

# *Asia Pacific Journal of Developmental Differences*

Volume 6 ♦ Number 1 ♦ January 2019





Published by the Dyslexia Association of Singapore (DAS)

© 2019 DAS

ISSN 2345-7341 (print)

Contact:

The Managing Editor  
Dyslexia Association of Singapore  
1 Jurong West Central 2  
#05-01, Jurong Point  
Singapore 648886

Email: [editor@das.org.sg](mailto:editor@das.org.sg)

Reprint permission may be obtained by writing to the Managing Editor at the above address.

The responsibility for facts and opinions represented in the articles rests exclusively with the individual authors. Their interpretations do not necessarily reflect the views or the policy of the editorial committee, the Review Panel, sponsors of the Asia Pacific Journal of Developmental Differences, or the Dyslexia Association of Singapore.

# Asia Pacific Journal of Developmental Differences

## **Editor-in-Chief**

Professor Angela Fawcett  
Research Consultant  
Dyslexia Association of Singapore,  
Emeritus Professor  
Swansea University, UK  
Honorary Professor  
University of Sheffield, UK

## **Executive Editor**

Professor John Everatt  
University of Canterbury  
New Zealand

## **Managing Editor**

Deborah Hewes  
Head, Publicity and Publications  
Dyslexia Association of Singapore

### **Contact:**

1 Jurong West Central 2  
#05-01, Jurong Point  
Singapore 648886

[deborah.hewes@das.org.sg](mailto:deborah.hewes@das.org.sg)

## **Associate Editors**

Professor Hugh Catts, Florida State University, USA  
Professor James Chapman, Massey University, New Zealand  
Professor Steve Chinn, Educational Consultant, UK  
Prof. Kevin K H Chung, The Hong Kong Institute of Education, Hong Kong  
Kate Curawalla, President, Maharashtra Dyslexia Association, Mumbai, India  
Dr Kristiantini Dewi, Dyslexia Association of Indonesia, Indonesia  
Dr Shirley Egley, University of South Wales, UK  
Dr Gad Elbeheri, Dean, Australian University of Kuwait  
Professor Esther Geva, University of Toronto, Canada  
Dr Charles Haynes, MGH Institute of Health Professionals, Boston, USA  
Professor Connie Ho, University of Hong Kong, Hong Kong, China  
Professor Sunil Karande, King Edward VII Memorial Hospital, Mumbai, India  
Junko Kato MD, Japan Dyslexia Research Association  
Professor Sharanjeet-Kaur, Universiti Kebangsaan Malaysia  
Professor Amanda Kirby, University of South Wales, UK  
Dr Lim Boon Hock, Special Education Consultant, Malaysia  
Professor Su-Jan Lin, National Kaohsiung Normal University, Taiwan  
Dr Beth O'Brien, National Institute of Education, Singapore  
Dr Dino Ocampo, Philippine Dyslexia Foundation, Philippines  
Dr Ong Puay Hoon, Dyslexia Association of Sarawak, Malaysia  
Asst Professor Kenneth Poon, National Institute of Education, Singapore  
Dr John Rack, Dyslexia Action, UK  
Dr Gavin Reid, Educational Consultant, UK  
Assoc. Professor Susan Rickard Liow, National University of Singapore  
Dr Kate Saunders, CEO, British Dyslexia Association, UK  
Geetha Shantha Ram, Dyslexia Association of Singapore  
Dr Thomas Sim, Australian Institute of Professional Counsellors, Australia  
Dr Purboyo Solek, Dyslexia Association of Indonesia, Indonesia  
Professor Su-Jan Lin, National Kaohsiung Normal University, Taiwan  
Professor Akira Uno, Tsukuba University, Japan  
Professor Taeko N. Wydell, Brunel University, UK  
Assistant Professor Dongbo Zhang, Michigan State University, USA



# Contents

---

- 1 Editorial Comment  
*Angela J. Fawcett*
- 5 Orthographic Advantage Theory: National advantage and disadvantage due to orthographic differences  
*Bruce Allen Knight, Susan A. Galletly, Pamela S Gargett*
- 33 Preventing teacher burnout and promoting job satisfaction and retention: work values in teachers of learners with dyslexia in relation to organisational initiatives.  
*Geetha Shantha Ram and Ashraf Samsudin*
- 49 Children with learning difficulties and the move to Innovative Learning Environments  
*John Everatt and Jo Fletcher*
- 75 Barriers undermining the implementation of the students' mental health promotion process in schools: teachers' perceptions.  
*Dalal Alradaan, Suad Albeshar and Abdullah Alosaimi*
- 93 The construction and evaluation of an English Exam Skills test for primary school students with dyslexia  
*Edmen Leong and Hu Guangwei*
- 115 Early Markers of Executive Functions and Their Relation to Dyslexia: Cross Patterns and the Level of Initial Activation  
*Piero Crispiani, Mary Mountstephen, Eleonora Palmieri*
- 127 An evaluation of the effectiveness of using drama as a tool to build social-emotional development of children with dyslexia in Singapore.  
*Muzdalifah Hamzah*





## Editorial Comment

Angela J. Fawcett, Editor-in-Chief

---

It is a very great pleasure to publish the 11th issue of the Asia Pacific Journal of Developmental Differences, now in its sixth year of publication, which is published by the Dyslexia Association of Singapore. The response to the previous issues continue to be extremely gratifying, and we intend to maintain these high standards in this issue and forthcoming issues. We have now amassed an even stronger editorial board, and I am grateful for the support of the academics and professionals involved in resolving any issues arising. In this edition, we will enter the ongoing debate on standards in academic publishing, including here our editorial policies, which is also published on the DAS website.

### EDITORIAL POLICY

#### RETRACTIONS

The APJDD takes the issue of retractions very seriously, and the editor has conferred with the full editorial board in producing this statement. In line with requirements of major academic journals the APJDD will continue to monitor publications for retractions. No future citation will be permitted for articles that have been retracted and a correction will be issued if any such article is published in error. In the case of citations prior to retraction no such correction will be issued, in line with the policy for other journals of this type. Please contact the editor in the first instance if there are any concerns. COPE guidelines have been accessed in preparing this guidance.

Articles published in the APJDD should be original work that has not been published in this form elsewhere. In rare instances where previous publication has been made, this will be fully acknowledged.

#### SCIENTIFIC REVIEW COMMITTEE

In common with a number of other academic journals, we are now setting up a scientific committee of reviewers to assist the editor and editorial board in the review process. In forthcoming issues, a list of members recruited internationally will be presented, with a short bio for selected members published in each issue.

In this issue, we again present 7 articles representing international research on a number of important issues addressing theory and practice. The first article presented here, by Bruce Knight, Susan Galletly and Pamela S Gargett from Queensland University addresses an important theoretical issue, that of orthographic advantages and disadvantages. The authors argue that learners in English are uniquely disadvantaged by the complexity of the English orthography, comparing their task with bilingual studies that indicate the greater ease of acquisition in more regular languages.

An interesting article from Geetha Shantha Ram and Ashraf Samsudin from DAS highlights the importance of values within a successful organisation, in a study that links the values and needs of Educational Therapists with the climate within the organisation itself. Drawing on a questionnaire study of 111 Educational Therapists at DAS, the authors identify achievement and support as the key factors in staff retention, interpret this in terms of the experience and length of employment, and present recommendations for enhancing commitment and avoiding burnout for this group.

