered help. They suggested a laptop but Adam said no as his typing was slow. A special room for the use of voice recognition software was available, but Adam's voice was not clear enough so he thought it would be slow and he did not use it.

As Bridget was not assessed as dyslexic at school, she received no help. She was put in the lowest set for English and had to fight to get put into the next set. There was no help to understand the issues around dyslexia. At her school pupils with physical disabilities were put in a different wing of the school and not integrated. As Bridget was not positively assessed for dyslexia, this meant that Bridget was more integrated into the whole school. Three of her school-teachers took Bridget under their wings and at lunchtime and break times they would ask her how things were going. These teachers were open to other pupils because some teachers are more pupil-friendly. One of these teachers looked at one essay and then helped Bridget and she got a good result, which spurred her on. Also she now had a formula about how to write an essay so on the next assignment she doubled her mark and she believed that she would not be at university today without that help. Bridget was given a lot of help with spelling at college and she was able to use her own resources – teaching herself.

Only at university did she receive 'proper' help in terms of English (grammar and

punctuation), presentation skills, confidence and reduction of stress through relaxation exercises and techniques. Bridget does not like group work because it is too impersonal. However, with one-to-one tuition the tutor got to know her and how she worked. The student can set the agenda but she is unsure and reserved in a group. One can say what one feels in an individual session and not feel embarrassed or ridiculed.

Charlotte had good help at Middle School (aged 9 – 11). She was in a group with 3 other students. Her teachers suggested she should be taken out of Mathematics and not English. She was given some reading techniques and told the difference between, for example, could, should and would. Charlotte missed some mathematics lessons, for example, fractions and was never good at them and never caught up because as one progresses one does not go over the hard stuff - just the harder stuff. In her next school (Year 4, 5 or 6, at age 11) Charlotte had no help because a lot of the pupils in the school had learning difficulties. The school was in a poor area with lots of pupils and she was in the top set for all subjects, but just not as good at English as Mathematics. She was average at English. She did not study History but studied art instead.

Fiona only had help with Mathematics.

At primary school George had an external teacher who helped with word searches. Every one or two weeks he was taken out of a class 30 minutes before the end and took half of the lunch hour to go into a small group of 6 students. This was helpful but embarrassing because he was doing something different to the rest of the class. George went to a state school for one year and the only help they had to offer was a laptop. He was then moved to a private school and had one-to-one tuition for the first 2 years (2 or 3 times a week). They had their own tests- IQ etc but his reading and spelling age went up by 4 yrs at private school. He went to a technical college to study for A levels. He was given extra English for comprehension and his chemistry teacher was very helpful with mathematics and chemistry. He had one-to-one dyslexia tuition, which helped with confidence as they would proofread work because he sees only what he thinks he has written.

After his assessment, for dyslexia Harry had lessons outside of school to help with literacy and also the lessons he missed. Also he had 45 minute touch typing lessons during the lunch break but had no extra tuition at Senior School but found the house System in his Senior School supported him and his Head of House whilst not an academic office did monitor his progress so that he was pushed but also supported. Harry had extra lessons all the way from 7 – 13 years old.

Ian was given a laptop.

EXTRA TIME IN EXAMINATIONS

In order to achieve their potential, it is important that dyslexic children are allotted the extra time which they are due in public exams, in many Western countries and also in Singapore.

Ian had 25% extra time in examinations for GCSEs and A levels because he became very tired in examinations and sometimes fell asleep in the examination. However, his inability to write quickly prevented him from finishing his A Level Mathematics paper even though he knew the answers and so he felt that extra time was justified in his case.

Harry also had extra time in public examinations and he felt he could not have done without it as he only just managed to finish papers with the extra time. In his case he needed extra time in order to read the questions. He often had to re-read texts to comprehend what was asked of him and to analyse the questions. Harry observed that in the case of English papers he was still reading when everyone else had begun writing.

Bridget received extra time in examinations at College once she had a Dyslexia Assessment. In Bridget's case, the extra time alleviated her stress and allowed her to 'refresh her brain and re-focus'. .

George was given extra time for As2 level examinations whereas Adam and Charlotte only had extra time in examinations, as did all the students who were interviewed, at university level. Adam said that the extra time in examinations allowed him to read the question through properly, to write more clearly and proof read some of his answers.

MATHEMATICS

A number of students with dyslexia experience difficulty with maths, whether with concepts or the wording of problems. This overlap is often overlooked, so it is interesting to check on the experience in this group.

Adam thought he was 'OK' at mathematics but he was not good at graphs and shapes but all right with algebra. He passed with a B grade for GCSE. Bridget, on the contrary, said with regard to Mathematics that she was "useless, pathetic". She could add, subtract, multiply and divide using a

"A number of students with dyslexia experience difficulty with maths, whether with concepts or the wording of problems."

calculator but not in her head and has never been able to learn her tables. Bridget does not avoid mathematics but if she had to tackle algebraic equations she would feel very stressed and pressured.

Daniel enjoyed Mathematics – coloured textbooks were filled in and he could see his daily progress but he had to re-sit his examinations to get a C or B in GCSE. His mathematics tutor was brilliant could explain things just right but he could not understand his mathematics teacher. At Grammar school his Mathematics and Science were good and at Sixth Form Physics, Biology, Geography and Philosophy coursework assessment was easier although exams were "hit and miss".

Fiona also could not learn her tables and had extra help with mathematics after she was awarded a D for her GCSE. After two mathematics lessons a week from a "brilliant" mathematics teacher she re-sat her examination.

Harry was assessed as having dyscalculia and had extra mathematics lessons in primary school.

Ian was very good at Mathematics although he was slow at reading the actual questions. He is not quick at reading and understanding Mathematics questions. He has a difficulty copying lines of Mathematics; he can miss a minus or something. So he has to check his work a great deal. Ian is unable to hold an image in his head because of a short-term memory problem. He needs to write a Mathematics problem out and then look at it. He needs to write out every little step of the solution. Ian enjoys Mathematics; it takes lots of thought but it is good for his Science subject.

UNOFFICIAL HELP

At University Daniel found it difficult to get low-level help. He tried to contact people during his second year exams and no one was available. He also said that a dyslexic friend was constrained by course.

Fiona said that her Mother and Grandparents tried to teach her to read and write when she was at pre-school. Also, her Aunt was a library teacher and tried to encourage her to go to special reading classes but Fiona hated books. Eventually her Mother read books to her because her mother wanted Fiona to be like Fiona's friend who was "a genius". Even now Fiona only reads the first 4 pages of a book and then just puts it on her shelf.

It can be seen from the interviews that there is considerable variability in maths in

this group, ranging from the most extreme, to some who are even quite strong in this subject.

EMOTIONAL REPERCUSSIONS

Interestingly, there will also be considerable heterogeneity in the emotional responses of the students. Some feel stigmatised if they are receiving 'special' help, while others accept that they are stupid, or react by acting the clown to distract attention from their learning difficulties. Nevertheless, most dyslexics suffer emotional repercussions of some kind and these depend on the individual temperament as well as the environment in which they find themselves.

Adam was not happy at being at being taken out of class. At the time he felt alienated and had a desire to be independent although he thinks that response is silly now. He also felt very embarrassed at having his reading recorded and played back to the class but he now feels at ease about reading aloud.

Bridget believes that her personality saw her through. If she had been given help earlier in her education, she could have been awarded a 2i or a first. She felt a failure up to that point but when she was shown how to write an essay at age 14/15 she decided that she would prove her Headmaster wrong.

Edmund experienced a certain relief at knowing that he had dyslexia as he said, "it was good to know what a problem is so you can work on it". He felt the assessment tests were childish, and that it was difficult to explain to his parents that he might be dyslexic. He also felt that there was a stigma about having dyslexia at university as "you're supposed to be intelligent". Edmund obviously felt that others at the university might equate dyslexia with being unintelligent. Edmund said it was a challenge to cope with it when you are at university; actually being told at 20 years old that you are dyslexic; it was quite a shock to the system. It was nice working in the dyslexia group because you did not feel quite so isolated. At first I thought I was the only person with this, so it was good working in a group because other people asked questions and chipped in. If I had been assessed at age 10, I might have developed better ways of coping with it.

George did not have enough confidence because he been knocked back many times in primary school when teachers thought he was lazy. In secondary school they worked on targets and he was told that he would fall below the target so they could not help him. His parents were outraged so they moved George to another school.

Harry reported that his Mum said he used to get very frustrated because he could not do things, but he does not remember this. He was a very happy kid and was used to being able to do things but at some point he found he could not do certain things. Then he was put into a very good preparatory school who worked on his strengths – sport and art- and he was encouraged. He had problems with English but he was all right. Sometimes he worked really hard but got a bad mark. His parents said he had done the work and his teachers were usually willing to explain it and he got feedback from them.

Ian was very stressed when trying to keep up with copying down work off the board especially when he had to keep asking for work to be left for a longer time on the board.

So each individual here reacts very differently to their situation, as we would predict from the literature.

CONCLUSIONS

It may be seen that the experiences of these nine students have been very different, but a number of key factors emerge. Those students who were not assessed in school felt that they could have achieved more with the benefit of early support. It is interesting to note, that for several of these students their dyslexic problems were overlooked because of attendant physical issues. It is important to remember that experience in school changes over the year, depending on the knowledge of dyslexia within the education system. For these students, there would have been a reasonable awareness of dyslexia and it's problems. Nevertheless, Fiona in particular seems to have been damaged by lack of recognition of her difficulties by her family and school, and this may have impacted on her decision to withdraw in her final year without completing her degree.

Recent changes in the support system in the UK from September 2016 will mean that there is less availability of support for students with dyslexia. Nevertheless, there should be a keen awareness in staff of the impact of dyslexia in the student age range. In countries where awareness of adult dyslexic problems is not as well developed, it is likely that problems would be exacerbated by failure to understand the lifetime effects of dyslexia. It is important that these are recognised and addressed across the world.

ABOUT THE AUTHOR

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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:
Dyslexia Awareness Training (including other Specific Learning Difficulties)
Diagnostics Assessment 16 years – Adult

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CASE STUDIES

Useful Strategies and Technological Solutions to Overcome Language-based Learning Differences when Studying at Tertiary Level

Samunn Abdul Cafoor
Senior Educational Therapist
Dyslexia Association of Singapore

INTRODUCTION AND BACKGROUND

In order to construct meaning from the printed language (reading) and to use the printed language to convey a message (writing), students must be able to recognise in print the language they use orally (Manson and Herman, 1991). This ability is referred to as word identification, though some writers use the term decoding (Anderson, Hiebert, Scott, & Wilkinson, 1985; Williams, 1985). However, there is much more to reading than this – in order to comprehend the work you are reading you need to be a fluent reader with a good memory to hold in place the language while you make sense of it.

Text understanding is the literacy skill that adult students need to use frequently in their studies when they access text books and other study materials. This essay focuses on strategies and technological solutions that are useful for adult learners with language-based learning differences when studying at post secondary level.

"Text understanding is the literacy skill that adult students need to use frequently in their studies."

THE CASE OF UMA

Uma, a young adult of 19, was introduced to me by her aunt. On the surface she did not suffer from low self-esteem as a result of her language-based learning difference. Despite her challenges in academic skills, she has sailed through primary and secondary school with below-average grades. As she progressed, the curriculum demands kept on increasing year-by-year and her parents and some close relatives identified that Uma has some kind of learning difference. Her close associates knew that she cannot comprehend written and verbal responses quickly compared to her peers of the same age group. Uma was not able to get good grades in her secondary school qualifying examinations. As a result, she was not eligible to enter any of the state-owned tertiary institutions except for the Institute of Technical Education (ITE).

The Singapore education system identifies children with Specific Learning Differences (SpLD) when they are in lower primary grades and they are recommended for remediation through the 'Learning Support Programme' (LSP) within the school framework. Moreover, they are referred to external agencies like the Dyslexia Association of Singapore (DAS) for further intervention. Children with language-based learning differences are offered a separate curriculum named 'Foundation Stream'. On completion of their secondary education they are entitled to enter Institute of Technical Education (ITE) where they are taught life skills. It is unfortunate that the system in place at that point in time failed to identify Uma's language difficulties.

There is a general perception in Singapore that children who are selected to follow courses at ITE are considered as those who cannot perform academically well. The students who attend ITE colleges are called 'stupid' by their able peers who attend other tertiary institutions. Uma did not want to attend an ITE college for this reason. Furthermore, her parents supported her idea as they did not want their child to be labelled. Therefore, they decided to send her to a private institution to help her pursue a diploma in management studies. In fact, it was Uma's choice that she selected this discipline. She had to do a bridging course for nine months in order to prepare herself to follow the diploma programme in management studies. Currently, she is a first year student of the 15-month course and she looks forward to completing the programme of study in the next year.

Uma could not recollect much about her past learning experiences with the primary curriculum. However, she shared with me her learning incidents when she was in secondary school. Reading was a challenging task for her because she could not recognise words. This in turn resulted in poor comprehension skills and significantly impeded her writing. Furthermore, she was not able to perform well in time-bound

reading and writing tests and she was always behind schedule to submit most of her homework assignments.

She expressed her recent concerns to me that she experiences difficulty with her way of compensating for academic skills.

INITIAL SCREENING

Uma's parents have never subjected her to a psychological assessment and she had never been identified as having SpLD till I met her in December 2012. A package of two screening tests – The Dyslexia Adult Screening Test - DAST (Fawcett and Nicolson, 1998) and Lucid Adult Dyslexia Screening Test – LADS (Singleton, 2004) - was offered to Uma to identify whether she is in need of further support. These were the only screening tests that she has been subjected to so far.

The DAST screening test was administered by me and the profile indicated severe difficulties with Nonsense Passage reading. In addition, problems were identified with Reading, Spelling, and Phonemic Segmentation. All these difficulties are consistent with problems in Phonological Processing.

By looking at her profile, I assumed Uma could be dyslexic. I am an educational therapist and I have limited knowledge in psychological testing. Therefore, I sought help from a senior psychologist at Dyslexia Association of Singapore to conduct a LADS screening test for Uma for predicting dyslexia. The psychologist gave us constructive feedback and advice after the screening test. LADS suggested that there is a low probability of Uma being dyslexic. But there were other issues that needed attention.

Verbal reasoning ability was a significant weakness for Uma. Due to her low verbal reasoning skills, there may be a possibility that she fails to recognise enough words for her age. She may also fail to understand the material she can read. Therefore, reading is a challenge for her. And for this reason, she finds it difficult to refer and extract relevant information from text-books and given study materials to answer semi-open and open-ended writing assignments.

RECOMMENDATIONS

- Uma could learn the majority of the words as sight words.
- She can seek help from someone who understands her difficulty and get help from that person to run through the given study materials with her and engage in meaningful discussions.

- She could use assistive technology tools such as text-to-speech and/or voice recognition software.
- She could create mind maps from her own notes to summarise the extracted information from the study materials to have a holistic view. In addition, these mind maps could be used as revision material during examinations.
- Uma attends a private institution. Hence her parents can approach the school management to seek special examination arrangements for her.
- Uma should expose herself to good quality English Language (audio and video). This will help her to listen to good language and will support her to communicate her thoughts well.
- As an adult, she should develop self awareness of her strengths and weaknesses. This would help her find ways around to address her language-based difficulties.

LITERATURE REVIEW — LEARNING THEORIES

Facilitated Learning (Malcolm Knowles 1970)

Most adult learning theories have been based on the work of Malcolm Knowles. He described adult learning as a process of self-directed inquiry. Adult learning theory (Andragogical or facilitated learning) refers to the practice of teaching and educating adults (Knowles, Holton, &Swanson, 2005). As the facilitator for Uma, I made myself familiar with Knowles' research as a foundation to develop and deliver lessons effectively in a manner that is best-suited to my learner. The lessons were relevant to the experience of the learner and they were presented through an active learning process where the learner could retain and apply knowledge more effectively. The instructional approaches were learner-centered and they made the learner actively engage in the process of discovering and exploring rather than being the recipient of information (Knowles, et al., 1970).