Innovations in teaching are discussed in New Zealand in an interesting and insightful article from Prof. John Everatt and Jo Fletcher from the University of Canterbury. Here they address the issues of flexible learning in situations where classes are combined to include up to 150 children. In a questionnaire study of 283 teachers, including principals, the authors found significant support for the approach, but less so for children making low progress in literacy and Maths. This is a particularly important issue, given the likely impact for dyslexic learners of these environmental changes, which might be predicted based on the literature to be particularly deleterious for children who are struggling to achieve.

Another important article that addresses the viewpoint of teachers on mental health in students in Kuwait is presented by Dr Dalal Alradaan and colleagues. In a major study of teachers in secondary schools in Kuwait, 500 teachers completed a questionnaire examining barriers to support for mental health in Kuwait. The results indicated the perceptions were highly influenced by socio-cultural and religious norms. An in-depth interview of 30 teachers provided a range of qualitative data to illustrate the issues arising, that could undermine moves to promote mental health well-being in Kuwait.

Edmen Leong from DAS, in collaboration with Hu Gwangwei from Hong Kong Polytechnic University present an article on the construction and evaluation of an English Exam Skills (EES) test for primary school children with dyslexia. The DAS English Exam Skills Programme has been very successfully implemented at DAS over the years, with highly significant improvements noted (Leong, 2015; Leong et al., 2017; Elfira et al., 2018). Here the test paper itself is evaluated for reliability in identifying high and low achievers, leading to a new EES test, performance was significantly higher after the programme and the results correlate with school based tests. This evaluation and refinement is a



major step forward for a test that has already demonstrated high levels of academic performance.

Another paper from Eleanora Palmieri, Piero Crispiani and Mary Mountstephen focuses on the role of executive function in young Italian children, with motor activation seen as a marker for later success or failure in literacy. A programme of intensive support designed to improve the speed of activation and fluency of patterning is evaluated here in terms of the emerging importance of executive function skills, and the improvements that can be made towards normalising the speed of dyslexic children with severe difficulties.

Social-emotional development is targeted in an interesting study by Muzdalifah Hamza from DAS, based on the use of drama as a tool in young children. Working with children aged 7-11, an emotional literacy scale was administered pre-and-post participation in the Speech and Drama Arts Programme from DAS. Furthermore, questionnaires were collected at both stages from students, parents and teachers, and semi structured interviews provided an in-depth focus on changes in socio-emotional status which could be related to the support received. Significant improvements were found, with a strong effect size, endorsing the use of these techniques in changing patterns of thought.

## References

- Elfira, T., See, E., Tan, S. H. J., & Leong, E. (2018). Exploring the effectiveness of the English Examination Skills Programme on struggling non-dyslexic learners. *Asia Pacific Journal of Developmental Differences*, 5(2), 141-162.
- Leong, E. (2015). Improving English exam skills for dyslexics in primary education in Singapore. *Asia Pacific Journal of Developmental Differences*, 2(2), 184-201.
- Leong, E., Asjamiah, S., & Wang, A. (2017). Exploring the classroom practices of the English Exam Skills Programme for Singaporean primary school children. *Asia Pacific Journal of Developmental Differences*, 4(2), 167-194.





# Orthographic Advantage Theory: National advantage and disadvantage due to orthographic differences

Bruce Allen Knight<sup>1\*</sup>, Susan A. Galletly<sup>1</sup>, Pamela S Gargett<sup>2</sup>

1. Central Queensland University

2. Queensland Department of Education, Training & Employment

---

## Abstract

Considerable research reports nations differ in orthographic complexity (regularity and consistency of spelling patterns used); that this impacts ease and speed of reading and writing development; and that, in contrast to the world's many regular-orthography nations, English word-reading and word-writing development is extremely slow, with difficulties more frequent and severe (Knight, Galletly & Gargett, 2017; Seymour, Aro, & Erskine, 2003; Share, 2008). Orthographic Advantage Theory proposes that, according to their level of orthographic complexity, nations experience disadvantage and potential advantage in multiple areas of education and national functioning. Building from current cross-linguistic theories and research on cross-linguistic differences, it proposes six dimensions of orthographic advantage and disadvantage, namely: ease of early literacy development; simplified school instruction and learning across primary and secondary school; ease of improving education; impacts of reduced workplace illiteracy; increased adult life advantage; and generational advantage through confidently literate parents being able to effectively support their children's literacy development. This article details Orthographic Advantage Theory, building from review of research findings that show the major differences in reading development and outcomes in regular-orthography and Anglophone nations. The theory is offered as a tool for educators and researchers towards optimising reading and literacy outcomes.

**Keywords:** Orthographic Advantage Theory, reading development, writing development

---

\* Correspondence to:

Bruce Allen Knight, Centre for Regional Advancement in Learning, Equity, Access and Participation (LEAP), Central Queensland University, Level 1, 538 Flinders St, Townsville Qld 4810. Email: b.knight@cqu.edu.au

## INTRODUCTION

*Orthographic advantage is experienced by individuals, families, schools and nations reading transparent-orthographies in the many academic, social-emotional and economic ramifications of easy access to literacy. Orthographic disadvantage is experienced by English-reading individuals, families, schools and nations, in the many ramifications of difficult access to literacy, and high rates of reading failure.*

(Galletly & Knight, 2004, p.8)

Word-reading and word-writing, the ability to read and write words as isolated words and in meaningful text, are gateway skills on the path to effective literacy. Reading and writing build from readers' language skills integrated with their word-reading and word-writing skills. Thus, whilst no readers have reading comprehension and written expression skills beyond their level of intelligence and language reasoning, those with poor word-reading and word-writing are impeded from reaching their potential.

Many nations use highly-regular orthographies (spelling systems), with close to one-to-one correspondence of graphemes and phonemes (Grapheme-Phoneme Correspondences, GPCs). In contrast, English orthography is so highly complex that researchers consider it an outlier on the continuum of orthographic complexity (Seymour, Aro, & Erskine, 2003; Share, 2008). Whereas Finnish uses only approximately 23 GPCs, one grapheme for each of its 23 phonemes (one-to-one GPCs), English uses more than 560 different spelling patterns (GPCs) for its approximately 40 common phonemes.

Regular orthographies have orthographic simplicity (transparency), one-to-one GPCs and a very small word-reading and spelling curriculum to master. This creates low cognitive load, due to minimal curriculum load and confusion for beginning readers, and expedites word-reading and spelling development. It follows that teaching, learning, and early intervention can be easier, non-intensive and highly effective, for virtually all children, including children with intellectual disability (Cossu, 1999; Olofsson & Niedersoe, 1999).

In contrast, English's high orthographic complexity means that children during early literacy development work through a large, complex word-reading curriculum which involves high cognitive load and high orthographic confusion from English's many potentially confusing GPCs (Knight, Galletly, & Gargett, 2017; Seymour & Duncan, 2001; Share, 2008; Ziegler & Goswami, 2005). As examples, in the four highly frequent words, was one two eight, only the four underlined letters, one per word, use their commonest, 'regular' GPC (the sound children are taught that letter says), with the remaining 10 GPCs offering potential learning confusion. Reading and spelling instruction and

learning are thus more complex in Anglophone nations, with word-reading and spelling development taking many years; many children and adults experiencing significant word-reading and word-writing difficulties; and interventions for weak readers often failing to achieve proficient reading (Compton, Miller, Elleman, & Steacy, 2014; Hindson, Byrne, Fielding-Barnsley, Newman, Hine & Shankweiler, 2005; Torgesen, 2000).