Discovery Learning (Jerome Bruner 1970)

Discovery Learning is an inquiry-based, constructivist learning theory that takes place in problem solving situations where the learner make connections between his own past experience and existing knowledge to construct new concepts, facts, and relationships on his own. Under the preview of this theoretical construct, my study adopts the guided discovery learning model that provides a tailored learning experience to the learner which encourages active engagement and promotes motivation and independence when the learner engages herself with the given tasks.

Operational Framework

The Technological Pedagogical Content Knowledge (TPACK)
(Mishra & Koehler, 2006; Koehler & Mishra, 2008)

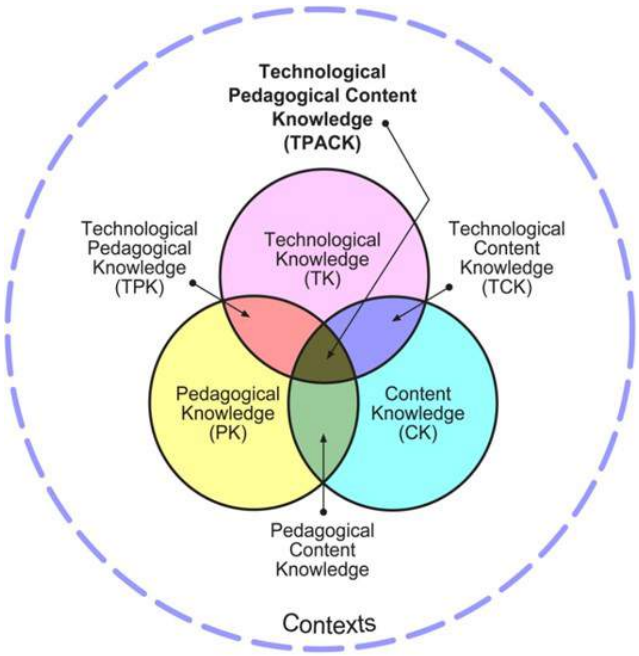

Figure 1: The TPACK framework and its knowledge components
(reproduced by permission of the publisher, © 2012 by tpack.org).

In this model (see Figure 1), there are three main components of teachers' knowledge: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). The interactions between and among these bodies of knowledge are equally important and represented as PCK (pedagogical content knowledge), TCK (technological content knowledge), TPK (technological pedagogical knowledge) and TPACK (The Technological Pedagogical Content Knowledge). The TPACK framework suggests that content, pedagogy, technology and teaching and learning contexts have roles to play individually and together.

I intend to discuss only TPACK and its implication to integrating technology into teaching. As TPACK brings a unique combination of three different bodies of knowledge and it helps teachers not to treat technology as an 'add on' component but to treat technology as an integral part of the teaching and learning process.

Constructing the dynamic equilibrium among all three elements will aid me to teach

successfully with technology to my student with SpLD who in turn will use this assistive technology device (the iPad) and skills to function effectively and enjoy greater freedom and independence in the society.

HOW I INTEND TO USE ADULT LEARNING PRINCIPALS TO FACILITATE STUDENT LEARNING

Adult students experience a need to learn new knowledge or skill in order to cope more satisfyingly with real-life tasks or problems (Knowles, 1980). As a facilitator, my role in this practicum is to provide meaningful learning experiences to Uma that are clearly related to her personal and academic goals. Secondly, Adult learners resist learning when they feel others are imposing information, ideas, or actions on them (Fidishun 2000). Therefore, I have made an attempt in this practicum to recognise and evaluate new information and skills on the basis of my learner's particular needs so that she can present what is learned in a way that makes clear its relevance to her. Thirdly, I am aware of Uma's level of motivation for learning and what is driving her motivation. I have identified some of the barriers she has against participating in learning. And I have discovered few pointers that are keeping her from learning.

As a motivational strategy I have tried to decrease these barriers by establishing a very good rapport with her to prepare her for this learning journey. Finally, I got Uma to actively engage in the designing process of her learning. I got her involved in the planning of lessons to some extent. This helped me to agree on the mid-term objectives with her and I was able to explain to her how the instructional approach and content will enable us to achieve the objectives.

METHODOLOGY

In this teaching practicum I have attempted to find ways of working to help Uma to meet the demands of the academic environment. Students with SpLD need instruction that helps them develop metacognition, or awareness of their own thinking processes (Borkowski & Muthukrishna, 1992). Vygotsky's (1978) concept of scaffolding and interactive dialogue between the teacher and the learner becomes the foundation for the model of instruction in this teaching practicum. From a word identification perspective, Uma has not developed a conscious understanding of how, when, and why to use different word identification strategies.

This model of instruction provides a mediated learning experience (Feuerstein et. el. 1980) to Uma at her current level of performance. The facilitator takes control of the learning process and presents the learner with word identification tasks based on

the student's curriculum. Moreover, the facilitator models word identification techniques to the student so that she will use them strategically to a given activity. Uma is guided when she is given tasks for practice. Each task is followed by a short discussion where Uma is asked to explain why she selected particular strategy. This process will help her to develop a self conscious understanding of her own knowledge, skills, and strategies. The student will gradually learn to use the knowledge and skills that she acquired in this short practicum and will start to perform independently.

Stanovich (1980) states: 'Higher-level processes can actually compensate for deficiencies in lower level processes. Thus a reader with poor word recognition skills may actually be prone to a greater reliance on contextual factors because these provide additional source of information.' Poor decoding skills can impact on comprehension. In the simple model of reading (Gough, Hoover & Peterson 1996; Hoover & Gough 1990) decoding and comprehension are the two key elements. And if the reader is unable to decode a word, the meaning of that word will not be available to the learner and this reduces understanding of a given text. But a non-decoded word could be inferred by processing the meaning of words around the word that is in question. To overcome Uma's poor word decoding skills, context-based strategies can also be introduced to support decoding and improve identification of meaning of individual words. I have sought technological solutions (e.g. the use of text-to-speech software) to compensate Uma's poor reading speed as to make my student more comfortable when she takes up reading assignments.

Assistive Technology (AT) will be embedded into this 10-hour teaching practicum. Raskind (1994) points out that AT should not be treated as a 'cure' for a learning disability but to help people work around their difficulties. I intend to use AT as a means of modifying the way(s) my student Uma receives or expresses information in a manner that highlights her strengths. I have identified and recommended Apple's iPad as the best assistive technology tool available to my student taking into consideration the 'dynamic interaction between the individual, technology, task, and context' to bypass the difficulty in specific academic skill areas (Raskind & Stanberry, 2006).

Uma has no knowledge of phonological awareness that phonetically regular words could be broken down into phonemes. Taking into consideration of the limited time available for intervention during this teaching practicum of 10 hours, I have tried other approaches than phonics to help her with word identification strategies. Theses clues include grammar and syntax, meaning (semantic) clues, word parts (prefixes, suffixes, base words), and the familiarity with similar words (analogy) (Adams, 1990; Anderson et al., 1985; Mason et al., 1991).

INDIVIDUALISED EDUCATION PLAN - IEP

The learner's needs, insights, and skills were taken into consideration when this IEP was planned. A possible match between the learner's best personal learning style and her specific learning requirements was well thought-out when the lessons were designed to present best possible educational experience to this adult learner.

Reason for developing this IEP - Part fulfilment of PG Diploma: SLAS Module

Student Profile

Uma is a 19 year-old girl who currently functions within the Below Average range of Verbal abilities. She functions best in a structured-environment and she should be told of any change of plans way ahead or it would upset her and lead her to confusion. Her parents and my observations conclude that Uma is a visual learner. She uses an iPad for her learning activities. Therefore, the lessons in this practicum are planned integrating Apple technology (iPad and a set of iOS applications – apps) to overcome her reading difficulties.

Formative assessment data

Assessment	Date	Outcome
DAST	19 Jan 2013	No difficulties shown in the Working Memory test
LADS	8 April 3013	Major difficulties shown in the Word Construction and Word Recognition tests

Student's areas of strength

Uma can work independently once she knows what to do. She is aware of the fact that she learns much more if lessons are presented to her with visual stimuli. She does a lot of self-talk very silently to internalise and consolidate the information that she receives before she embarks herself on writing.

Student's areas of need

Uma struggles in academic subjects that require a lot of reading. She has difficulty in decoding unfamiliar, multi-syllable words. Her fluency is not at the level of an adult.

Accommodations for learning

Instructional Accommodations	Environmental Accommodations	Assessment Accommodations (if any)
Technology embedded teaching -Mind-mapping -Word recognition -Reading -Scanning -Writing -Digital voice-recording -Note-taking	An informal learning environment. An iPad is connected to a 32' TV through Apple's airplay technology. The TV serves as an interactive white board (IWB) for instructional purposes with iPad app 'whiteboard'.	None

The Individualised Learning Programme

Learning Expectations	Teaching Strategies	Assessment Methods
Text Structure (2 sessions)	Presentation of facts and the relationship among facts	
Word Identification Structural Analysis (3 sessions)	Identifying word parts and Syllable patterns	The student's progress was closely monitored
	Decoding words - DISSECT	
	Spelling patterns and rules	
	Syllabication division strategies	
	Prefixes, Suffixes, and root words	
Answering a question (3 sessions)	Developing an integrative workflow with technology	
Note-taking (2 sessions)	Smart note-taking with technology	

Long term plan (if any)

The outcomes of this teaching practicum will be shared with Uma and her parents at the end 10 sessions. An auxiliary plan (if necessary) will be discussed with Uma and her parents if they prefer providing continuous support to Uma until she completes her diploma in management studies.

Comments

The lesson outcomes will inform me of what kind of support the children with SpLD need once they leave secondary school.

Educational Therapist: _____ Date: _____

IPAD INTEGRATED IEP

Why iPad used in this teaching practicum

Though Apple technology – iPad and a selected list of iOS applications in this context - presents a set of new challenges to learners with technology, it awards the users the choice of multiple and alternative formats to perform a given reading or writing task. These are very different experiences altogether to my adult learner that encouraged, engaged, and compensated Uma to overcome her learning differences during the teaching practicum that increased her sense of self-worth. On the other hand, the pedagogical use of Apple platform offered me, the facilitator, a scope of instructional methods that encouraged me to introduce more technology-based tasks to my adult student.

Selection of suitable iOS applications apps

Draffan (2009) identifies seven major categories of technological aid (hardware and software) that students can use. They are planning, reading, writing, voice recognition, digital voice recorder, scanner, and personal digital assistant. The selection of iOS applications (apps) for this teaching practicum is made based on the categories specified above to provide one-to-one learning support. A catalogue of iOS applications (apps) was made available to the learner and she was given the chance to make the right choice of the apps that best suited her and a given learning situation in consultation with the facilitator. Sharing and integrative options within and between apps were also considered key elements when the selection was made to ensure best learning outcomes.

iOS applications (apps) used in this teaching practicum

Table 1 shows the iOS applications (apps) that were used in this teaching practicum. (For more details: QR codes can be scanned).

App Title	Description/Rationale	More Details
Inspiration	**Planning** Students visualise ideas and information in a diagram or in an outline and flip between views with a tap	
Sound Literacy	**Word Recognition** Help the teacher to explain how the written word is structured: letter and letter combinations, prefixes, suffixes, and bases	
AppWriter	**Reading & Scanning** This app has three features: text-to-speech, word prediction, and OCR scanning with Dyslexie-typeface (popularly known as dyslexia font)	
Pages	**Writing** A well-suited full word processor for iPad	
SuperNote	**Digital Voice Recorder** Colour-coded note-taking app with a voice recorder. Take quick notes and make recordings simultaneously.	
GoodNotes	**Note-taking** Notations could be made on documents and save them or export them.	

FINDINGS AND DISCUSSION

Text Structure

Students who are taught to identify the structure of expository and narrative text have been found to have better comprehension than students who have not received such instruction (Taylor, 1992). The facilitator modelled the text structures to the student and she was given exposure to various patterns of organisation of information - sequence, cause and effect, problem and solution, compare and contrast, description and directions - in non-fiction texts.

At first, Uma did not have a clue how facts are presented in non-fiction texts. But at the end of the two sessions designated for this topic she was able to understand the relationships among the facts that are presented in a text. Additionally, she was able to figure out some of the clue words that hold these relationships together. 'GoodNotes' app provides a unique experience by allowing its users to highlight and annotate. Uma highlighted the text using different colours. (For example: a cause and effect text structure could be highlighted in two different colours). We developed a checklist with the six text structures so that Uma could use this checklist when she comes across a new piece of non-fiction for reading. Furthermore, a short list of clue words was developed so that it could serve as a reference guide to help Uma to understand relationships among the facts presented in a text.

Word Recognition

The inability to sound out unfamiliar words is a major contributor to the poor comprehension skills (Foorman, et al., 1997). Syllabication was introduced to decode words by looking and recognising chunks of words. DISSECT method (Lenz and Hughes, 1990) was used in this teaching practicum to assist my struggling student to decode unfamiliar words by using a combination of context clues and word analysis strategies. Students will master structural analysis skills only when modelled by teachers (Gaskins et. el., 1996). The student was modelled all six syllable types and was provided with ample opportunities to practice her newly learned strategies. Student's work was checked instantly to make sure that she has completed the activities and corrective feedback was provided immediately.

'Sound Literacy' app is an excellent instructional tool to teach morphemic awareness to kids. It provides a platform for students to see, hear and analyse words and build words with meaningful word parts. I demonstrated concepts and skills as well as guided practice sessions with Uma using this app. This unique app encouraged Uma and me to work together in this intensive practicum. We used another app – 'Vocab Rootology' – for independent practice during our drill sessions to learn most

common prefixes, suffixes, and Latin and Greek roots used in English Language. I found Uma effectively applying structural analysis skills during these three practice sessions and she was able to identify the prefixes, suffixes, and the roots (base words) of a set of words that were selected from her textbooks. This gave her confidence to handle some words on her own and she expressed her success by telling me that words that made no sense to her previously make sense now when they are broken down into meaningful word parts.

Write an answer to an open- ended question using selected apps

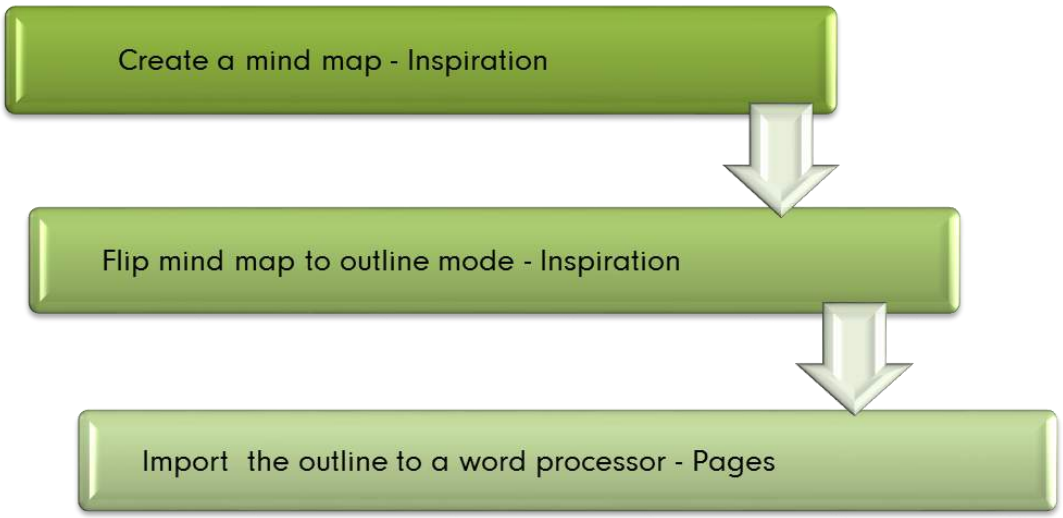

Figure 2 shows how two iOS applications (apps) use sharing and integrative options within and between the apps.