Research has established significant differences in reading development between Anglophone nations (nations of predominantly monolingual English speakers, where children learn to read using Standard English orthography), and regular-orthography nations where children learn to read highly regular spelling systems (Knight et al., 2017; Landerl, Ramus, Moll, Lyytinen, Leppänen, Lohvansuu & Schulte-Körne, 2013; Seymour et al., 2003; Share, 2008; Ziegler & Goswami, 2005).

Surprisingly, given the very strong impact of orthographic regularity and complexity, there is relatively little awareness of these important cross-linguistic differences among education leaders, researchers and educators (Joshi & McCardle, 2017; Galletly & Knight, 2013; Share, 2008). Share's (2008) seminal paper emphasises the need for greater awareness that English's extreme orthographic complexity makes Anglophone word-reading and literacy development highly atypical. This currently low awareness is evidenced in international reading studies such as PISA (Thomson, De Bortoli, & Underwood, 2016) and PIRLS (Thomson et al., 2012) not including orthographic complexity as a variable that can differentiate nations' reading and academic achievement.

In addition, whilst proliferating cross-linguistic research is currently focused on word-reading development, minimal research seems focussed on areas beyond word-reading. Logically, rapid as opposed to slow word-reading and word-writing development will impact ease of education and diverse aspects of literacy development. As examples, it is difficult to find cross-linguistic research exploring literacy beyond word-reading, including spelling, independent reading and writing, vocabulary and language skills, cognitive processing beyond phonological awareness and Rapid Automatised Naming (RAN), and verbal efficiency. Whilst logically there will also be differences in support needs and pressures on children and teachers, it is difficult to find cross-linguistic research exploring ease of word-reading and word-writing instruction, teacher workload, and children's self-teaching and their needs for adult support.

With likelihood that orthographic disadvantage has detrimental impacts, thinking on cross-linguistic differences potentially offers useful directions towards optimising reading and literacy development (Knight & Galletly, 2017; Knight et al., 2017). There is therefore value in education policymakers, researchers and educators building greater awareness of the major cross-linguistic differences of literacy development and instructional needs between regular-orthography and Anglophone nations. This need is strong in Anglophone nations, given many Anglophone nations are struggling to improve literacy

outcomes (Knight & Galletly, 2017; Thomson et al., 2016; Thomson et al.; 2012). The authors have developed Orthographic Advantage Theory to support varied thinking on the impact of cross-linguistic differences on learning to read and write words (Galletly & Knight, 2004, 2011a, 2011b, 2013; Knight et al., 2017). Orthographic Advantage Theory builds from reading theories, including the Orthographic Depth Hypothesis (Frost, 2012) and Psycholinguistic Grain-Size Theory (Ziegler & Goswami, 2005), as well as research findings on children learning to read Standard English and regular orthographies.

This paper details Orthographic Advantage Theory and the significant cross-linguistic differences nations experience. It has two sections. The first section summarises research findings establishing orthographic advantage and disadvantage in regular-orthography and Anglophone nations. The second section describes Orthographic Advantage Theory.

Unless stated otherwise, the term 'regular-orthography nations' designates nations with the most regular orthographies, such as Estonia, Finland, Italy, and South Korea, whilst 'Anglophone nations' refers to nations such as the United Kingdom, United States, Australia and New Zealand, where many citizens are monolingual English speakers, and most children learn to read Standard English orthography.

## **ADVANTAGE AND DISADVANTAGE**

Orthographic Advantage Theory is built from the considerable research establishing strong cross-linguistic differences in literacy development. Literacy development for Standard English readers is significantly delayed and more complex, with far more students experiencing literacy difficulties. This section discusses key findings establishing that research basis.

### **Word Reading**

English word-reading and word-writing (spelling) development takes at least seven years, with studies developing test norms showing ongoing development from age six to at least age thirteen years, and some through to adulthood (Snowling et al., 2009; Torgesen, Wagner & Rashotte, 2012).

Word-reading and word-writing have two important components: accuracy (reading and writing words correctly) and fluency (increasing automaticity). Self-teaching is a pivotal aspect of literacy development (Share, 2008; Ziegler, Perry, & Zorzi, 2014) as children require less teaching support when they can work out unfamiliar words for themselves (Knight & Galletly, 2017). The pivotal role of self-teaching in early literacy development makes children's rate of skill development towards proficient word-reading and word-writing accuracy a key cross-linguistic factor, as it develops to a proficient level much more quickly in children learning to read regular orthographies. Whereas English

orthographic complexity markedly delays both self-teaching and proficient word-reading and word-writing accuracy in all children, and especially children experiencing difficulties, most regular-orthography readers are proficient self-teachers from mid-Year 1, when they are able to accurately read and write virtually all words. From a self-teaching perspective, whilst fluency is an advantage, proficient accuracy is crux.

Evidence is growing that children's learning is significantly impacted through the balance of consistency and confusion in content being learned, with at-risk learners significantly disadvantaged by inconsistencies (Gabay, Thiessen, & Holt, 2015; Pollo, Treiman, & Kessler, 2007). Termed 'statistical learning', children's learning is found far more powerful when learning content is highly consistent (e.g., when learning to read a highly regular orthography with virtually one-to-one GPCs), and significantly weaker when confusion is present due to inconsistencies (e.g., when learning to read standard English orthography).

Using standard English orthography, it is difficult to avoid confusion in early Anglophone reading instruction, given English's three orthographic grainsizes (phonemes, spelling units, and whole-words, Ziegler & Goswami, 2005), the overlapping and confusing GPCs created by these grainsizes, and the large number of highly frequent words which have highly irregular spelling. As examples, in common words encountered frequently by early readers, children routinely experience at least three 'conflicting' GPCs for many sounds, e.g., *for* /a/ in *has*, *was*, *car*; /w/ in *was*, *who*, *write*, and /o/ in *one*, *does*, *to*. This orthographic confusion, and the amount of learning children must do to be able to effectively read English's many common words with irregular spelling, can greatly impede word-reading development. Seymour, Aro, & Erskine's (2003) study of Year 1 children in 14 European nations established the excessively slow rate of English word-reading development. When tested towards the end of Year 1, the readers of ten regular-orthography nations (Norway, Netherlands, Iceland, Sweden, Spain, Italy, Finland, Turkey, Austria and Greece) read with 90% to 98% accuracy. In contrast, English Year 1 readers had just 34% accuracy, with English Year 2 readers (after twice the learning time) having just 76% accuracy.

Huang and Hanley (1997) reported Taiwanese regular-orthography children taking only 10 weeks to achieve sufficient accuracy and self-teaching to accurately read and write using Zhuyin Fuhao (also termed Bopomofo), their fully regular initial orthography. Aro's (2004) Finnish study reported that Finnish beginning readers take a matter of weeks to master word-reading accuracy, and that children differ in the time-point when they start to master word-reading but, once started, progress at the same rapid rate. Like riding a bike, some children need the bike supported for longer, until subskills are coordinated, but once the child rides successfully and feels in control, skill builds rapidly with relatively minimal need for adult support (Galletly & Knight, 2013). This 'same-rate' word-reading development stands in contrast to Anglophone word-reading development where children differ greatly in rate of word-reading development, and most need considerable

ongoing adult support, and teachers are required to cater for a wide range of skill levels (Galletly, Knight, Dekkers, & Galletly, 2009; Snowling et al., 2009; Torgesen, Wagner & Rashotte, 2012).

Rapid regular-orthography early literacy development is also evident in Anglophone studies of children learning to read and write using the Initial Teaching Alphabet (I.T.A.) in the 1960s with many thousands of Grade 1 children being enthusiastic independent readers and writers (Downing, 1969; Knight et al., 2017; Mazurkiewicz, 1973).

## Reading Difficulties

The ease of regular-orthography word-reading development is also evident in how effectively regular-orthography delayed readers master word-reading. Examples include German children with dyslexia having high word-reading accuracy from Grade 2 (Landerl & Wimmer, 2008), and regular-orthography nations testing only word-reading speed, not accuracy, because all children have proficient accuracy (Aro, 2017; Torppa, Eklund, van Bergen, & Lyytinen, 2015).

Landerl, Wimmer and Frith's (1997) study of German and English weak readers reveals the extent of English word-reading difficulties. The authors report German readers reading their study's most difficult words (three-syllable pseudowords, e.g., *quaduktrisch*, *miktanie*, *usision*, *plauferfant*) with greater accuracy than English students read the simplest words (1 syllable real words, e.g., *ball*, *round*, *blind*, *friend*). In addition, English readers made 16 times more vowel errors (342: 20 errors). There seem few recent studies comparing the extent of cross-linguistic differences in word-reading difficulties.

It is not the case that regular-orthography nations have no literacy weakness, but rather that weakness is much less severe. Anglophone weak readers struggle to develop both accurate and fluent reading and writing of words, and hence also struggle with self-teaching, reading comprehension, written expression, and independent reading and writing. While virtually all regular-orthography weak readers read accurately, a small proportion of children who have phonological-awareness weakness show spelling difficulties, and a small proportion who have weakness in Rapid Automatised Naming (RAN) struggle with fluency and reduced speed (Aro, 2017; Landerl & Wimmer, 2008; Liao, Deng, Hamilton, Lee, Wei & Georgiou 2015; Torppa et al., 2015). Some studies show that many regular-orthography slow readers still seem able to achieve age-appropriate comprehension (Thomson et al., 2016; Thomson et al., 2012; Torppa et al., 2015), likely because they can read all words accurately. This seems evidenced in high-achieving regular-orthography nations having far fewer weak readers than Anglophone nations in PIRLS and PISA international comparison studies (Thomson et al., 2012; Thomson et al., 2016).



In contrast to regular-orthography children, studies show it is common for many Anglophone children to have word-reading and word-writing difficulties across the school years, including upper primary school and secondary school (Galletly et al., 2009; Leach, Scarborough, & Rescorla, 2003; Roberts, Torgesen, Boardman, & Scammacca, 2008), with approximately one quarter of Australian and American children in Grades 7 and 8 having significantly weak word-reading and word-writing skills.

## Intervention

Research reports cross-linguistic differences in the effectiveness of remedial and preventative intervention, with Anglophone nations struggling relative to regular-orthography nations. With children's skill levels likely reflecting effectiveness of the reading instruction and intervention, the major differences between German and English weak readers in Landerl et al.'s (1997) study suggest English instruction and intervention is far less effective. Similarly, differences in instructional effectiveness are indicated by the much higher proportions of children in Anglophone nations achieving at Low level in PISA and PIRLS studies (Galletly & Knight, 2011b; Knight & Galletly, 2017; Thomson et al., 2016; Thomson et al., 2012).

Major differences in effectiveness of word-reading intervention are also evident when long-term results of intervention programs are considered. Studies in regular-orthography nations show cohorts of children reaching high accuracy levels after approximately 18 months intervention (Cossu, 1999; Olofsson & Niedersoe, 1999). As an example, an Italian study of children with Down Syndrome and severe intellectual disability (mean IQ 44, IQ range 40 to 56) showed effective word-reading skills developed with relatively minimal extra support, with children correctly reading 93% of real words, and 88% of pseudowords, with skills retained effectively over time (Cossu, 1999). In contrast, studies of Anglophone weak readers with healthy intelligence show many making good gains which are maintained over time, but others making little to no progress, or over time losing gains made (Compton et al., 2014; O'Connor, 2000; Roberts et al., 2008; Torgesen, 2000).

While minimal research explores instructional differences, regular-orthography instruction and intervention seems brief, simple, and highly effective (e.g., Cossu, 1999; Olofsson & Niedersoe, 1999; Poskiparta, Neimi & Vauras, 1999; Schneider, Ennemoser, Roth & Kuspert, 1999). This contrasts strongly with Anglophone early intervention. For example, although there are effective gains for some Anglophone delayed readers (Shapiro & Solity, 2016; Stuart & Stainthorp, 2015), there is often a small but not insignificant proportion of children who are nonresponders, also termed 'treatment resisters', who do not improve significantly despite ongoing and intensive intervention (Torgesen, 2000). This is evident in many older children having weak word-reading (Leach, Scarborough, & Rescorla, 2003); and studies reporting the challenges of moving weak Anglophone readers to average level and keeping them there (Compton et al., 2014; Hindson et al.,

2005; O'Connor, 2000). Studies of the Anglophone 'summer slump' phenomena, whereby weak readers lose significant amounts of reading prowess across the summer vacation, also seem testament to the challenges faced in achieving highly effective Anglophone reading instruction (Knight et al., 2017).

## **Cognitive Load**

It is likely that it is the high as opposed to low cognitive load of learning to read and write words that is the pivotal factor differentiating Anglophone and regular-orthography early literacy development.

Studies showing the need for working memory in learning to read and write permit insights into this area. Healthy working memory is consistently established as being strongly associated with English word-reading and literacy progress, with low short-term and working memory associated with reading difficulties (Gathercole & Pickering, 2000; Holmes, Gathercole, & Dunning, 2010). In contrast, studies report working memory is not strongly associated with regular-orthography reading development, with low working memory not preventing effective word-reading development (Cossu, 1999; Jimenez, Siegel, & Lopez, 2003).

As discussed elsewhere (Knight & Galletly, 2017; Knight et al., 2017), it is theorised that the young age (4-5 years) when Anglophone children start school and word-reading instruction, may well reduce their rate of word-reading development due to working memory being smaller at younger ages. Young-age disadvantage would likely compound difficulties caused by English orthographic complexity. In addition, it would likely cause younger regular-orthography readers to have slower reading development than older regular-orthography beginners. This is evident in comparing the younger Welsh regular-orthography Year 1 and 2 readers of Spencer & Hanley's (2003, 2004) English-Welsh study, with the older European regular-orthography Year 1 readers in Seymour, Aro & Erskine's (2003) fourteen nation comparison.

Using revised Learned Helplessness theory (Maier & Seligman, 2017), built from studies showing Learned Helplessness is a default option moved into relatively automatically when early failure and helplessness are experienced, the impact of resilience inoculation from early success also seems an important factor impacting cross-linguistic differences in early word-reading development. Anglophone beginning readers engaging with a complex word-reading curriculum with many confusing GPCs and high cognitive load, at an age when working memory is quite low, would seem more at risk of Learned Helplessness, and its accompanying negative effects (Knight et al., 2017)

## **Phonemic Awareness, Vocabulary and Lexical Efficiency**

Fluent effective word-reading and word-writing skills support children's subsequent language and literacy skill development. This occurs through heightened phonological and orthographic skills, reading and writing proficiency, independent reading, and ongoing vocabulary and language expansion, with this in turn increasing verbal, lexical, language, and literacy efficiency (Ziegler et al., 2010).