Uma used text-to-speech software to read a piece of text in her laptop. She summarised the text and generated notes and put them on a mind map using the *'Inspiration'* app in the iPad so that she can view the information holistically. Then she read the question using text-to-speech software in her laptop. She switched the visual view of the information in the mind map to a linear note view. In other words, the 'Inspiration' app allows flipping of the information from mind map view to an outline view. According to the question, she deleted some content and added more information to the notes. Subsequently, she exported the contents from the 'Inspiration' app to 'Pages' – a word processing app to edit and format the answer to the question and submit it online to her tutor.

This writing process with technology was really an eye-opener for Uma and she liked it the best out of all the sessions in the teaching practicum. Because most of her take -home assignments are open-ended questions and she has to answer them after a short group discussion. This process really helped her because she could read the text and create a mind map. Then she attends the group discussion. She adds in more details to the mind map during the discussion. When she wants to answer the question individually she flips the mind map to the outline mode and exports it to the word processing app, formats the answer, edits it, and posts it online to the virtual learning platform (VLE) of the college. This technology integration to the learning process reduces her anxiety on reading and it shows an easy way around to work on her assignments at home.

Two additional apps were introduced to Uma as they will be of immense assistance to her in note-taking activities. *'AppWriter'* is a text editor with reading, writing, word prediction, and text-to-speech features. This app allows converting any printed document into a digital text document through its scanning feature with optical character recognition (OCR) technology and gets the document read using text-to-speech function. *'SuperNote'* is the other app which helps to colour-code notes and this feature helps to locate the notes instantly. Recording feature is built into the notes where one can make notes while listening to the lecture and recording it simultaneously. We did not have much time during the last two sessions to explore all the characteristics of these two apps but Uma was confident that these two apps will be very helpful to solve the day-to-day academic demands she faces.

Ever since she learnt to sight read, she has not learnt to decode most commonly used words. The strategies that we focused on decoding and word recognition skills should have helped Uma to better comprehend the texts that were presented to her.

CONCLUSION

Transfer of learning for adults is not automatic and must be facilitated. Coaching and other kinds of follow up support are needed to help adult learners transfer learning into daily practice so that it is sustained (Speck, 1996). Through appropriate practice, self-acquired strategies over time, and the use of assistive technology can support Uma to develop comprehension as a skill. In this teaching practicum, the results of informal assessments indicates that the strategies that produced positive results were the use of mind mapping techniques and writing of summary notes. These two skills helped Uma to think about the text during the actual process of reading.

My take in this short study is that continuous support in the area of literacy is vital to

adult learners with language-based learning differences. They should be facilitated outside the traditional classrooms. A blended learning approach or a flipped classroom model would certainly be of advantage to adult learners as these approaches and models offer numerous ways to learners to receive additional learning support outside the classroom.

The opportunity has arisen to follow up the progress of Uma, since our initial sessions. I plan to interview Uma to ask the following questions that tap study skills and technological support, as well as more general questions targeting self esteem.

INTERVIEW QUESTIONS

1. Do you get your tutor / someone to run through study materials which will help you to understand them better?
2. Do you engage in meaningful discussions with your tutor(s) or someone?
3. Do you create mind maps (with or without tech help) from your notes to summarise or extract information from the study materials?
4. How do you stay organised with or without technology?
5. What is the role of technology in your present class?
6. In what ways do you use technology to support your learning?
7. Does the use of technology have enhanced your learning? Explain.
8. What device(s) do you use in your learning (in class and at home)?
9. Do you think the device(s) available to you right now aid your learning? Yes / No. Explain.
10. If you do not have the right device(s), which one(s) you would prefer and would like to obtain or use? Why?
11. Does the use of technology has improved your writing? How?
12. Do you currently enjoy any exam accommodations? Explain.
13. As an adult, are you aware of your strengths and weaknesses? What strategies you use to work around the issues you face? Explain.
14. Are these computer based?

General questions

15. How the sessions with me affected her confidence and self esteem.

It should then be possible to tap Uma's meta-cognitive awareness of her own difficulties and how this has been affected by my input. Illustrating the final article with quotes from the interview should provide an example of good practice for further research.

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Psychological Assessments in Singapore - Getting Personal?

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Around the world, there are always currents of opinion swirling, creating eddies and turbulence, about how the psychological assessment of children should be done. In the United Kingdom, my home territory, in their evidence to the Education Select Committee towards the end of the last Labour Government's term, some parents questioned the impartiality and indeed the value of Local Authority Psychological Assessments. Longer ago, the reconstructing movement (Gillham 1971) questioned the need for individual psychological assessment of children - the institutions in which they were educated seemed a better place to apply change. When I first trained as a psychologist, I remember psychologists being surprised that we still used those "outdated tests", such as WISC (1st edition).

But here we are in 2015 in Singapore, itching to get our fingers on the gleaming buttons of WISC-V. The normative tests have survived and prospered. Indeed, they now so dominate the assessment process that other sources of information about children seem to be discarded or forgotten. No-one has heard of dynamic assessment, and curriculum based assessment is not something psychologists do. How did it come to this?

"When I first trained as a psychologist, I remember psychologists being surprised that we still used those "outdated tests", such as WISC (1st edition). But here we are in 2015 in Singapore, itching to get our fingers on the gleaming buttons of WISC-V."

Psychological assessment came relatively late to Singapore. The Ministry of Education employs a team of educational psychologists and assistant psychologists, who provide assessment services to

the Singaporean population, and contribute to decisions about children entering Sped schools (special schools). They also see mainstream pupils and make recommendations for additional interventions within them and to outside support agencies (eg Child Guidance, Dyslexia Association of Singapore). There are other psychologists, mainly professionally trained abroad (in for example Australia, the US and the UK), working within the private sector and within the International Schools. Few Singaporeans attend International schools, so their clients are mainly expatriates. Some of the psychologists working in this area are expatriates themselves.

Although the situation may be changing, places in International Schools are not easy to obtain, and it is common for schools to refuse a place because a child has more significant special needs than the school feels able to support. There is therefore considerable worry among expatriate parents that if their children's special needs are identified, or identified as severe, the schools will not accept them. A few schools specialise in the SEN end of the market but they often have waiting lists.

I came to Singapore in mid-2011 to work within the Dyslexia Association of Singapore (DAS), in a new unit providing general support services to the International Schools, including assessment and tuition. I came from a spell working for a specialist mainstream school in England, and a long career in Local Authority psychology and SEN services. I was surprised after three years in the private sector how different Local Authority and private educational psychology work was in the UK, and wrote about this in a paper for SEN Magazine (Bunn 2011), arguing that both sectors had value but they pursued different priorities.

With a few exceptions, psychological assessment in Singapore is clinic based, and draws conclusions mainly from normative test results. Most parents are not familiar with psychological assessment in other countries, and so have to rely on the prevailing models here. I recently suggested in public talks that assessment is too narrow.

I suggested to the participants, a mix of Singaporean parents and teachers and expatriates (mainly teachers), some of the concerns I have heard during my career, from parents, teachers and other psychologists:

- You are only told what the psychologist wants you to hear – our child said they did all sorts of funny things and the psychologist seemed a very odd person. We aren't sure what to think.

- It's all based on a single short session with lots of very quick tests. How can you be sure that you really see all the child can do, and that this shows his best?

- It's all based on tests – why can't they watch how the child gets on in class or in homework too?
- The tests are all made in the US and UK, not Singapore, so how can we be sure they work properly for kids here?
- In the UK and US many psychologist's assessments are part of a legal assessment process, and States, school districts or Local Authorities employ the psychs, so how can we trust them to be honest?
- Privately employed psychs need to work so they have to say what you want – but it costs!
- Psychologists tend to use very technical language that is very hard for ordinary people to understand. Why don't they write in ordinary language?
- The psych assessment gives very broad recommendations, and many of them are unrealistic or have already been tried. They aren't teachers so how do they know what teachers can and can't do?
- They don't usually seem to know that we have tried this and it hasn't worked, that's where we need more help.
- They seem to think every child is dyslexic. But they don't take any notice of other conditions like dyspraxia or ADHD.
- How can they give a "diagnosis" of dyslexia when it isn't a medical condition?

During the early part of both sessions I asked the participants to rate these concerns, using

4 = a big, serious concern
3 = some concern
2 = a bit of concern but not too serious
1 = not a concern,
leave blank = I don't know.

I combined the two payment bias comments into one, but otherwise the 10 items were intended to reflect the statements bulleted above.

STATEMENT ON PSYCHOLOGICAL ASSESSMENTS	Group 1 n=25	Rank 1	Group 2 n=14	Rank 2	All n=39	Rank All
Mysterious activities parents don't see	2.79	7	2.36	8=	2.66	7
Information from one testing session determines everything the child can do	3.42	1	3.29	2	3.37	1
Testing not supported by class observation	2.92	5	3.43	1	3.10	5
Tests used not based on Singaporean kids	2.58	8	2.45	7	2.54	8
Who pays the psychologists - bias inevitable	2.46	9	2.5	5	2.47	9
Language of reports too technical	2.88	6	2.36	8=	2.69	6
Unrealistic or too obvious recommendations	3.04	3	2.64	4	2.89	3
They don't know what has been tried before	2.4	10	2.46	6	2.42	10
Conclusions can be limited and can miss vital problems	3.24	2	3.09	3	3.19	2
Diagnosis - medical model not educational	2.96	4	2.33	10	2.74	4

The results of these mini surveys were:

The differences between the two groups suggest some differences between groups (parents vs teachers, Singaporean vs expatriates). But there was considerable common ground, too. The greatest concern overall was the shortness and one-off nature of the assessment session:

- A longer assessment, over two sessions or more, is wanted.
- Assessments that look at the whole child, rather than assessing to see

whether a child does or does not have a particular difficulty, also seem to be wanted.

- The recommendations need to be useful and practicable.

- There was divergence over whether a "medical model" outcome was desirable. Many in the second group did not feel this was much of a concern. But the first (more Singaporean group) were more concerned.

- There was also divergence about whether classroom observation was needed. The second group felt it was a top priority, but the other group were less concerned.

- Perhaps surprisingly, the language of reports did not figure as strongly in either group's priorities as I expected.

- Tests not based on Singaporean norms were also less of a concern than I anticipated.

I then gave a very short history of the psychological assessment of children, and explained why normative testing seems to have dominated assessment, in spite of the value of dynamic and curriculum based assessment. I then illustrated what psychological tests are like by giving the audience some questions and activities which are quite like some leading tests. I used this to emphasise the differences between dynamic and normative assessment, and suggested that some dynamic and curriculum based testing would extend and complement existing normative techniques.

Finally I suggested a very brief model of the processes a psychologist follows in conducting an assessment:

- Problem clarification, nearly always something is not going as well as the parents or the teachers would wish; we need to clarify the problem as much as possible, by asking more questions.

- Evidence is gathered: background (health, early development, educational history, previous assessments etc), views and feelings, test results, error analysis, observations of processes, sometimes follow-up results;

- We try and answer the question or problem – sometimes we doubt there is a problem, sometimes we think there is a more important problem,

different to the one given. Usually we have a "theory" of what causes the problem (which may arise at any stage);

- We put forward the theory as an answer to the problem and present whatever evidence there is for it (and sometimes against it too);

- We consider what the implications of the proposed answer might be – what resources, programmes, changes in view etc might be needed to bring about change. What answer is "best" is often an ethical as well as an evidential reasoning and pragmatic matter.

I put forward 12 statements about the development of psychological assessment which I believe would improve the quality of what psychologists do. Finally, the participants were asked to rate the statements, using a similar scale:

Which of the changes suggested to improve psychological assessment are most important to you (4,3,2,1,-)?

The audience responses are detailed in the table on the following page.:

Some of my personal "hobby-horses" clearly left the participants unimpressed. They didn't think that recasting assessment as part of "personal-science", which tells a "narrative", after looking for a "theory" of the child's problem was very important. Perhaps more surprisingly, doing assessments at a pace and in a place which may be "more informative" (perhaps with parents watching, I meant) also did not much interest them, even though testing too quickly, in a single session, was the top worry from the first survey.

They did continue to respond strongly to the suggestion that psychologists should be using dimensional, not categorical conclusions. They clearly agreed with my suggestion that most educational difficulties are not all or nothing and are really matters of degree.

They responded quite strongly (ranking it fourth) to my suggestion that part of the psychologist's job should be to "clarify the question" - in other words, they seemed to agree with the first part of my process model. They want psychologists to help them work out what are really the issues and difficulties for the child.

They did in the end feel that the language of reports should be clearer. I did not spend any time on this issue in my talk but it was rated first in the final questionnaire. One other issue also jumped up the ratings: the participants wanted psychologists to provide improvement goals. I mentioned this only briefly and said that almost all

STATEMENTS ON PSYCHOLOGICAL ASSESSMENT	Group 1, n=20	Rank 1	Group 2, n=17	Rank 2	All, n=37	Rank All
Clarify the question	3.65	2=	3.25	4	3.47	4
Open up possibilities (questions)	3.40	9	3.31	3	3.36	7
Review the story so far	3.44	8	2.87	10	3.18	9
Choose more widely from available tests & activities, invent new if necessary	3.45	7	3.06	8	3.27	8
Work in a place & at a pace which is most informative	3.30	10	3.00	9	3.16	10
Survey the abilities & skills most relevant to the question	3.60	4=	3.19	6	3.42	5
Find a "theory" to help explain the problem	3.05	12	2.56	12	2.83	12
Provide dimensional not categorical answers	3.65	2=	3.35	2	3.51	2
Research the recommendations & actions	3.60	4=	3.13	7	3.39	6
Provide measurable improvement goals	3.70	1	3.24	5	3.49	3
Provide understandable records (reports)	3.60	4=	3.53	1	3.57	1
Accept that the story is personal-science, each psych tells it his or her way	3.20	11	2.71	11	2.92	11

psychologist's reports in England include improvement goals - lists of objectives the psychologists suggests should be worked on to help the child. I explained that many of them are rather "wishy-washy" (eg "John will read more fluently"), but I suggested that such goals can easily be written more sharply. The audiences at these talks agreed, and placed improvement goals as their third priority, after readable reports and dimensional answers.

My aim, as I explained at the start of the talks, was to offer suggestions of what good psychological assessment could be, so that consumers can ask for what they consider to be important when their children (as parents or teachers) are assessed by psychologists. I don't expect my talks to provide more than small ripples in the pond. But I hope that opening up psychological assessment to debate with parents and teachers will begin to enlarge the possibilities for the future. Singapore is a country which focuses efforts very precisely. It may not yet be ready to develop its own ways of doing psychological assessment, but one day I shall not be surprised to see a Singapore model of psychological assessment making waves around the world.

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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 lead 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.

Lexical-Based Intervention for Students with Dyslexia: An Exploratory Case Study

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SUMMARY

The Dyslexia Association of Singapore (DAS) teaches over 2,500 children in twice weekly sessions within small classes of no more than four students. All the students have been diagnosed as dyslexic. DAS uses a modified form of the Orton-Gillingham teaching methodology, now called the Essential Literacy Approach (ELA). It is a predominantly phonics based approach, and works well for the great majority of students. This study explored the effectiveness of a lexical intervention with six students who did not seem to be responding well to ELA. The students were chosen as representative of children who did not respond to ELA.

A lexically based intervention was delivered over 40 weeks (2 hours per week), focusing on teaching word families, whole words and multi-syllabic words whose "root" words were themselves real words. Standardised tests were used to clarify the students strengths and difficulties before intervention, and TOWRE2 was used both before and after intervention to measure progress. However, the main measure of progress was the students' scores on a set of 90 spelling words from the larger body of words taught during the intervention, which they spelled before and after the intervention. All students showed some progress on this measure, with the majority showing good progress.

The study suggests that an alternative lexically based intervention can benefit some students who do not appear to respond to the usual phonics based interventions. Issues of identification and training are discussed.

LITERATURE REVIEW: EXPLORING LEXICALLY BASED INTERVENTIONS FOR STUDENTS WITH DYSLEXIA.