Rapid mastery of word-reading generates phonemic-awareness advantage from early primary school, with sophisticated phonemic and orthographic awareness present from when children master word-reading accuracy and self-teaching in Year 1 (Aro, 2004; Hanley, Masterson, Spencer, & Evans, 2004). Rapid early literacy development is also likely to create vocabulary and language advantage through empowering independent reading and writing. Additionally, regular-orthography texts can use unrestricted vocabulary and sentence structure, enriching language development, whereas Anglophone beginning-reader texts restrict vocabulary and sentence structure to scaffold word-reading. Regular-orthography children thus have sophisticated phonological, reading, and writing skills; and language enrichment from Year 1 (Ziegler et al., 2010). This seems likely to build strong learning advantage, with Anglophone students, particularly weak readers, experiencing corresponding disadvantage.

Whilst there is minimal cross-linguistic research on these areas, it seems likely that other aspects of cognitive processing, notably executive functioning, are also improved by or within rapid development to proficient word-reading and word-writing. In the same way that multilingual children have heightened executive functioning linked to their skill using and moving between two linguistic codes (Greenberg, Bellana, & Bialystok, 2013; Kuo & Anderson, 2010; Morales, Calvo, & Bialystok, 2013), being proficient in verbal and literacy codes (speaking and listening, reading and writing) and moving between them may impact development not just of phonological and orthographic awareness, but also of executive functioning.

## **Pre-school Intervention**

The gentleness of regular-orthography word-reading instruction is highlighted by the role of pre-existing weakness at school entry in phonological, language and pre-literacy skills (Caravolas, Lervåg, Defior, Seidlová Málková, & Hulme, 2013; Christopher, Hulslander, Byrne, Samuelsson, Keenan, Pennington & Olson, 2015; Hulme, Nash, Gooch, Lervåg, & Snowling, 2015; Snowling & Melby-Lervåg, 2016; Torppa et al., 2013), and Literate Cultural Capital, the bank of language and literacy experience which children build at home and bring to school (Prochnow, Tunmer, & Chapman, 2013). Whereas phonological and language weakness and low parent literacy predict major difficulties mastering accurate word-reading and word-writing in Anglophone nations, they do not impede the development of word-reading and word-writing accuracy in regular-

orthography students. In like manner, whilst RAN and family history do predict lasting weakness in all nations (evident in regular-orthography nations as fluency difficulties), in regular-orthography nations this is usually only slower reading, whereas in Anglophone it is often severe word-reading, writing and literacy weakness, and increased likelihood of low progress made from intervention (Compton et al., 2014; O'Connor, 2000).

Thus, whilst predictors are universal, in practical terms, it seems they create urgency only for Anglophone nations, with effective early intervention prior to word-reading instruction important for at-risk learners. This appears a major aspect of Anglophone orthographic disadvantage, made even more challenging through children being so much younger when they start reading instruction.

### **Triple Risk Disadvantage**

A triple risk disadvantage appears likely for many Anglophone pre-school children with language and Literate Cultural Capital weakness (Hulme et al., 2015; Prochnow et al., 2013; Stuart & Stainthorp, 2015) with children experiencing disadvantage overlaid on other disadvantages. Firstly, generational disadvantage is experienced when parents with low literacy skills themselves are unable to support their children's literacy progress by building their Literate Cultural Capital (Compton, 2014). Secondly, these weak skills make it likely the children will have poor phonological awareness, and word-reading and word-writing difficulties. Thirdly, their weak word-reading and word-writing skills are likely to then prevent access to confident independent reading and writing, and the vocabulary, language and verbal efficiency growth available to effective readers.

### **Initial Orthographies and Cognitive Load**

Crux factors creating the relative ease with which regular-orthography children learn to read and write appear to be keeping curriculum cognitive load sufficiently low to enable children's cognitive processing and working memory to not be overwhelmed, with high consistency of GPCs creating strong statistical learning and low cognitive load. These seem key factors currently differentiating early literacy development in regular-orthography and Anglophone nations.

Several Asian nations (Japan, China and Taiwan) require children to master Kanji (termed Hanzi in China and Taiwan), complex, largely logographic orthographies that seem at least as difficult, if not more difficult to master than English, given there are far more GPCs to be learned. However, PIRLS and PISA comparisons show these nations as much higher achievers than Anglophone nations, and to have fewer weak readers (Galletly & Knight, 2011b; Thomson et al., 2016; Thomson et al., 2012).

These nations begin word-reading and word-writing instruction using transitional fully-regular orthographies (Japanese Hiragana, Chinese Pinyin, and Taiwanese Zhuyin

Fuhao), used firstly as children's initial orthography, then as a parallel orthography enabling self-teaching of Kanji. This seems effective in achieving strong statistical learning, keeping cognitive load (and curriculum content load) manageable, and maximising children's word-reading, word-writing, self-teaching, and phonemic, orthographic and cognitive processing efficiency. Their orthographic advantage may well build from the children's strong statistical learning, lack of confusion, and confident success, along with the phonemic, orthographic, vocabulary, language, reading, writing and lexical efficiency advantages experienced from early primary school (Galletly & Knight, 2011b; Huang & Hanley, 1997).

Insights on this area are also available from reflecting on Initial Teaching Alphabet (ITA) research (Knight et al., 2017). While explored purely as a temporary initial orthography, in many ways, ITA use was similar to current Asian use of fully-regular orthographies. Like the Asian initial orthographies, the fully-regular English ITA orthography was used to remove confusion (and thus provide strong statistical learning), and to build strong early literacy skills that would enable later successful learning and mastery of a highly complex orthography, in this case, standard English orthography. ITA research finished abruptly at the time when Whole Language philosophy became dominant in Anglophone nations, with many planned research projects not completed. However the available research findings consistently report that the fully-regular ITA orthography kept cognitive load and early learning manageable, and expedited confident early literacy development (Downing, 1969; 1972; Knight et al., 2017; Mazurkiewicz, 1973).

## Improving Outcomes

Since 2000, PISA and PIRLS international reading studies have provided nations with data allowing them to compare nations' elementary and secondary school educational achievement. Consideration of PISA data suggests the likelihood that regular-orthography nations can improve education and outcomes more easily than Anglophone nations (Galletly & Knight, 2011b; Thomson et al., 2016; Thomson et al., 2012). Many Anglophone nations show polarised achievement with many students doing very well (sufficiently well to keep mean achievement high), but also having much higher proportions of low achievers than high-achieving non-Anglophone nations. Successive PISA and PIRLS rounds show Anglophone nations generally not improving despite more teaching hours (Galletly & Knight, 2011b; Knight & Galletly, 2017; OECD, 2015; Thomson et al., 2016; Thomson et al., 2012).

It is in optimising the early years of Anglophone instruction that the current cross-linguistic reading achievement gap will most likely be narrowed (Compton et al., 2014, Stuart & Stainthorp, 2015). Recent PIRLS data is encouraging towards this end. The United States has had a strong national focus on optimising word-reading and reading instruction since 2000 (United States Government, 2004), as has the United Kingdom (Rose, 2006; UK DfES, 2006). In contrast, far more weak readers were evident for Australia and New

Zealand, which have not had this strong word-reading focus (DEST, 2005; Tunmer, Chapman, Greaney, Prochnow, & Arrow, 2013).