There is widespread agreement that some students do not respond well to interventions for dyslexia (Blachman 1994, 1997; Brown & Felton 1990, Mathers, Howard, Allen & Fuchs 1998, Shanahan & Barr 1995). Al Otaiba and Fuchs (2002) found in an very large scale meta-analysis of early phonics-based literacy interventions that between 8% and 80% of students exhibited little or no improvement, depending on the outcome measures. Students who do not improve in literacy as a result of intervention were called "non-responders" or "treatment resisters" by Torgesen (2000).

How should we identify "treatment-resistors" within the DAS? Annual reading and spelling tests on all students up to 2013 were carried out. A plausible measure is lack of progress year on year, in effect a negative "gain score" when comparing reading or spelling over two successive years. Analysis of gain scores suggested that a similar picture emerged whether 3 or 8 bands were used, so using 3 bands reading and spelling gains were:

Reading gains separated into 3 bands, where 1=lowest gain (below -6), 2= medium gain (-6 to +6) and 3= highest gain, (above +6) for 2012-13 using the British Ability Scales, 3rd Edition (BAS III) Word Reading test:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	75	5.7	5.8	5.8
	2	1050	80.3	80.8	86.6
	3	174	13.3	13.4	100.0
	Total	1299	99.3	100.0	
Missing	System	9	.7		
Total		1308	100.0		

Similarly for spelling:

Spelling gains separated into three bands, where 1=lowest gain (below -6), 2= medium gain (-6 to +6) and 3= highest gain, (above +6) for 2012-13 using the BAS III Spelling test:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	72	5.5	5.5	5.5
	2	1112	85.0	85.7	91.2
	3	114	8.7	8.8	100.0
	Total	1298	99.2	100.0	
Missing	System	10	.8		
Total		1308	100.0		

There were therefore 75 children showing very poor progress in reading and 72 showing very poor progress in spelling. There might, however, be only 75 children involved (where all the poor readers were also poor spellers, or 147, where there was no overlap. Surprisingly, when the composition of the two groups of children showing the lowest progress were examined, there were 135 children involved, with only 12 having very low gains in both reading and spelling. When a combined distribution of low composite reading and spelling gain was computed, there were 11 children with very low composite gains (below -16); and a further 81 children with composite gains between -16 and -9. These 92 children, constituting 7.1% of the 1308 children tested on both years, probably provides the best estimate of the number of "treatment resistors" in the DAS at that time.

It is likely that one of the reasons for not responding to intervention is a lack of phonological awareness (PA) and difficulty in gaining PA in spite of intensive training over a prolonged time (Bruck 1992, Brady 1997, Lovett, Bordon, Lacerenza, Benson & Blackstone as cited in Torgesen 2006). Phonological Awareness involves awareness of the sound structure of the language and it is expected to lead to difficulty in learning letter-sound correspondences, blending and non-word decoding.

PA deficits can persist into late adolescence (Fawcett & Nicolson, 1995). Thus, interventions for children over 8 years who do not appear to be responding well to PA based interventions might be based on other (non-phonics) approaches.

Alternative analysis of the National Reading Panel data (Hammill & Swanson, 2006) suggested

a. Beginning readers who are taught phonics do better in decoding than children taught by other approaches, but phonics and non-phonics instruction are about equal in their ability to teach other reading skills such as comprehension or oral text reading

b. Older students (aged 8 to 11) who are taught phonics read about as well as students who are taught by other reading methods that do not emphasise phonics. No appreciable superiority favouring phonics was noted.

c. Poor readers and disabled readers respond similarly to both phonics and non-phonics approaches. Kindergarten and first grade at-risk children show greater reading growth when phonics instruction is used, but this growth appears to be limited to decoding skills and may not hold up over time.

d. The NRP appropriately concluded that "phonics instruction is never a total reading program" and when used "should be integrated with other reading instruction to create a balanced reading program" (p. 2-136).

Taken together, this research suggests that non-phonics based approaches can be considered for non-responders. The aim of this exploratory case study was to explore the effectiveness of such an intervention at the DAS.

The Dual-Route model of reading provides a clear contrast between sub-lexical (phonics) and lexical (whole word) learning pathways (Coltheart, 2005). As seen in Figure 1, in the sub-lexical route, the reader looks at the written word and uses the sub-lexical phonological route by breaking the word down into its individual graphemes (letters) and converting each into a phoneme (sound). Then, the reader blends the individual phonemes together, finds associated meaning and then says the word out (Colheart, 2005).

In contrast, for the more direct lexical route, the reader sees the written word as a whole, directly connects the whole word to a meaning, then says the whole word out.

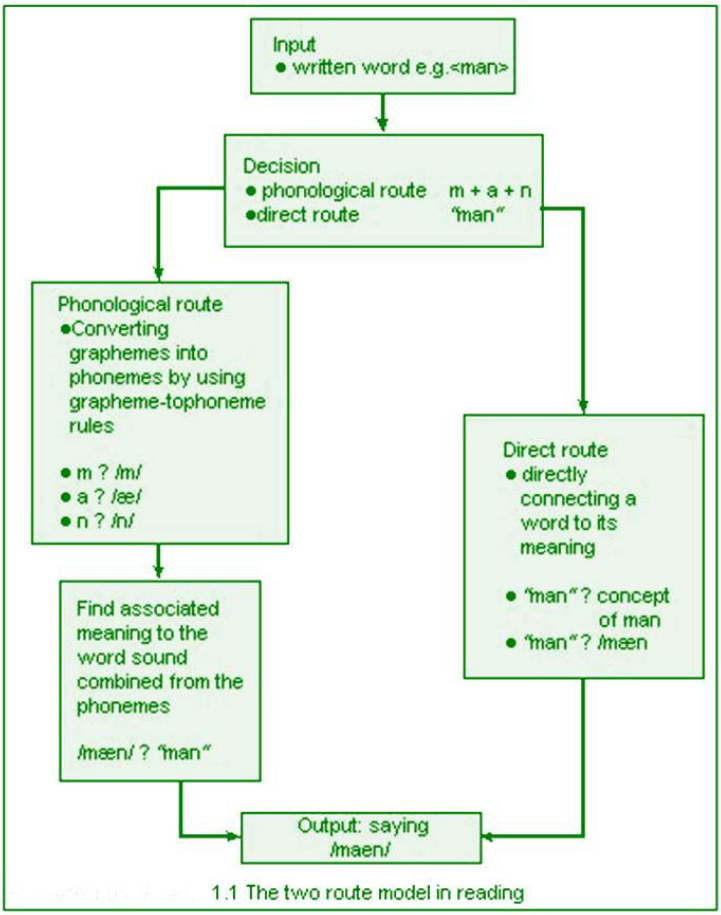

Figure 1. The dual route model of reading: sub-lexical and lexical route (Colheart, 2005)

Our aim was to devise a strengths-based approach for a small group of older children, who seemed to be struggling badly when taught using an approach that aimed to remediate their deficits in phonological awareness. It seemed possible that they would retain whole words taught through an association with word meanings better than through an association with sub-lexical units associated with phonemes.

PARTICIPANTS

Our participants included children about whom we had considerable additional test data and another group about which we only knew through teaching. The first group were the 'main focus' of this study but the second group could not be ignored and suggested some important lessons to us (see below).

Taken together, the children were all 10 or older, at least 2 years behind in reading and spelling (using BAS Word Reading and Spelling test results), and had not achieved reading and spelling ages above 10 years. They had been on the DAS ELA programme for at least a year and had not shown progress in reading and spelling scores in the previous year. Three of them had English as a second language, and the other three had co-morbid difficulties (Specific Language Impairment, ADHD, colour blindness, visual-perceptual issues). They had all been diagnosed as dyslexic, and from observation over time seemed to be stronger at reading than spelling, and to have strengths in visual-memory and weaknesses in phonological awareness and auditory sequential memory.

In particular, we noticed that the children seemed to be able to segment words at a syllable level but not at a phonemic level, and they found the concept of a "silent letter" very hard to understand. When reading text, they seemed to rely mainly on context to work out unfamiliar words (i.e. very limited decoding using letter-sound correspondences). When learning to spell, they seemed to be most affected by the length of the word rather than its sound structure. They could learn 3 letter words and 4 letter words after substantial practice. Sight word knowledge seemed to depend mainly on practice and word frequency.

AIMS AND RATIONALE

We considered that it would be very difficult to overcome these older students' established reading habits. They tended to use context and meaning cues to guess words in text, and seemed resistant to other approaches. So we felt we should tackle the 'harder' problem of spelling, because context cues are not available to support spelling. We hypothesised that if they could begin to remember words using meaning cues for spelling, this would automatically support their reading skills. We felt that the Dual-Route model provided a fresh and potentially fruitful novel way of looking at the learning of these students, whom might benefit from an approach based on their stronger lexical routes

METHODS

We also wanted to explore whether further diagnostic tests would help us better understand the needs of the students and why or how they made progress. We tested the 'main focus" group using the Test of Word Reading Efficiency, 2nd Edition (TOWRE-2; Torgensen et al., 2012) and Comprehensive Test of Phonological Processing, 2nd Edition (CTOPP-2; Wagner et al., 2011) tests. We considered other tests which were intended to focus more on visually mediated learning (for example

Berninger's "Receptive Coding" test from the Process Assessment of the Leaner) but found the norms referred only to primary age children. We were unable to identify suitable tests of "visual memory" even though this was one of our key explanatory concepts.

We constructed a curriculum based measure using 90 words randomly chosen from the 450 words we covered during the intervention programme. The children were asked to spell these words one at a time, with a meaning prompt; so the children listened to a word, were given a cue and then the word was repeated (e.g. Spell "flag"; "flag" as in the flag every country has to represent them; spell "flag"). If the participants did not understand the meaning, a visual cue was shown once; participants could request as many repeats as they needed. Teaching took place during classes of two hours per week, over 20 weeks. The total intervention time was thus 40 hours.

In each weekly lesson, word families were taught. We found that the participants differed widely in their receptiveness and tolerance. We considered receptiveness to be best shown by whether they could understand and employ the concept taught, and measured this by whether they were at least 80% accurate in spelling the words at the end of the lesson. We considered tolerance to be their ability to cope with more than one new concept in each 2 hour lesson. In fact, the children seemed to split into 2 groups, with 3 participants able to manage only one concept per lesson and the other 3 able to manage more than one; the second group were taught four word family concepts per lesson.

MATERIALS

Single syllable word family cards were constructed including CVC, CCVC and CCCVC words, and words which can be formed with and without a final (magic) e. We used words with the vowels "a" and "i" only.

We colour-coded onsets and rimes within the words; the onsets were always black, while the rime was either purple (for magic-e words) or red (for non-magic-e words). We felt it was more likely that the students would remember the words with these additional colour cues.

On the back of each card there was a picture showing its meaning. We aimed to show the meaning first then the word, so that meaning was "primed". We also colour coded the borders of the cards according to the part of speech the word most commonly fell into, with a difference between present and past tense verbs:

Border colour	Parts of speech	Simplified definition
Green	Noun	Things, people or animals
Yellow	Verb (Present tense)	Action words (still happening)
Orange	Verb (Past tense)	Action words (happened already)
Red	Adjective	Words that describe things, people or animals
Black	Abstract* (e.g. can, an)	-

*Abstract = no simple representation in reality.

From experience teaching some of the more complex spelling rules, we doubted whether these students would be able to benefit from trying to learn spelling rules. In ELA, for example, two important rules presented schematically are:

Doubling Rule: base word + suffix

clap	ing	=	clap ping
VC	V		VC__CV

Drop-e rule: base word + suffix

tape	ing	=	tap -ing
VCE	V		V_CV

We wanted to reduce jargon and avoid rules in word form, so we used a predominantly visual approach when presenting cards and sequences of cards. Suffixes -ing and -ed were further sorted into ing/ed and __ing/ __ed (blank for inserting a letter).

An example of doubling/drop-e rule cards is seen in Figure 2a and 2b.

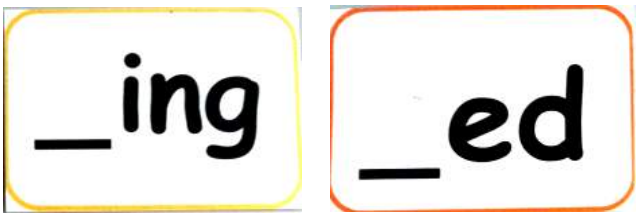

Figure 2a: Examples of doubling cards

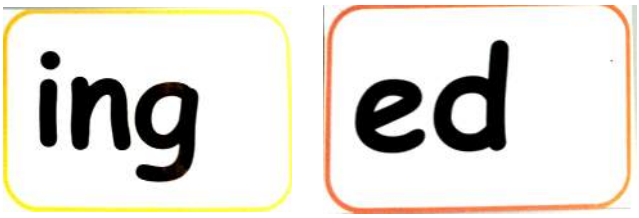

Figure 2b: Examples of drop-e cards

A previously taught set of a-e and non a-e words (e.g. -ap and -ape) was arranged and grouped according to border colour (indicating specific part of speech). Then, participants were told that only present tense verbs (yellow border) followed the doubling and drop-rule, so all other words were taken away.

Teaching doubling rule: Participants were instructed to place the ___ing or ___ed cards behind the non magic-e words (red-coloured words). To minimise jargon use and increase understanding, they were instructed "When you add i-n-g to red-coloured words, double the last letter of the base word [point visually] into the blank [point visually]." If participants were receptive (i.e. they could understand and apply it), they were taught the doubling rule for all red-coloured words.

If participants had poor auditory memory, researchers reduced instruction length using these short phrases: (a) red coloured words (b) add i-n-g (c) double last letter (point last letter of the base word and write it on blank of '___ing'). The same instructions applied for suffix '-ed'.

Teaching Drop-e rule: For magic-e words (purple coloured words), the drop-rule applied. Participants were instructed to apply drop-e rule by covering the –ing and –ed suffix cards to cover the last letter 'e' of the purple coloured words. If participants were receptive (i.e. can understand and apply), they were taught the

drop-e rule for all purple coloured words. If participants had poor auditory memory, researchers reduced instruction length using these three short phrases: (a) purple coloured words (b) add i-n-g (3) cover last letter e (cover last letter 'e' with an -ing card). The same instructions applied for suffix '-ed' For a visual demonstration of doubling and drop-e instruction, see Figure 3a and 3b below.

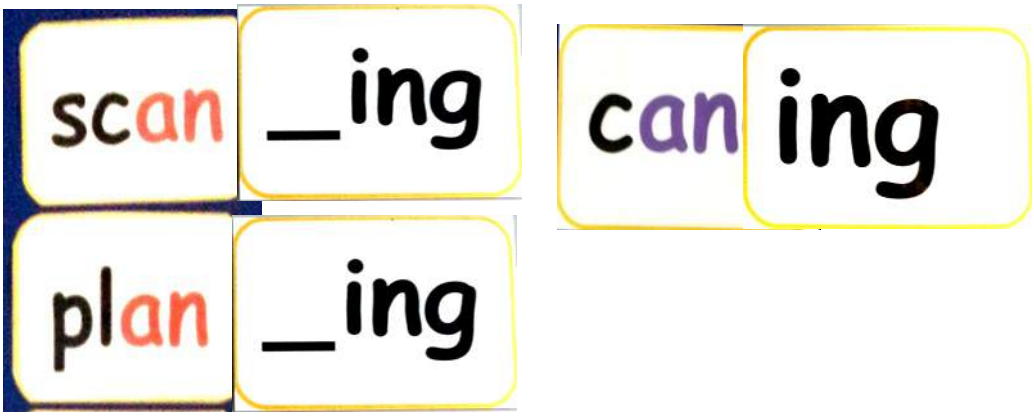

Figure 3a: Visual teaching of doubling and drop-e rule (suffix: -ing)

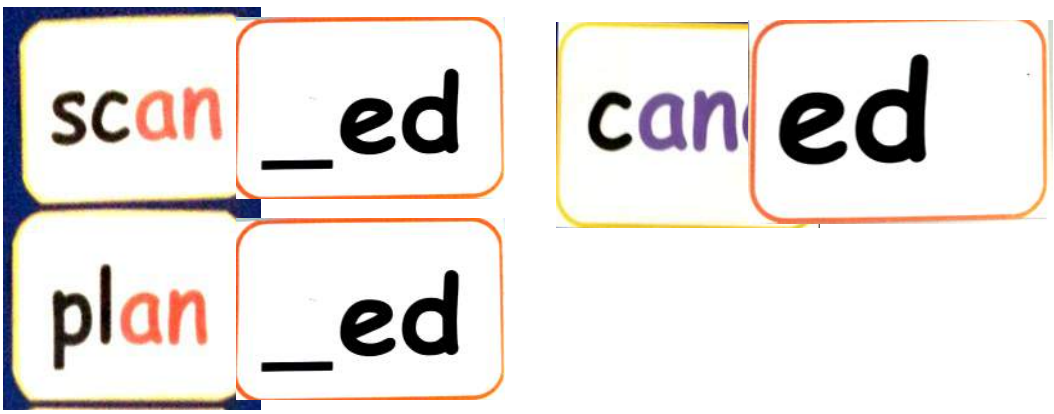

Figure 3b: Visual teaching of doubling and drop-e rule (suffix: -ed)

In summary, the aims of our procedures and materials were:

1) To increase spelling accuracy and improve word retention;
2) To provide a direct way of learning the parts of speech of the words taught;
3) To simplify and visualise the concepts of consonant doubling and the drop-e rule.

Our materials were intended to support these aims using visual and whole word meaning rather than phoneme associations.

Test results on the main group:

We used the CTOPP-2 (Wagner et al., 2011) with this group of children before intervention, to clarify their strengths and difficulties in phonological processing. The results were:

PARTICIPANT	A	B	C	D	E	F
Phonological Awareness Percentile rank	13th	3rd	5th	16th	27th	3rd
Phonological Awareness Composite Score	79	73	76	84	91	73
Phonological Memory Percentile Rank	53rd	50th	50th	82nd	42nd	42nd
Phonological Memory Composite Score	103	100	100	82	97	97
Rapid Naming Percentile Rank	35th	27th	88th	98th	3rd	19th
Rapid Naming Composite Score	94	91	88	130	73	76

The table above shows that all participants except E had below average Phonological Awareness scores (average 79.3) while all except D had average phonological memory (average 96.5). There was a wider range of scores on Rapid Naming, with one participant (D) well above average in his recall speed and one (E) very slow indeed (average 92.0). This was consistent with our expectation that they would have severe phonological difficulties, except for one participant, E. However, their memory for sequences of digits and nonsense syllables seemed satisfactory except for D, whose below average score suggested that his main difficulty was in short-term memory rather than phonological awareness. Their rapid naming varied widely, with D showing very fast recall speed, and E showing very slow.

We used the TOWRE-2 (Torgensen et al., 2012) both before and after intervention as a measure of progress in word reading fluency and phonemic decoding fluency. The results were:

	Pre-Intervention 2013			Post-Intervention 2014			Changes in Scores		
	SWE	PDE	SWE-PDE Discrepancy	SWE	PDE	SWE-PDE Discrepancy	SWE	PDE	SWE-PDE Discrepancy
A	83 (8.3)	67 (6.6)	16	87 (9.0)	77 (7.6)	10	+4	+10	-6
B	80 (8.6)	63 (6.3)	17	86 (9.3)	61 (6.3)	15	+6	-2	-2
C	76 (8.0)	63 (6.3)	13				-	-	
D	88 (9.9)	89 (9.3)	-1	83 (9.0)	88 (9.6)	-5	-5	-1	-4
E	79 (8.6)	63 (6.6)	16	78 (8.6)	65 (6.9)	13	-1	+2	-3
F	77 (8.3)	62 (6.3)	15	78 (8.6)	63 (6.6)	15	+1	+1	0

SWE = Sight word efficiency PDE = Phonemic decoding efficiency

The table shows that before intervention all the participants except D had below average sight word efficiency scores, and all (except D) had even lower phonemic decoding scores. They all had large discrepancies between SWE and PDE, except D. So both sight word reading fluency and phonemic decoding fluency were very low for all the participants, except D.

The changes we found on post-intervention testing were small with slight gains in both sight word efficiency and phonemic decoding for a majority of the students in the group.

Unfortunately we were not able to retest C at this stage. Average scores were:

SWE Pre	PDE Pre	Discrepancy Pre	SWE Post	PDE Post	Discrepancy Post
80.5	67.8	12.7	82.4	70.8	9.6

These figures suggest that that the participants made progress in their reading fluency and in the phonemic decoding on average, but it is also clear that there were differences between the students, with 3 making positive gains in SWE and 3 in PDE. D was the only student who made no gains; his SWE and PDE both decreased slightly. A made the greatest progress on both measures, especially in phonemic decoding.

Our main measure, however, was the curriculum-based spelling accuracy measure. The results here showed a very different picture:

Participant	Pre Scores	Post Scores	(Post-Pre) scores % change	Level of Improvement
A	25/90	68/90	+ 47.8%	Very substantial
B	26/90	67/90	+ 45.6%	Very substantial
C	38/90	50/90	+ 13.3%	Fair
D	48/90	78/90	+ 33.3%	Substantial
E	48/90	74/90	+ 28.9 %	Substantial
F	19/90	52/90	+ 36.6 %	Substantial

Five of the six participants made large gains, with 2 of the 3 students who had a low base making the greatest progress (A and B). D and E started from a higher base (over 50% correct on initial test) but they also made substantial progress. C's start was from a medium base and his progress was fair but not substantial. 4 of the 6 students achieved percentage scores in the range of between 74% to 87% on this measure, indicating substantial retention of the spelling patterns we had taught them.

DISCUSSION:

There was a large difference between the results from pre and post testing using the

TOWRE-2 and the curriculum-based measure of spelling. Our participants did not seem to make much progress on the two TOWRE-2 measures, sight word efficiency and phonemic decoding. We did not expect progress on phonemic decoding because we had not taught the students using phonemes, although we had taught them alternative ways to learn syllable units of words. Their progress was about the same, on average, between reading real and non-words on TOWRE-2. However, the averages disguise a range of patterns of progress. , A and F made positive progress on both TOWRE-2 measures and made good progress on the curriculum based measure, while B and E made good progress on the curriculum measure but had mixed results on TOWRE-2. D did not make progress on TOWRE-2 but did on the curriculum based measure. Thus, there seems a lack of consistency here, which suggests that the changes in TOWRE scores were not measuring the same kinds of things as our curriculum measure. Our hypothesis that progress in spelling would feed into progress in reading did not seem to be supported, from these results over the 20 week timescale.

Our understanding of the students' strengths and weaknesses did not seem to be aided by the normative testing we used, from TOWRE-2 or CTOPP-2. There seemed no consistent relationships emerging between strengths and weaknesses on these tests and the students' progress in learning the spelling of the words.

Normative testing had covered only 6 students but a further 9 were also involved in the teaching programme. We therefore asked whether any patterns were suggested from our working knowledge of these 15 students. The pattern we felt most helpful in understanding the students arranged them into 4 "types" of learner, who seemed to respond differently to the materials we had developed.

The table below shows which groups the students seemed to fall into, using this classification:

	Group A (1)	Group A (2)	Group B	Group X	Group Y
Formally observed	3 (B,D,F)	2 (A,E)	-	-	1 (C)
Informally observed	-	1	2	3	3
Total	3	3	2	3	4

Receptive and Retentive	Selective Receptivity and Retention	Partial Receptivity with No Retention	No Receptivity and No Retention
A	**B**	**X**	**Y**
Pattern 1 Able to utilise phonics to ensure high spelling accuracy till the CCVC word level Use their strong visual memory to remember words beyond CCVC **Pattern 2** Solely rely on their visual memory to achieves high of spelling accuracy	Exhibit high spelling accuracy and word retention with words that contain real-word rimes Demonstrate poor receptivity in recalling words with non-word rimes Unable to observe the trend among words in the same word family Example of real-word rimes: fl <u>at</u>, sl <u>am</u>, pl <u>an</u>, gr <u>in</u> Example of non-word rimes: fl <u>ap</u>, st <u>ab</u>, gr <u>ip</u>, sl <u>um</u>	Do not seem to display strong lexical connection (meaning making in connection to prior knowledge) with the word taught via the proposed method	Heterogeneous group of individuals with distinct learning needs and difficulties. Show signs of co-morbidities that have a direct impact on their receptivity towards literacy acquisition

Our observations suggested there were some important differences between the 6 'main focus' students, which had not emerged from testing. We noted that the three students in Group A (Pattern 1) were able to use phonic skills up to and including CVC and CCVC words. But for longer words they seemed to rely predominantly on their memory for the whole word (visual memory). This gave the 3 students a slight advantage over the other students: most CVC and CCVC words could be spelled

accurately, and errors were spotted more easily. For example, when asked to write "plane", B first wrote "plan" but then corrected his word by adding an "e". However he was not consistent in this; when asked to write "twin" he wrote "twine" and did not realise he had not given the correct word. Perhaps his self-correction relied more on visual memory, which is influenced by word frequency, rather than phonological skill.

We felt that the Group A (Pattern 2) students hardly used phonological skills at all, relying mainly on visual memory. This meant that Groups A and E were able to make progress on our spelling measure but they did not seem to generalise: for example, Group A could read "clap" and "trap" but did not then see that "flap" was very similar; he could not read "flap". We did not see examples of these students in Group A (Pattern 2) self-correcting at all. Our hunch was that they all were using predominantly visual-memory based learning, and the Group A (Pattern 1) students were more able to see similarities in the words they were learning, and hence could sometimes correct their errors.

We noticed an important difference between the 5 students in Group A (Pattern 2) of the other students , whom we suggest need to be considered as a separate group (Group B in the table above). These students also only relied on their visual memory but did not seem to learn rimes which were not sight words or in their sight vocabulary. Indeed, they could only learn rimes which were short real words. For example, they could read and spell words in the "-at", "-an" and "-am" families but not words in the "-ap", "-ab" and "-ag" families (which are not themselves real words) or words in the "-ate" and "-ape" families (even though these rimes are real words).

A further group seemed to be suggested by the way in which other students responded. They showed satisfactory retention at the end of the lessons, but then showed in subsequent lessons that they had forgotten what was learned. This group (which we called Group X) also seemed to be using their visual memory rather than replying on phonics. However they may need more frequent or more intensive help and effort to make connections between words, word parts and meanings.

Finally, there were 4 students (including C from the main group) whose progress seemed impeded both by very limited phonological awareness and visual memory. One female student said she was able to remember 2 letter words by sight easily, and seemed to use phonic knowledge to spell 3 letter words, but she seemed to have great difficulty hearing differences between CCVC words, and needed context or conversation cues to identify the word intended. She was a very hard working student, who used mnemonics and repeated practice to try to memorise words. The second and third students in this group seemed to experience much greater difficulties with abstract words (eg "has, by") and with past tense words rather than

with nouns and verbs that can be easily pictured. One of them could read "arrow" but could not read "at, by" reliably. They also tended to respond to words with strong semantic associations to the target word (eg "tiger. work" read as "lion, build"). It seemed that semantic associations remained although visual and phonological ones were extremely hard to retain. However, we noted that both these students had a diagnosis of Specific Language Impairment.

Participant C also seemed to fall into this group. He spelled very inconsistently within a lesson and from lesson to lesson. He struggled badly with homonyms. But he seemed he do better when words were spelled by reciting the letter names. He commented earlier that his hand "seems to have a life of its own" when he was trying to write spellings. The reasons for his difficulties seemed very complex, possibly including sensory integration issues. We felt that his final curriculum-based result was not reliable; he progressed from 38 to 50/90 words, thus gaining 13.3 %, but we felt this did not mean he would get the same result next day.

Thus, our research shows that it is possible to construct materials to meet the needs of some children who do not seem to be responding successfully to conventional phonics based programmes, and that some show very encouraging progress in learning spelling. However, it also shows that there are other children who remain hard to help, even though they also appear not to be responding well to phonics based programmes. Standardised tests do not seem to aid much in understanding their needs, nor in predicting which students will and will not make progress. Weekly sessions may not provide sufficient intensity and frequency of practice. Our research suggests that we may not have sufficient understanding of more complex cases and thus it remains unclear how further help can be rendered to such children.

CONCLUSIONS

1. Phonics based instruction is widely regarded as the main teaching method for dyslexics. This study selected students who did not seem to be responding well to a well-established and well delivered phonics-based approach over a prolonged period (at least a year). A method of teaching two key spelling rules; which involved visual and semantic cues instead of the usual phonological awareness training, was developed. The students were taught for 40 hours in 20 x 2 hour lessons, as part of their normal attendance at DAS classes.

2. Our research showed that the students were able to make good progress in learning spellings using these methods. All students made progress.

3. Measures of word reading fluency and non-word reading fluency showed that progress did not generalise to reading fluency, to any significant extent. Slight progress was seen on both measures by some students but not all.

4. Standardised tests of phonological processing did not seem to aid in our understanding of the strengths and difficulties of this group of students. They seem to be neither explanatory nor predictive of their success.

5. The research was conducted as part of our normal teaching duties at the DAS. We felt our methods and materials may be taught to other teachers without undue strain. We consider that this approach deserves further development (see below) because there are significant numbers of dyslexic students, albeit only a minority, who seem to have great difficulty with phonics-based teaching methods.

6. Our research was intended to be qualitative, although a quantitative curriculum based measure of progress was our key indicator. Our observations on how students learn and how well their retain their learning suggested that they fall into four main groups (one with 2 patterns). These suggestions, broadly based on Dual Route theory, give rise to possible further developments in observation of students as they learn, and perhaps to the further development of alternative theories of their strengths and difficulties.

AREAS FOR FURTHER RESEARCH:

1. Further development of the teaching approach is needed. The concepts and wordlist developed for this research does not follow the sequence of the ELA scope and sequence that are taught to students who are receptive to phonics. This questions the practicality of implementation in a DAS class which may consist of both gGroup A students and students who are receptive to phonics.

2. Further refinement and development of the teaching materials is needed. In particular, we should consider how practical it is to implement and train other teachers in this method. Also, we should consider whether the motivation and commitment to teach using this method can be communicated effectively. We clearly began with a strong motivation to try to help students whom we felt were making very little progress. We need to ensure that other teachers share or can come to share this motivation.

3. We need to explore new approaches for the students in groups X and Y. They showed receptivity to neither phonics nor the approach employed in this research.

4. We need to explore why there seemed to be little impact on reading in this study, as measured by the TOWRE2. We wanted to focus on spelling at the outset because it seemed most likely that this was an area where we could show the students that they could learn. Now we need to bring reading into the picture and explore how to teach both skills using alternative materials and methods.

5. We need to explore more widely other measures of children's strengths and difficulties, and especially measures which are intended to deal with visually mediated learning of words. One possibility may be to systematise what we found the most helpful; the observation of children's specific and general daily responses to teaching. Progress checking measures in the forms of applications on tablet computers would be useful to track these observations.

6. We would like through this study to draw attention to the needs of those dyslexic students who seem to have the greatest difficulty in learning, whatever the teaching methods and materials used (i.e. the "treatment resistors" in Torgensen's words). We observed some students whose progress was painfully slow in spite of exceptional effort on their part. Thus, we would like to ask teachers and researchers to join our efforts to better understand their needs and come up with strategies and ways to help them more effectively.

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Sue-Lynn completed her Psychology degree (Honours) at the University of Western Australia and Postgraduate Certificate in Special Educational with the University of South Wales (UK). She worked as an Educational Therapist with the DAS for 3 years, developing a keen interest and passion in Early Intervention. Sue-Lynn is currently working as an Assistant Psychologist, conducting cognitive and learning assessments for children in a hospital setting. She will be pursing her Masters in Educational Psychology in Australia in 2016 and hopes to continue contributing to the educational and child development field when she graduates.