### **Educational Emphases**

Children's early and later literacy are highly dependent on the quality of the instruction provided. The importance of early literacy instruction seems evidenced in nations which have regular orthographies still having widespread poor literacy levels (Galletly & Knight, 2013; Thomson et al., 2016; Thomson et al., 2012). For example, Portuguese children's reading was much lower than other regular-orthography readers in the Seymour et al., (2003) study of Year 1 reading.

The importance of later literacy instruction currently seems evident in Sweden's achievement on international reading tests. Sweden has rapid development of early word-reading and word-writing (Seymour et al., 2003), but unlike many other regular-orthography nations, Sweden's advantage seems to diminish over time. For example, Sweden achieves reasonably high results in Year 4 PIRLS reading (Thomson et al., 2012), but much lower achievement for students at age 15 years in PISA reading (Thomson et al., 2016).

### **ORTHOGRAPHIC ADVANTAGE THEORY**

It can be seen from the research discussed above that there is sufficient and considerable research establishing there are major differences in literacy development between Anglophone and regular-orthography nations. Anglophone nations are experiencing negative outcomes due to English orthography's outlier complexity. Orthographic Advantage Theory builds from this research and current theories on cross-linguistic differences.

#### **The Tenets**

Orthographic Advantage Theory holds that nations' choices of orthographies can strongly impact children's ease of learning to read and write words, and create proliferating effects on education and achievement. Regular-orthography nations have orthographic advantage, while Anglophone nations have orthographic disadvantage, as do other nations using single complex orthographies, e.g., Thailand.

Orthographic advantage in regular-orthography nations begins with rapid easy word-reading and word-writing development, and has positive impact in at least six areas (see Figure 1):

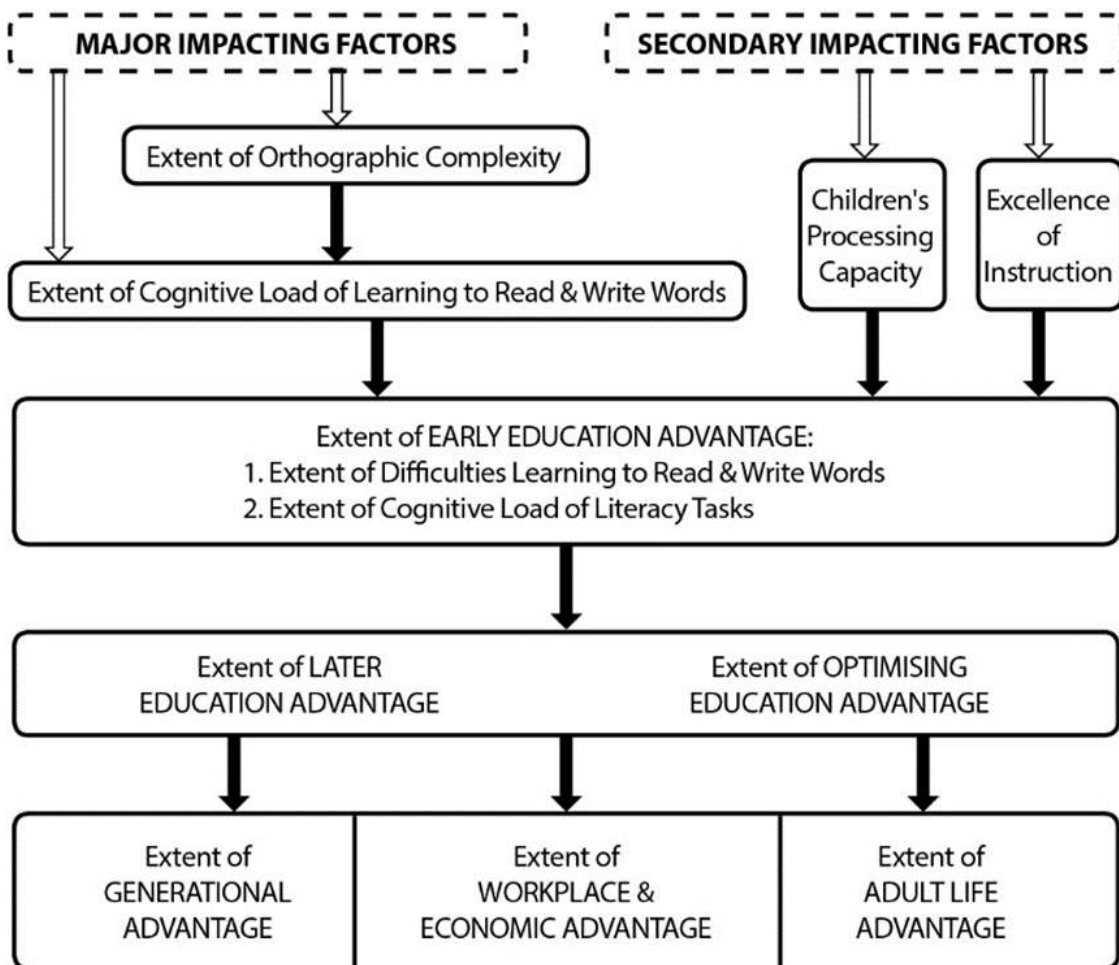


Figure 1. Orthographic Advantage Theory (from Knight et al., 2017)

1. Early education advantage, because of the low cognitive load that regular orthographies create for learning to read and write, with children quite quickly becoming proficiently accurate at word-reading, word-writing, and self-teaching.
2. Later education advantage, due to students having strong confident literacy skills, and likelihood of fewer struggling readers, with associated behaviour and social-emotional difficulties.
3. Optimising education advantage, as it seems easier to improve education and outcomes when schools do not face the challenges of overcoming relatively widespread literacy learning difficulties.

4. Generational advantage, as literate parents are able to effectively support their children's language and literacy development prior to and during their school years.
5. Adult life advantage, as adults with proficient literacy skills have heightened opportunities to access education, career, income and social-emotional benefits associated with effective literacy.
6. Workplace and economic advantage, through nations having higher workplace literacy levels.

Each of these six facets of advantage is likely present along a continuum ranging from strong disadvantage to strong advantage. Towards thinking more deeply on the dimensions of each of the six facets of orthographic advantage and disadvantage, the Appendix to this article contains tables detailing differences between Anglophone and regular-orthography nations with regards to these areas.

It is theorised that Anglophone nations experience orthographic disadvantage in the above areas. This is due to, firstly, the high cognitive load that Anglophone children experience in learning to read a complex orthography. This results in slower literacy development for virtually all children, with ongoing literacy weakness experienced by many. Slower literacy development creates complexities for teaching, learning and school resourcing needs. In addition, it is hypothesised that Anglophone early education disadvantage is compounded by children starting reading instruction at much younger ages than many other nations, and thus having reduced working memory.

It is also posited that differential disadvantage occurs for students with increased risk factors. These include family history of reading and learning difficulties; weakness in language skills, phonological awareness, Rapid Automatisated Naming (RAN), Literate Cultural Capital, behaviour or attention; or having parents with low school achievement and poor literacy skills (Galletly & Knight, 2011a).

### **Language and Literacy Optimisation**

It is proposed that language and literacy optimisation occurs through the interacting skills of language and literacy, including cognitive processing (and particularly executive functioning); word-reading, word-writing and phonological awareness; reading comprehension, written expression, and independent reading and writing; speaking, listening, and language reasoning; and vocabulary and the syntactic and semantic forms used in verbal and written modes. Elsewhere, we have proposed an expanded-form Literacy Component Model (see Figure 2), highlighting the many factors impacting language and literacy development.