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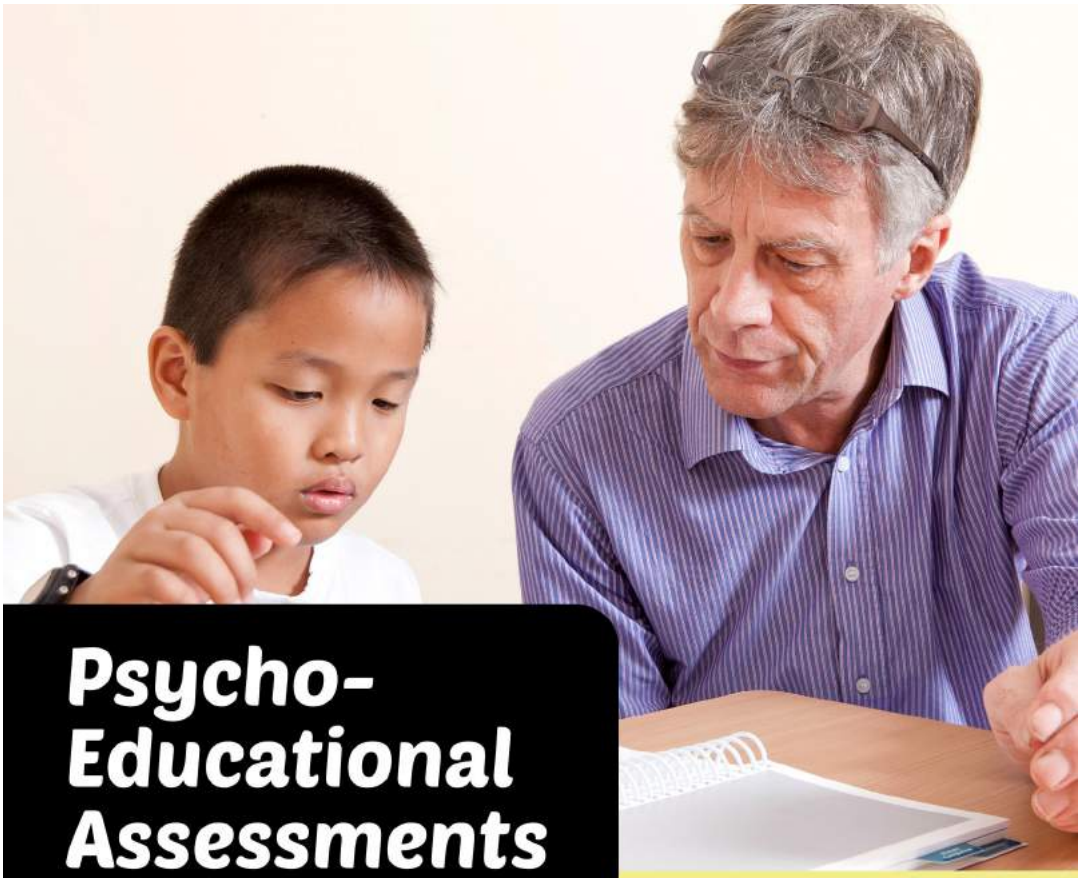

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PRACTICAL APPLICATIONS

The Importance of Bursaries at DAS

Quek Gek San
Director of Human Resources and Corporate Services
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INTRODUCTION

There is clear evidence from our evaluations that support from the DAS MOE-aided DAS Literacy Programme (known as MAP thereafter) can improve the quality of life of children with dyslexia, improving their learning skills and their self esteem. DAS believes that no child should be left behind because he or she cannot afford the cost of a DAS education.

The provision of bursaries is critical as it levels the playing field for children with dyslexia from lower income families. DAS and the Ministry of Education (known as MOE thereafter) provide financial assistance (known as bursary thereafter) to Singaporean students, or who have at least one parent who is a Singaporean. The student must also be attending MOE mainstream school between Primary One and Secondary Five.

DAS provides bursary to students for:

- Psychological assessments
- MOE-aided DAS Literacy Programme (MAP) remediation
- Specialised Educational Services (SES) programmes. This bursary is only to students who are currently on our MAP programme.

"DAS believes that no child should be left behind because he or she cannot afford the cost of a DAS education."

FINANCIAL ASSISTANCE (BURSARY) FOR STUDENTS WHO NEED PSYCHOLOGICAL ASSESSMENT

Table 1 shows an increasing percentage of students receiving bursary for psychological assessment over the years. DAS through donations received provide bursaries for psychological assessments.

Table 1 : Number of students receiving bursary for psychological assessment

Year	No. of Students Assessed	No. of Bursary Applications Received	No. of Students Receiving Bursary	% of Students Receiving Bursary
2008	665	64	60	9.0
2009	667	64	62	9.3
2010	656	74	67	10.2
2011	793	128	120	15.1
2012	684	174	169	24.7
2013	905	290	277	30.6
2014	1,110	308	293	26.4
2015	820	242 *	234	28.5

* as at end October 2015

FINANCIAL ASSISTANCE (BURSARY) FOR STUDENTS WHO NEED INTERVENTION

Table 2 shows an increasing percentage of students receiving bursary for literacy intervention over the years. DAS is grateful to MOE for providing financial assistance to eligible students based on certain eligibility criteria including gross household income. Table 2 shows the increasing percentage of students receiving bursary over the years.

Table 2 : Number of students receiving bursary for literacy remediation

Year	Student Enrolment **	No. of Bursary Applications Received	No. of Students Receiving Bursary	% of Students Receiving Bursary
2007	1,032	255	236	22.9
2008	1,085	314	298	27.5
2009	1,233	379	378	30.7
2010	1,633	589	575	35.2
2011	1,936	738	720	37.2
2012	2,211	928	900	40.7
2013	2,465	1,178	1,151	46.7
2014	2,723	1,380	1,336	49.1
2015	2,497	1,486	1,450	48.3 ***

** Student Enrolment is based on the enrolment statistics as at end October of the year. This is the steady state number for the last term of the year.

*** as of October 2015

In addition to bursary, MOE also gives an MOE grant to students attending DAS for literacy intervention. This has helped DAS to maintain MAP fees payable by parents at the same level since 2007.

Table 3 shows the increasing amount of MOE grant over the years due to the steady increase in student enrolment at DAS.

Table 3: MOE Grant

Year	Student Enrolment	MOE Grant S$
2008	1,085	2,055,244.20
2009	1,233	2,823,534.10
2010	1,633	2,741,683.00
2011	1,936	4,317,745.30
2012	2,211	6,567,846.30
2013	2,465	7,363,938.50
2014	2,723	7,811,929.00
2015	2,497	8,599,581.70

PROGRAMMES OFFERED BY THE SPECIALISED EDUCATION SERVICES (SES) DIVISION

The Specialised Educational Services (SES) Division was established in 2013 to support students with dyslexia with a wider repertoire of programmes.

SES offers programmes in:

- Preschool
- Mathematics
- English Examination Skills
- Chinese
- Speech Drama Arts
- Speech and Language Therapy

DAS provides bursaries for these programmes through donations received. DAS relies heavily on the generosity of corporate and private donors, who are found through the tireless effort of our small Fundraising Team comprising only two staff.

Table 4 shows the amounts raised in the recent years, arranged in alphabetical order, of the donating organisations.

Table 4: Donations from corporate donors to fund our SES programmes

Organisation	Amount donated (SGD)	Specific Purpose (if any)
Bengawan Solo Pte Ltd	10,0000	
British Dyslexia Association	20,852	
CapitaLand Limited	10,000	
Flag Day 2014	50,820	Preschool K1
Goofy Golf 2014	43,338	Speech and Drama Arts
Issaac Manasseh Meyer Trust Fund	10,000	
Jacob Ballas Charitable Trust 2013/14/15	40,000	
Keppel Charity Golf 2013/14/15	268,078	
Marina Bay Sands Pte Ltd	60,000	English Exam Skills and Mathematics
NTUC Income Insurance Co-operative Limited 2012/13/14/15	728,026	
OCBC (2013 Gala Dinner)	131,000	OCBC GTIB Scholarship
PB Tankers Limited	10,000	
President's Challenge 2012/13/14/15	590,000	
SICC May Day Charity Golf 2014	19,000	
Singapore Cruise Centre Pte Ltd	50,000	Speech and Drama Arts
StarHub	160,500	Mathematics
The Community Foundation of Singapore	50,000	English Exam Skills and Speech and Drama Arts
The Rotary Club	34,175	
Tote Board 2014/15	225,029	Speech & Language Therapy
Citi-YMCA Youth for Causes 2013/14/15	117,006	

CARE & SHARE

The Care & Share Movement was mooted in January 2014. Care & Share is a national fund-raising and volunteerism movement for the social service sector. The objectives are to mobilise Singaporeans to contribute to worthwhile causes and to give a big push to social services for the needy, as Singapore approaches our 50th year of independence in 2015.

Eligible donations raised by Community Chest and participating voluntary welfare organisations will be matched by the government, dollar for dollar. DAS is grateful to have benefited from this government initiative. Through the endeavours of our Fundraising Team, DAS is optimistic that it can request for a dollar matching grant of $2.25 million from the Government.

CONCLUSION

The support we are able to provide at DAS through our bursary system can make a real difference to the lives of children with dyslexia. In running our evaluations, we take care to ensure that the support we provide is effective for as many children as possible, with particular emphasis on those children who are benefitting from our bursaries, in order to check on the effectiveness of our system.

It is a pleasure to report continued success and increasing support over the years, and we at DAS are very proud of the flourishing bursary schemes. This would not be possible without the hard work of our fundraisers and all the support we receive reported here. DAS is very grateful!

ABOUT THE AUTHOR

QUEK GEK SAN
Director of Human Resource & Corporate Services

Gek San has a Diploma in Business Studies from Ngee Ann Polytechnic and a degree in Management Studies from University of London. She has passed Levels 1 and 2 of Chartered Financial Analyst examination (USA). She has obtained a Teaching Award for Foundation Modules from British Council Singapore Teaching Award for Young Learners. Gek San has six years of working experience in IBM Singapore in Finance and Corporate Communications. She has worked 10 years in Reuters as Team Leader for Pacific market and Company Financial Reports.

Community Outreach Programmes at DAS

Fanny Foo
Director of Learning Centres and Outreach
Dyslexia Association of Singapore

DAS Outreach objectives is to raise awareness about dyslexia and learning differences within the community of Singapore. It aims to equip educators and others working with children about the signs and symptoms of dyslexia, as well as the accompanying co-morbidities of learning differences, for the main purpose of early identification and intervention.

The primary goals of the outreach programme is to:

- provide advocacy
- support children's physical development
- provide children and their families and caregivers with the support and care they need
- aim for early diagnosis and intervention.

The framework for this programme is based on the Community-Based Rehabilitation (CBR) model outlined by the World Health Organisation (WHO).

"Community-based rehabilitation (CBR) focuses on enhancing the quality of life for people with disabilities and their families; meeting basic needs; and ensuring inclusion and participation. It is a multi-sectoral strategy that empowers persons with disabilities to access and benefit from education, employment, health and social services. CBR is implemented through the combined efforts of people with disabilities, their families and communities, and relevant government and non-government health, education, vocational, social and other services. (WHO, 2010)."

"It aims to equip educators and others working with children on the signs and symptoms of dyslexia, as well as the accompanying co-morbidities of learning differences, for the main purpose of early identification and intervention."

The programme is divided into three elements, each with specific objectives which are explained below:

1. **Individual outreach and support which provides direct and indirect benefits in the following areas:**

    - Provide a needs assessment and evaluation of children through free computerised screening.
    - Early diagnosis that can provide psychological assessments with additional support for exams accommodations for the child.
    - Bursaries for assessments and remediation.
    - Support through speech therapy and remediation programmes.
    - Mentorship or internship for employment opportunities through the DAS Student alumni.
    - Post secondary support through workshops and networking.

2. **Children's Activity and Inclusion Group**

    - Provide a community activity and support group for children with special needs and their families through organised outings throughout the year.
    - Provide heavily subsidised or free activities to students to network and meet other like students through learning journey and fun activities.
    - Provide recreational and education activities for example Speech and Drama, Cat in the Hat, rock climbing, Dance performances for Graduation, art therapy.
    - Provide support and education to parents/caregivers through a "Carers Support Group" such as Parent's Support Group through FaceBook and Focus Group meetings.
    - Provide ad-hoc services and training on therapy and support techniques through parents/caregiver's talks by inviting various expert speakers such as OTs, counsellors.

- Provide siblings and family activities during school holidays, for example, Student Bake activity.

- Exploring the strengths and talents of children with disabilities through various activities such as art, rock climbing, speech & drama, presentation skills, baking and many more.

- Provide person-centred care and support for the child and their families/ caregivers through workshops and courses through the DAS Academy utilising government grants.

3. Community Outreach

- Provides free awareness talks on signs and symptoms of dyslexia to schools, educators, organisations and corporate entities.

- Promotes community inclusion for children with dyslexia through talks in school focussing on inclusion.

- Conducts Open House at each Learning Centres to promote community awareness of the programs and on signs and symptoms of dyslexia.

- Collaboration with schools and students on organised activities allowing interaction and awareness building to the next generation.

- Collaboration with other voluntary welfare organisation for support such as counselling services, youths at risk groups, other special needs and support groups.

- Providing volunteering and collaboration opportunities to corporate companies through the Corporate Social Responsibility (CSR) programme.

- Provides internships to Higher Tertiary institutions for project evaluation and attachments.

- Participation in road shows, exhibitions and networking sessions organised by the various VWOs, schools or government organisation.

- Designed an outreach booklet for free distribution to the schools and organisation.

To-date, the outreach team has conducted:

DYSLEXIA SCREENING

SCREENING FOR DYSLEXIA	2013 to 2015
	No. of Students Screened
Screenings in schools	1185
Screenings open to the public	1247
Screening in various organisations *	419
Total	**2916**
Total number of Screenings	**96**

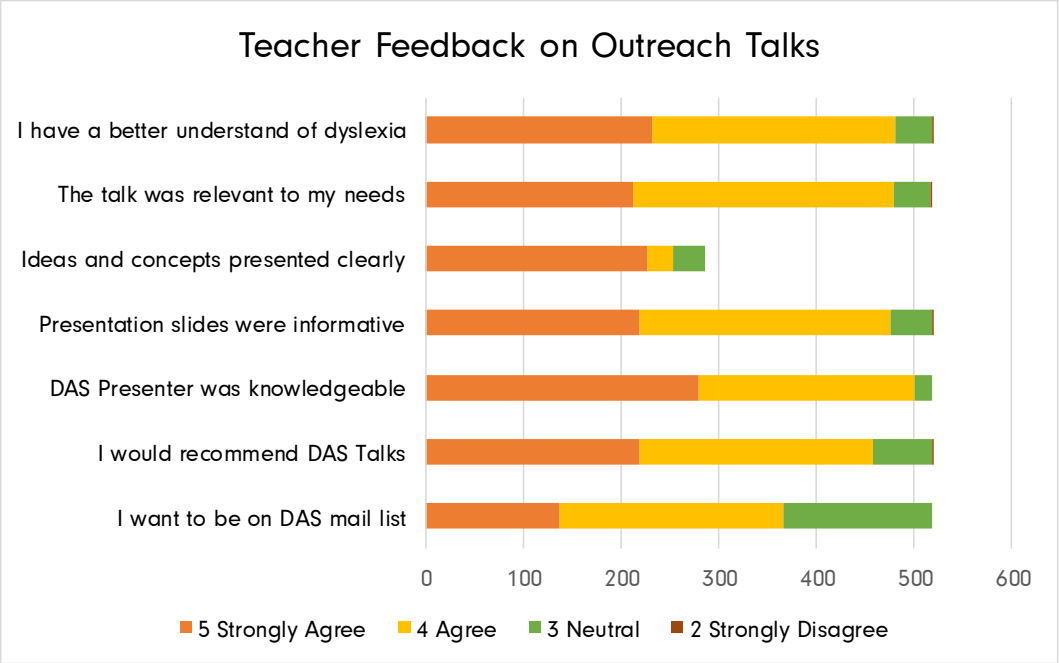
* Orphanages and Homes, Student Care, Voluntary Welfare Organisations, Prison Inmates Welfare Organisation

AWARENESS TALKS

AWARENESS TALKS AND ATTENDEES	
	2013 to 2015
Primary & Secondary Schools	117
Preschools	36
Talks at Organisations and Mass Screenings	85
Total Attendees	14,413

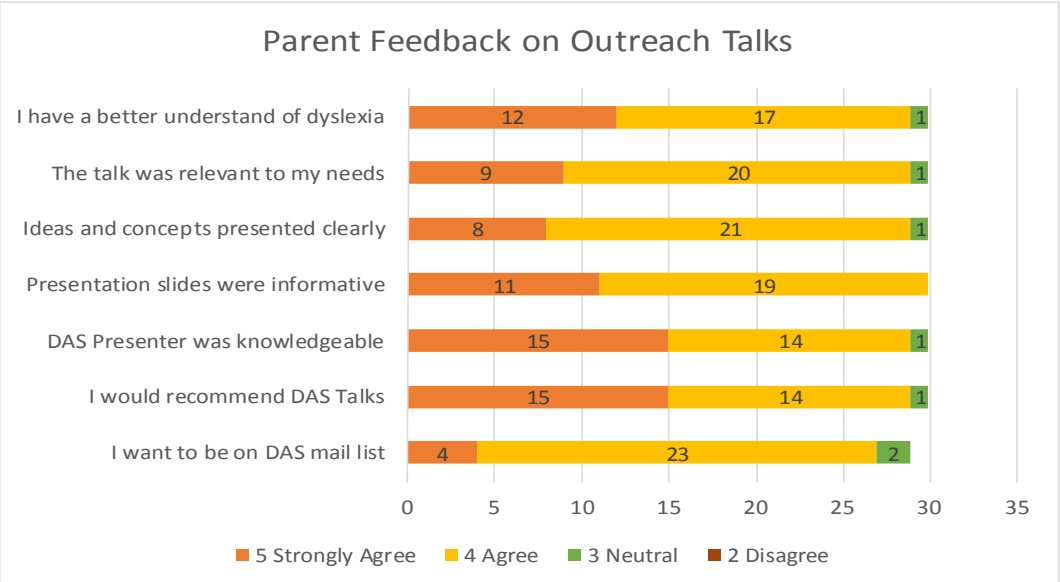
TEACHER FEEDBACK FROM OUTREACH AWARENESS TALKS—2015

TEACHER FEEDBACK ON OUTREACH TALKS (520 RESPONDENTS)	5—Strongly Agree to 1 Strongly Disagree				
	5	4	3	2	1
I have gained a greater understanding of dyslexia and DAS after this presentation.	232	250	37	1	
The content of this presentation was relevant and useful to my needs.	213	267	38	1	1
Ideas and concepts were presented clearly to me.	227	26	33		
The slides and materials given are helpful and informative.	219	257	43	1	
The presenter(s) was knowledgeable about dyslexia.	280	222	18		
I would recommend DAS Awareness Talks to others.	220	238	62	1	
I am interested in receiving more information on DAS and its services by email.	138	229	153		



PARENT FEEDBACK FROM OUTREACH AWARENESS TALKS—2015

PARENT FEEDBACK ON OUTREACH TALKS (30 RESPONDENTS)	5—Strongly Agree to 1 Strongly Disagree				
	5	4	3	2	1
I have gained a greater understanding of dyslexia and DAS after this presentation.	12	17	1		
The content of this presentation was relevant and useful to my needs.	9	20	1		
Ideas and concepts were presented clearly to me.	8	21	1		
The slides and materials given are helpful and informative.	11	19			
The presenter(s) was knowledgeable about dyslexia.	15	14	1		
I would recommend DAS Awareness Talks to others.	15	14	1		
I am interested in receiving more information on DAS and its services by email.	4	23	2		1



The model used for screening and intervention has proven to be very successful in the early identification of students with dyslexia. With the continued model, DAS will build on increasing its presence and outreach within the community and extending beyond its shores.

DAS hopes to be a leader in South East Asia in terms of raising the profile of dyslexia through Outreach and Awareness in the coming years. DAS Awareness talks have helped many educators and parents to be more aware of the signs and symptoms and co-morbidities of dyslexia and have facilitated the early identification of their children with learning difficulties. With the early identification, these children would be able to seek help so that they can realise their fullest potential.

ABOUT THE AUTHOR

FANNY FOO
Director of Learning Centres & Outreach

Fanny Foo completed her A Levels at Temasek JC and Higher Diploma by Shatec jointly with Ecole Hoteliere de la SSH Lausanne (Switzerland) and National Productivity Board. It was sponsored by Westin Hotels under Starwood Properties.

Fanny started her career in Food & Beverage. She worked as a waitress to a management trainee in 2 years. She was promoted to a Tour Co-ordinator, handling majority Japanese tour groups for 2 years. She was one of the 2 pioneers to be sent to Kyoto, Japan, for a 3 months exchange programme. From tours, she moved onto Conventions Services Executive and to a Manager within a year. She was handling the MICE (Meeting, Incentives, Conventions and Exhibitions) market where she planned and handled incentive groups of up to 3,000 people. Some of the high profile groups she was involved in were: Visit of US President George Bush's and Queen Elizabeth's visit.

Fanny was then headhunted to head the PICO office based in Kuala Lumpur. There she brought in musicals and spearheaded from ticket sales to operations single-handedly. After leaving PICO Malaysia, she headed a trading office under All Beijing (M) Sdn Bhd to do business development and sale of raw materials from China in Malaysia. She had to oversee shipment of raw materials from China and sales to end users while ensuring quality of raw materials being brought in. When she returned to Singapore in 1998, she worked as a Sales and Marketing Manager for Great World Serviced Apartments in 1998 and Swissotel Stamford in 2000. Due to family commitments she left her full time job in 2002 and embarked on volunteer work at various organisations.

In 2010, Fanny joined DAS as the Centre Manager for Queenstown and Bishan Learning Centres. Her youngest child has been with DAS for the last 6 years. In 2012, she became the Assistant Director of Learning Centres and Outreach and presently the Director of Learning Centre and Outreach.

Screen your child for dyslexia

FOR PRIMARY SCHOOL STUDENTS

Does your child have difficulty with READING, SPELLING OR WRITING?

FREE!

Is your child **frustrated** about school and studying or has **difficulty** understanding text passages?

teh or the?
saw or was?

Come for our FREE Computerised Screening

We understand your concerns and would like to invite you to meet our multi-disciplinary team of professionals. We will explain the results of your child's computerised screening test thoroughly and advise you on the suitable support available.

SCREENING DETAILS:

Thursday, 17 March 2016
9:00am - 5:00pm
Tampines Learning Centre
Blk 163 Tampines Street 12, #01-257
Singapore 521163

Thursday, 2 June 2016
9:00am - 5:00pm
Rex House Learning Centre
73 Bukit Timah Road
#05-01, Rex House
Singapore 229832

Friday, 9 September 2016
9:00am - 5:00pm
Jurong Point Learning Centre
1 Jurong West Central 2
#05-01, Jurong Point
Singapore 648886

Tuesday, 22 November 2016
9:00am - 5:00pm
Chua Chu Kang Learning Centre
Blk 17 Teck Whye Lane, #01-167
Singapore 680017

DYSLEXIA ASSOCIATION OF SINGAPORE
HELPING DYSLEXIC PEOPLE ACHIEVE

TO REGISTER: 6444 5700
(Office hours: Mon - Fri, 8:30am - 5:30pm)
Limited slots available! Registration is required.

You don't remember this? The importance of working memory and what can we do to help children remember.

Adam Oei, PhD
Postdoctoral Research Fellow
Singapore University of Technology and Design

Genie was reading a book when she felt hungry and walked to the kitchen to fetch a snack. On the way, she spotted Jony, her son, still watching television and she asked him to get ready for bed. She then stepped into the kitchen, but paused and stood there, wondering why she came into the kitchen in the first place. She then went back into her room without getting the snack.

I'm sure something similar to the above scenario resonates with some of us. It represents a failure of working memory maintenance and illustrates the limited bandwidth us humans have with mental processing.

Working memory is defined as a mental workspace where information is stored for a short moment for further processing. The capacity of working memory determines how well we store information for use in an ongoing task. Working memory is fundamental to our interactions with the world on a daily basis. It is highly crucial for many of the tasks that we undertake, including arithmetic, planning, learning, speech and comprehension. Imagine the embarrassment if you were to have a conversation with someone and fail to follow the line of conversation because you forgotten what was said 30 seconds ago.

"Working memory is defined as a mental workspace where information is stored for a short moment for further processing."

Individual differences in working memory capacity are highly predictive of academic and occupational success. Specifically, children's performances on

working memory tests is highly correlated with reading achievement independent of their phonological skills. Furthermore, low working memory capacity is also predictive of poor performance on math achievement. Accordingly, working memory capacity, more so than IQ, measured at the start of formal education is highly predictive of subsequent literacy and numeracy attainments.

A popular model of working memory is a tripartite one that posits that working memory as made up of a Central executive (the 'CEO' of our cognitive system that is responsible for allocation of attentional resources, among others) plus two storage systems– a phonological loop (for verbal and sound based information) and a visuo-spatial sketchpad (for visual and spatial information). Children with different specific learning differences have been shown to have working memory difficulties in these different domains. For instance, children with reading difficulties tend to have difficulties with deficits in the phonological loop, which in turns impact learning of early phonics skills. This in turn affects reading development. Conversely, children with ADHD, given their problems with impulse control have been characterised as having weakness in the Central Executive.

Given the importance of working memory in our daily lives, wouldn't it be great if we can train and enhance it? Unfortunately, there is currently no consensus whether commercialised working memory training programmes are effective in improving working memory. However, there is a number of empirically proven strategies that could aid children in their learning, regardless of whether they have working memory deficits or not. The common thread among these strategies is to reduce cognitive or working memory load. I outline two here.

First, is to stop multitasking. Our brains are not built to undertake several mentally demanding activities simultaneously. Studies show that people who multitask frequently have poorer focus and are less effective in ignoring irrelevant information. Worse, when one does two or more things at once, none of the tasks are done well. Albert Einstein is no psychologist, but he had an opinion on multitasking that is particularly enlightening: "Any man who can drive safely while kissing a pretty girl is simply not giving the kiss the attention it deserves". What's the moral of the story here? Do one thing at a time.

Second, is to reduce classroom clutter. Many classrooms are often cluttered with decorations, information and pictures that are not relevant to the current lesson. Studies show that students in these highly decorated classrooms spend a larger portion of their time off task (instead of paying attention to the teacher). Consequently, students in these classrooms learn less compared to children in classrooms that have undecorated walls. In other words, instead of attending to the teacher, they are attending to the wall decorations instead, which in turn reduced

the amount of learning. While a sparse classroom may not be aesthetically pleasing compared to a well-decorated one, surely no teacher would want wall decorations to be competing with him or her for their students' attention.

Our working memory is a scarce resource. Given its importance to many activities that children undertake in school, it is important to be mindful that we, as educators do not overwhelm their capacity limits and impede their learning.

ABOUT THE AUTHOR

ADAM OEI
Postdoctoral Research Fellow
Singapore University of Technology and Design

Adam is formerly a lecturer at the DAS academy. He is currently a postdoctoral research fellow at Singapore University of Technology and Design. His research interest revolves around cognitive and neuroplasticity. In particular, he is interested in how the environment and the things we do affect our cognitive abilities. His PhD research completed in 2014 at Nanyang Technological University, focused on video game play and its impact on attention, memory and executive functioning.

PRESCHOOL LITERACY PROFILING TEST FOR K1 - K2 STUDENTS IN 2016

Does your child have difficulty with READING, SPELLING OR WRITING?

FREE!

teh or the?
saw or was?

Is your child having problems with letter formation or sequencing, or learning of sight words? Does he/she have poor handwriting or have trouble following multi-step directions or routines?

Come for our FREE Literacy Profiling Test*!

The screening will be conducted by our preschool early literacy intervention team. Our professionals will address your concerns about your child's literacy development and share with you help that is available.

SCREENING DETAILS:

Wednesday, 16 March 2016
9:00am - 5:00pm
Tampines Learning Centre
Blk 163 Tampines Street 12, #01-257
Singapore 521163

Wednesday, 1 June 2016
9:00am - 5:00pm
Rex House Learning Centre
73 Bukit Timah Road
#05-01, Rex House
Singapore 229832

Wednesday, 23 November 2016
9:00am - 5:00pm
Chua Chu Kang Learning Centre
Blk 17 Teck Whye Lane, #01-167
Singapore 680017

**This screening test is not meant to serve as a diagnosis for dyslexia but it will give you a picture on the learning needs of your child.*

DYSLEXIA ASSOCIATION OF SINGAPORE
HELPING DYSLEXIC PEOPLE ACHIEVE

TO REGISTER: 6444 5700
(Office hours: Mon - Fri, 8:30am - 5:30pm)
Limited slots available! Registration is required.

REVIEWS

Review of "The Dyslexia Debate" by Julian Elliott and Elena Grigorenko

Dr Tim Bunn
Consulting Educational Psychologist
Dyslexia Association of Singapore

A great deal is written about dyslexia in research journals and popular articles, too much for anyone to keep fully abreast of. So when a book comes along which summarises much of the literature in a balanced and constructive way we should be very grateful.

Is "The Dyslexia Debate" balanced and constructive? I think it provides a very helpful guide to the research literature, but I don't feel that the social policy side is so well considered. I feel Joe Elliott, who has been campaigning against dyslexia for many years, has not considered carefully enough how parents, educators and governments think about and organise educational policy around reading difficulties and dyslexia.

The key question the book asks, in the first chapter, is "Is dyslexia a scientifically rigorous construct that has meaningful value for research and educational/clinical practice?". The authors feel that the question is often over-simplified to, "Does dyslexia exist?" which results in strong outpourings of feeling from aggrieved parents and sufferers but does not really address the question of scientific validity. They do not doubt that biologically based reading difficulties really exist. But, they argue, we need to consider how literacy problems can best be understood, and crucially whether dyslexia is a rigorous scientific construct that adds to our

"Joe Elliott, who has been campaigning against dyslexia for many years, has not considered carefully enough how parents, educators and governments think about and organise educational policy around reading difficulties and dyslexia."

capacity to help those with reading difficulties.

Elliott and Grigorenko argue strongly that attempts to reach a widely agreed definition of dyslexia have been unsuccessful. Many people support the British Psychological Society (BPS) "working" definition,

> *"Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty. This focuses on literacy learning at the "word" level and implies that the problem is severe and persistent despite appropriate learning experiences."*

But Elliott and Grigorenko point out some consider the BPS definition is too inclusive and mistakenly includes some poor readers who are not true dyslexics; on this view, dyslexia is most evident in cognitive differences; it can even be quite a strong focus for a "dyslexic identity". Reading difficulties may not be very evident or may have been overcome. This view sometimes leads to a position where poor readers may or may not be dyslexic. In other words, dyslexics are a subgroup of all children with reading difficulties.

Others feel it is too exclusive, because some "compensated dyslexics" may reach a stage when they are able to read and write well enough but still experience organisational difficulties. There is also substantial controversy over whether reading comprehension difficulty should be considered a type of dyslexia or a separate disorder.

But without a reasonably precise definition, we cannot be sure that assessments are measuring the same thing, that two diagnoses of dyslexia mean the same, or that two research studies supposedly about dyslexia are really investigating the same phenomenon. They point out that the recent debate in the US about whether to talk about dyslexia or learning disorders in DSM-V proposed that we should talk about "specific learning disorders" of three types, reading fluency (aka dyslexia), written expression and mathematical difficulties. The reason DSM-V backed away from saying that dyslexia was the best name for the reading difficulty was a lack of international consensus on what it is.

In the second and third chapters they review evidence in detail of cognitive and biological explanations of dyslexia. The reviews provide a balanced picture of attempts to analyse dyslexia. It suggests that although phonological processing difficulty appears to explain more variance in students using English than any other deficit, a combination of other factors including naming speed, visual processing, attentional factors, working memory and executive functioning also predict dyslexia.