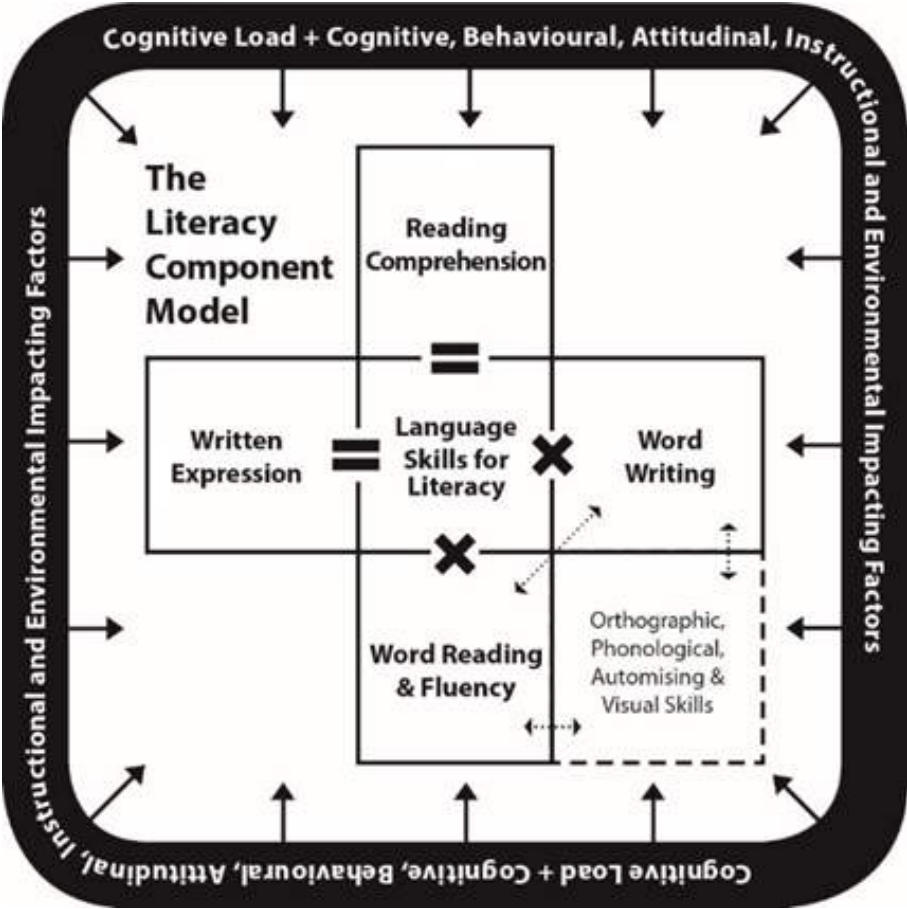


Figure 2. Literacy Component Model (Knight et al., submitted).

Cross-linguistic differences in word-reading and word-writing development are built from the level of ease of school teaching and learning. These can be considered more specifically using a model of Transition from Early to Sophisticated Literacy (TESL, Galletly & Knight, 2011b), which supports reflection on the teaching, learning, and learning environment differences of Anglophone and regular-orthography classrooms (see Figure 3).

In the TESL model, literacy is a broad construct with two components, namely Core Literacy (reading and writing words as single words and in connected text (i.e. learning to read and write by mastering the alphabetic principle) and Continuing Literacy (meaning-based literacy skills, including reading, reflecting on text content at varying levels, and transferring meaning using multiliteracies). The TESL model supports consideration of major educational differences between Anglophone and regular-orthography nations. As discussed elsewhere (Galletly & Knight, 2011b), nations and education systems can be classified as three types: Rapid-TESL, Facilitated-TESL and

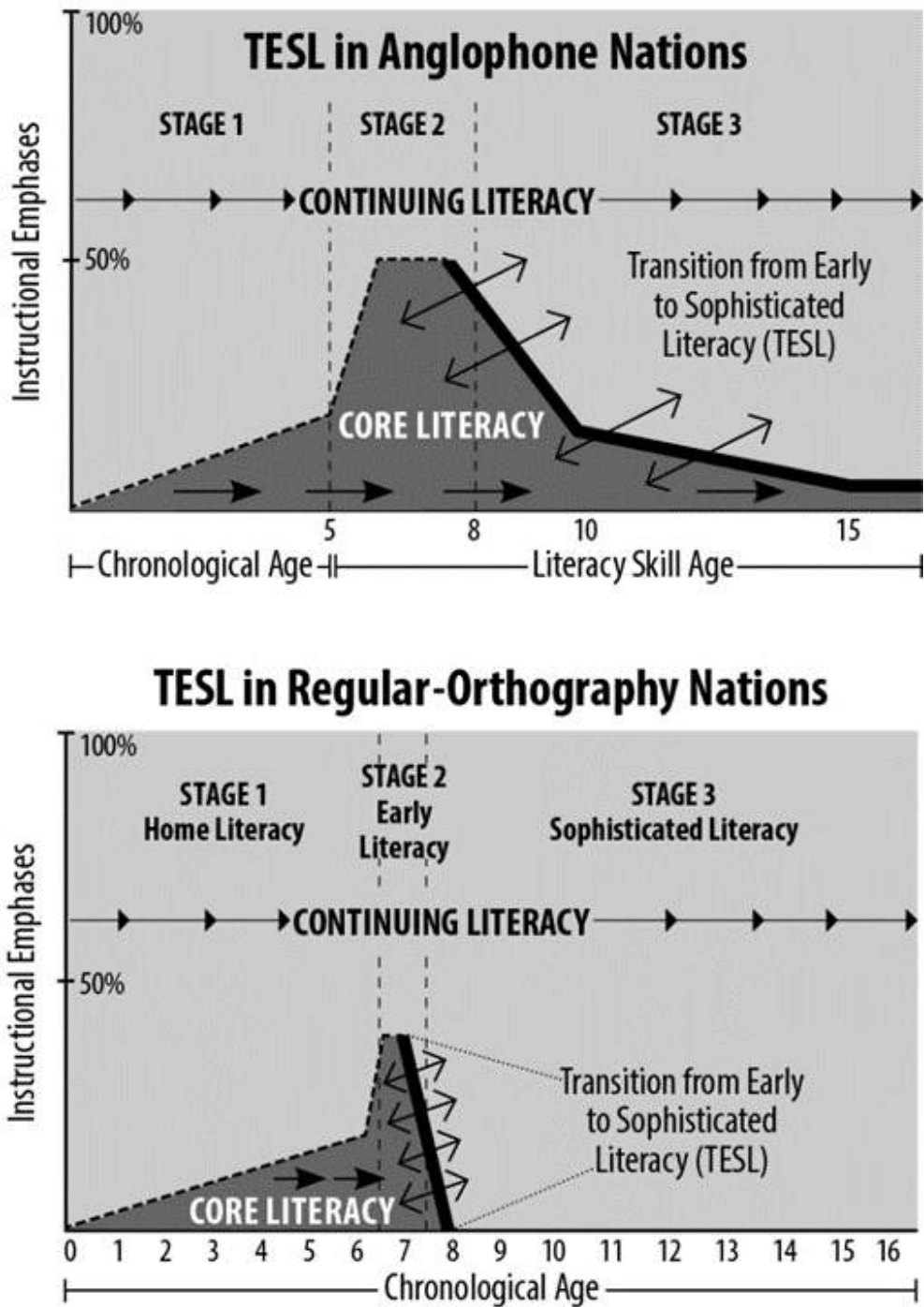


Figure 3. The Transition from Early to Sophisticated Literacy (TESL) model, showing Anglophone nations using Standard English (top) and nations using regular-orthographies (bottom).