Quoting Pennington, they conclude that,

1. *The etiology of complex behavioural disorders is multi-factorial and involves the interaction of multiple risk and protective factors which can be either genetic or environmental,*
2. *these risk and protective factors alter the development of the neural systems that mediate cognitive functions necessary for normal development, thus producing the behavioural symptoms that define these disorders;*
3. *no single etiological factor is sufficient for a disorder and few may be necessary;*
4. *consequently, comorbidity among complex behavioural disorders is expected because of shared etiological and cognitive risk factors; and*
5. *the liability distribution for a given disease is often continuous and quantitative rather than discrete and categorical.*

In other words, we should not expect the definition of dyslexia, or any other similar disorder, to be simple; we have to map the risk and protective factors without expecting neat bundles or discrete syndromes to emerge, and they will usually depend on quantitative criteria.

The third chapter reviews neuroscientific studies of the brain, grouping them into four types:

1) studies of how the "reading brain" does its job in adults: the brain systematically engages specific pathways, automatising processes as much as possible, in predictable areas of the brain;

2) studies of reading acquisition: the brain of a competent reader is very different from that of a beginning reader;

3) comparisons of typical and disabled readers: unfortunately definitional problems have seriously hampered the generalisability of results;

4) brain imaging within intervention studies: the authors suggest this new area holds the best hope for the future contribution of neuroscience to the dyslexia debate.

The chapter provides some detailed explanation of where we have reached in understanding how brains read, but the main point is to evaluate what our current understanding tells us about the dyslexia debate. They conclude that neuroscience

is not yet capable of resolving the dyslexia debate, and does not yet provide a way to identify a dyslexic subgroup from among the larger group of poor readers. Nor does it provide a way to identify which students might benefit from a particular intervention. Indeed, if Pennington is right, there may not be a dyslexic subgroup.

Genetics is even less likely to be able to come up with practical tools to identify dyslexia or to pinpoint effective interventions in the short or medium term. We can be sure that reading is partly controlled by genes, but the processes by which genes, in interaction with child rearing, nutrition, health and education, affect reading development remain extremely unclear, and perhaps are less clear now than when the Human Genome was first mapped.

The fourth chapter looks at interventions and assessment: how should dyslexia be identified and how can we help people with dyslexia? I found the review of intervention research thought provoking and interesting. My own modest contribution to the corpus was not included but it seemed to be consistent with what Elliott and Grigorenko say, (I examined differences between individualised and standardised intervention tools in England at ages 8-9, and found they were about equally effective). They quote research I read then (about 10 years ago) and I agree with what they say about it.

They go on to review more modern research which I found fascinating. For example, Marianne Wolf and colleagues have done a number of recent studies comparing the RAVE-O programme designed to deal with a fluency or naming speed deficit, and other more phonologically focused programmes. The results suggest similarly positive outcomes, with little difference in programme effectiveness when programmes included quite a broad range of language components addressing a variety of core deficits. However, the gains for daily intervention over 70 hours were modest.

The main message, however, is that there is really only one type of intervention for which there is good evidence of effectiveness: "it is now widely accepted that a systematic phonics approach usually leads to superior reading skills when compared to non-phonics or non-systematic phonics approaches." (p129). Early intervention is also very important, and they also support a well-organised Response to Intervention model (RTI), in which changes in class teaching (Tier 1), additional small group teaching based within the class (Tier 2) and more intensive individualised intervention, usually outside the class (Tier 3).

If there is really only one type of intervention, why, they ask, do we need such long and complex psycho-educational assessments, using cognitive testing when really we only need to know about the reading and writing skills? In other words, isn't most

educational psychology assessment of dyslexia a fraud?

As a psychologist who does a lot of assessments where the key question is, "does my child have dyslexia?" I probably can't give an unbiased answer. I do think some psychological assessment is unnecessarily complex and uses mistaken concepts (such as discrepancy analysis). I agree that in the UK this is more evident when university students are seeking exam accommodations, even though the student long ago achieved a satisfactory mastery of reading and writing; but the answer is for universities to worry less about the strict timing of exams and the finer points of their top grades, and perhaps to provide standard score guidelines on what constitutes a disadvantage, as the UK QCA did some time ago.

It is also evident when a small number of parents are seeking UK government funding for expensive specialised schools for dyslexics; entry is often through the SEN Tribunal where dyslexia can be a very powerful label; the answer is to find a fairer way to fund entry to such schools, and to persist with the government's intermittent efforts to address the problem of supporting children with SEN in mainstream schools through improving mainstream (Tier 1) teaching.

The Dyslexia Debate probably isn't going to persuade those psychologists who make a living from providing such assessments. Most mainstream dyslexia assessment in the UK is now (I think) done by specialist teachers, as Elliott would like. I am biased, of course, but I have seen as much bad specialist teacher assessment as psychological.

Elliott and Grigorenko's case is that continuing definitional confusion about dyslexia means that we are better talking about reading disability. It is relatively straightforward to identify children with reading difficulties, and researchers should generally not go beyond that. In other words, the problem with the BPS definition was in saying it was talking about dyslexia, not in the coverage ("accurate and fluent word reading and/or spelling").

If, in spite of Pennington, researchers still want to try and pin down the combination of risk and protective factors that might be "dyslexic", then they can, but they should make clear that they are not starting with a dyslexic sample, they are trying to find a way to reliably identify one.

Must educational policies wait for clear answers from research? They rarely do. But are cognitive and biological research the only kinds we need?

"Elliott and Grigorenko's case is that continuing definitional confusion about dyslexia means that we are better talking about reading disability."

Elliott and Grigorenko don't have a clear social-theoretical view of the dyslexia phenomenon. Perhaps none of us do, but this seems to me to be very much the missing chapter in their book. They assume throughout that findings and social policy decisions in one country or even one culture (the Anglo centric research hegemony?) apply equally well across other countries and cultures.

From a Singapore perspective, it is pretty obvious that how the UK and the US arrange the supply of assessments and interventions for children with reading difficulties does not apply straightforwardly here. In Singapore there is no SEN law, there are no quantitative criteria for how severe a reading difficulty must be and the government will only accept that a child is dyslexic if a psychological report says so - if a "diagnosis" is given - so professional judgement is conclusive. Provision is either school based or through tuition centres. There are no special schools for dyslexia. Joe Elliott thinks we in Singapore identify too many children as dyslexic. But we don't pick out two groups (dyslexic and non-dyslexic poor readers) and if we err on the side of helping even very mild difficulties, who loses?

In Singapore over 90% of children receive some additional tuition every week. If the Dyslexia Association of Singapore can provide high quality tuition, and parents can always pull their children out if they don't like it, who loses? There are probably weaknesses - Singapore has no quantitative criteria for exam accommodations, and parents either have to wait for the overstretched government psychologist or pay for a private one, and of course this favours the well off, which is not very "meritocratic".

We only have some (now outdated) Singaporean normative measures of literacy. We have to use US and UK norms. But in Singapore, we don't need the complex and extremely expensive SEN bureaucracy that Statements in the UK and IEPs in the US have created. Parents and the government seem committed to arranging help for children with reading and spelling difficulties, using the dyslexia construct. We need to identify all the children who need help early; no-one does that yet but Singapore seems to be moving in the right direction.

Elliott and Grigorenko nod briefly towards “sociocultural perspectives” (p175) but argue that "advances of research into reading disability" invalidate radical disability accounts, and suggest that the dyslexia construct "sustain[s] a vast industry geared to providing assessments, diagnoses and treatments." It would be helpful to see what evidence there is for and against this conspiracy theory account of the "dyslexia industry". There have been some sociological attempts to analyse special education in the UK (eg Sally Tomlinson, "The Sociology of Special Education", 1982), but they have not been widely understood or well developed.

In my opinion, international perspectives provide ways of comparing country-wide

attempts to improve reading outcomes. It would be helpful to see which approaches, dyslexic or reading disability, seem to offer better outcomes by comparing across countries.

Elliott and Grigorenko make approving reference to the Frith multi-level model (behavioural, cognitive, biological), which sits alongside "the environment". The model is helpful in seeing how the various natural science disciplines fit together but it does not make the vital distinction between "natural" and "social" environments. How a society construes an area like reading disability/dyslexia involves social forces which can be studied. Radical disability theory is only one approach. If we don't study them, we are just pushed and pulled with those forces. Elliott and Grigorenko want to chide those who believe the dyslexia construct has significant social value as "unscientific". But if they are not prepared to use science to understand social policy, are they not also unscientific?

So I think Joe Elliott misses the benefits of the dyslexia construct in some societies. In the UK, there was a gradual shift in the willingness of professionals to use the term "dyslexia" during my entire working life there. It eventually seemed to many that, in spite of the fuzzy definition, on balance there was more to be gained by bringing together "specific learning difficulties" and "dyslexia" than from trying to make a distinction, which was very difficult to explain to non-professionals.

Many parents and children preferred the term "dyslexia". It has a lot more impact. Some people adopt a "dyslexic identity" - "I'm dyslexic and I'm proud of it," they say - and gain strength and perseverance from it. Can Elliott's scientific view of reading disability encompass this personal dimension? I think his view is too narrow.

If you are worried about enough effort and resources going to help children with reading difficulties (as anyone who has worked in UK education should be) you need politicians and the public to be prepared to pay to get it right. The UK adopted an RTI approach to reading disability but either failed to fund it properly, expected too much of the primary schools or failed to take enough account of social class disparities (depending on whose side you are on).

"Many parents and children preferred the term "dyslexia". It has a lot more impact. Some people adopt a "dyslexic identity" - "I'm dyslexic and I'm proud of it," they say - and gain strength and perseverance from it."

Singapore appears a good example of a society that has adopted "dyslexia" and made it work. Elliott and Grigorenko may drag some societies backwards: those on the other side of the dyslexia

debate say that only a dyslexia construct has the power to make society do enough about reading difficulties. Of course, we need social research to support this thesis!

All research needs to be well grounded; Elliott and Grigorenko have done a very good job of summarising the cognitive, biological and intervention research. They have not taken the same care with their summary of the social policy options. Research in all disciplines into reading disability/dyslexia needs to take care with the definition of reading disability and dyslexia, separating but also linking explanations at different levels, not least the social.

ABOUT THE AUTHOR

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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 lead 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.

ABOUT DAS

2014 -2015

Our Journey

In 1993, the DAS had one learning centre, one teacher and 12 dyslexic students. Today, the DAS employs over 250 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.

DAS enhanced and 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.

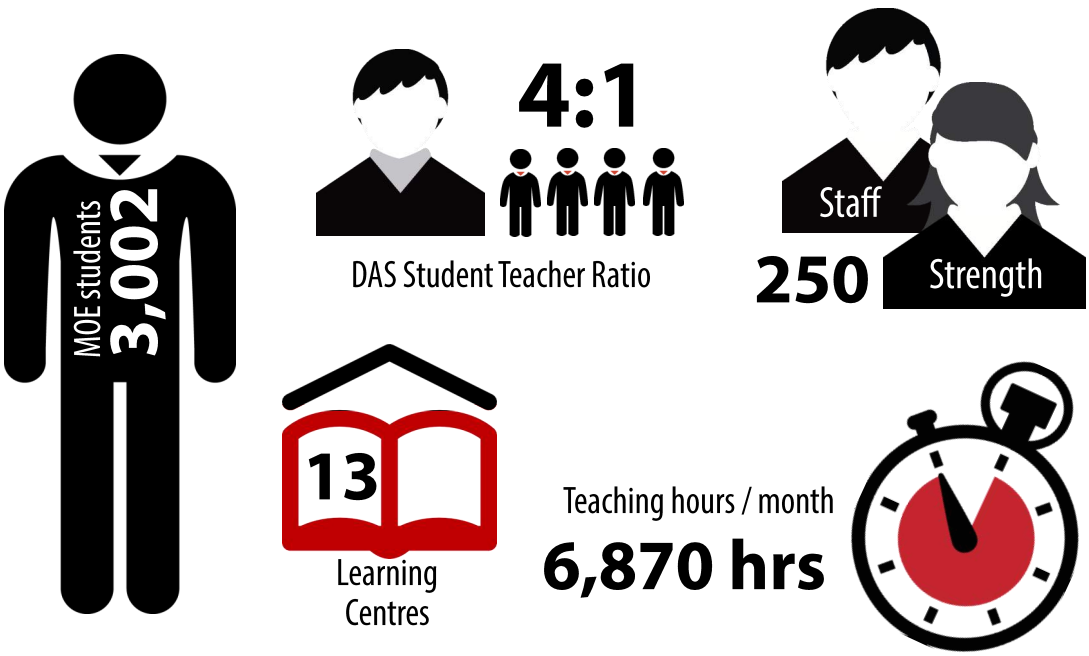
Upgraded facilities by increasing the number of learning centres as well as updating the classrooms by adding smart boards and projectors.

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 of 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.

2014-2015: A year of *firsts* and more...

- The MOE-aided DAS Literacy Programme (MAP) division crossed the 3,000 student enrolment mark for the first time.
- The Specialised Educational Services (SES) division achieved 1,000 student enrolment for the first time.
- Digital classroom-based assessments (CBA's) were used for the first time.
- English Exam Skills opened the programme to Primary 3 and 4 students for the first time.
- The Speech and Drama Arts programme provided Drama, Music and Movement to pre-schoolers for the first time.
- DAS Student Graduation Ceremony will see SES Special Achievement Awards for the first time.
- DAS awarded "MAP Educational Therapist of the Year"
- DAS staff have a paper published in the British Journal of Special Education.
- DAS has published a book that is one of its kind "Embrace a Different Kind of Mind—Personal Stories of Dyslexia"



Awareness talks reached

5,620

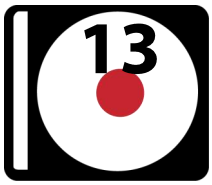
people

Awareness talks

62

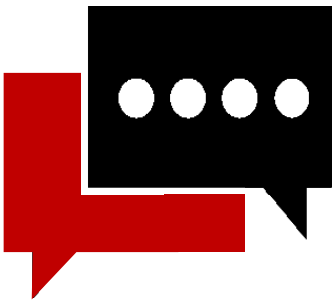
DAS website

86,000 views



DAS resources

455



1,207 Referrals made

DAS Learning Centres

1 **Ang Mo Kio** **6452 1186**
Anderson Primary School, Indoor Sports Hall
19 Ang Mo Kio Ave 9, Singapore 569785

2 **Bedok** **6444 6910**
Fengshan Primary School, Indoor Sports Hall
307 Bedok North Road, Singapore 469680

3 **Bishan** **6250 0526**
9 Bishan Place, #06-03
Bishan Junction 8, Singapore 579837

4 **DAS Assessment Services** **6538 1658**
133 New Bridge Road, #04-01
Chinatown Point, Singapore 059413

4	**Chinatown Point** 133 New Bridge Road, #04-01 Chinatown Point, Singapore 059413	**6538 1658**
5	**Chua Chu Kang** Blk 17 Teck Whye Lane, #01-167 Singapore 680017	**6464 8609**
6	**Jurong Point** 1 Jurong West Central 2, #05-01 Jurong Point, Singapore 648886	**6594 0331/2**
7	**Parkway Parade** 80 Marine Parade Road, #22-01/02 Parkway Parade, Singapore 449269	**6440 0716**
8	**Queenstown** Queenstown Primary School 310 Margaret Drive, Singapore 149303	**6475 9535**
9	**Rex House** 73 Bukit Timah Road, #05-01 Rex House, Singapore 229832	**6643 9600/1**
10	**Sengkang** Blk 257C Compassvale Road, #01-545 Singapore 543257	**6881 2072**
11	**Tampines** Blk 163 Tampines St 12, #01-257 Singapore 521163	**6786 0838**
12	**Woodlands** Blk 165 Woodlands St 13, #01-567 Singapore 730165	**6269 0730**
13	**Yishun** Blk 932 Yishun Central 1, #01-101 Singapore 760932	**6451 5582**

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

DYSLEXIA ASSOCIATION OF SINGAPORE

DAS HANDBOOK 2015

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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