Complex-TESL. Rapid-TESL nations (e.g., Finland, Estonia, South Korea) use highest-regularity orthographies and have the most orthographic advantage available to them. Facilitated-TESL nations (e.g., Japan, China, Taiwan) use parallel regular and complex orthographies, with the regular orthography taught first to facilitate self-teaching and literacy development, with resultant high orthographic advantage. Anglophone nations and Thailand are Complex-TESL nations. South Korea is a useful case study of a nation moving from Complex- to Rapid-TESL status, when it replaced its traditional highly-complex orthography with highly-regular Hangeul in 1946, with rapid expansion of literacy, education and the economy from that time. (While South Korea also has a logography, Hancha, it is increasingly less used, e.g., not used in newspapers and education, such that, in education, Hankel can be considered a sole orthography. South Korea can therefore be considered a Rapid-TESL, rather than Facilitated-TESL nation.)

Regular orthographies enable the optimising of education through rapid TESL, with virtually all children quickly becoming proficiently accurate at word-reading, word-writing and self-teaching, who are thus able to benefit from focused Sophisticated-Literacy and academic learning, with word-reading and word-writing creating minimal cognitive load. Thus, whereas regular orthographies and effective instruction bring early education advantage (see Figures 1 and 3), subsequent advantages of orthographic transparency build from language and literacy progress across the school years (Galletly & Knight, 2011b; Knight & Galletly, 2017; Thomson, De Bortoli, & Underwood, 2016; Thomson et al., 2012). There is value in research exploring the dimensions and implications of Orthographic Advantage Theory towards the optimising of literacy and its development in Anglophone nations.

## WIDESPREAD FORMS OF ADVANTAGE

In education and child development, few factors operate in isolation, and therefore orthographic complexity is unlikely to work in isolation in creating orthographic advantage and disadvantage. Within Orthographic Advantage Theory, it is considered likely that other factors impacting early literacy development will mimic, moderate, and interact with the effects of orthographic complexity. Factors discussed above, including the effectiveness of early literacy instruction, age when commencing school, and socio-emotional functioning encompassing extent of early success and resilience for complex learning (Maier & Seligman, 2016), will doubtless interact with the effects of orthographic complexity. Factors such as spoken-language characteristics, orthographic features beyond GPCs, multilingualism, and family work ethic supporting school and beyond-school learning would also seem likely to have significant impacts.

The research on multilingualism, for example, reports that young children who are multilingual (either proficiently from early childhood or through commencing learning a second language from the start of school) have heightened phonological sensitivity,

executive function skills, and metalinguistic awareness, which produce similar effects to those of mastering reading of a highly regular orthography (Greenberg et al., 2013; Kuo & Anderson, 2010; Morales et al., 2013). With multilingual children having high phonemic awareness, executive functioning and skill using, reflecting on and moving between different codes, multilingualism seems likely to be a factor which mimics and interacts with orthographic impacts. This is supported by the PIRLS and PISA results from Hong Kong which does not use a regular orthography prior to children learning to read and write Kanji, with multilingual competence appearing to act similarly to the orthographic advantage of other nations, in offsetting orthographic disadvantage linked to complex Kanji orthography.

Word factors beyond GPC ratios will also be interacting factors (Aro, 2017; Borleffs, Maassen, Lyytinen & Zwarts, 2017). As an example, Aro (2017) discusses the major morphological complexity of many Finnish words (e.g., *mustaviinimarjamehupullo*: a bottle of black current juice). with many words having over 2000 different forms (including up to fifteen core forms). This complex merging of many semantic categories at word level suggests that whilst Finnish children with language weakness would be able to read words accurately, they may experience higher cognitive load for reading comprehension and written expression, due to difficulties processing language aspects of words.

Using a broad form of Orthographic Advantage Theory, we emphasise that whilst these additional impacting factors moderate the effects of orthography, there is nonetheless sufficient research establishing major cross-linguistic difficulties due to differences in orthographic complexity.

## Cross-linguistic Theories

Orthographic Advantage Theory is built from the research reporting strong literacy development differences between Anglophone and regular-orthography nations, and influential theories on reading and literacy development cross-linguistic differences. Relevant theories it aligns with include cross-linguistic theories namely connectionist, Simple View (Gough & Tunmer, 1986) and Literacy Component Models.

Cross-linguistic theories about word-reading and literacy development have strongly influenced research on differences between learning to read Standard English and regular orthographies. Two key theories, which Orthographic Advantage Theory aligns with, are the Orthographic Depth Hypothesis (Frost, 2012) and the Psycholinguistic Grainsize Theory (Ziegler & Goswami, 2005).

The Psycholinguistic Grainsize Theory (Ziegler & Goswami, 2005) emphasises nations' orthographies differing by the psycholinguistic grainsizes which are used. These in turn impact reading development through differing word-reading strategies being used for each grainsize. Regular orthographies use a single grainsize, usually phonemes with

close to one-to-one GPCs, and virtually all words thus being regular words. In contrast, English uses three grainsizes, namely phoneme grainsize (in fully regular words and syllables); orthographic unit grainsize (in words using common English spelling patterns); and whole word grainsize (for highly irregular words). Using Psycholinguistic Grainsize Theory, reading development is impacted through differing word-reading strategies being needed for each grainsize, and early readers meeting many confusing GPCs.

The Orthographic Depth Hypothesis proposes cross-linguistic differences in word-reading relate to readers' use of lexical processing (whole-word reading) and sub-lexical processing (phonological recoding, 'sounding out' words) during reading. It is a highly influential theory which has been widely explored (Carrillo, Alegria, & Marin, 2013; Frost, 2012; Schmalz, Beyersmann, Cavalli, & Marinus, 2016). Complex, incomplete and inconsistent orthographies such as Standard English make decoding more difficult and slower to develop; and increase the likelihood of whole-word reading because phonological recoding is often ineffective; whilst highly-regular orthographies make decoding easier and increase likelihood of early reading using sub-lexical processing (phonological recoding).

In proposing language and literacy optimisation as part of orthographic advantage (Knight et al., submitted), Orthographic Advantage Theory aligns with multiple theories showing strong interrelationships of reading, writing, cognitive processing and language skills and development. Considerable research and models establish these strong interrelationships, including Seidenberg and colleagues' connectionist models (Harm & Seidenberg, 2004); Perfetti and colleagues' Verbal Efficiency, Lexical Quality and Reading Systems Framework models (Perfetti, 2007; Perfetti & Stafura, 2014); multilingualism advantage and structural sensitivity theory (Kuo & Anderson, 2010; Morales, Calvo, & Bialystok, 2013); theories of differential disadvantage of Anglophone weak readers with language and cognitive processing weakness language (Galletly & Knight, 2011a); and the expanded-form Literacy Component Model (see Figure 2; Knight & Galletly, Submitted). Elsewhere, we discuss this latter model that highlights many important factors impacting literacy development and interactions between them (Knight et al., Submitted). These interactions seem likely to be involved in the more efficient development of cognitive processing, language and literacy skills of regular-orthography readers and multilingual children.

## CONCLUSION

Whereas a half-century ago nations could operate relatively independently of each other, the world now operates globally on an international stage. Cross-linguistic and other research presents a plethora of knowledge and dimensions for thinking on cross-linguistic differences, and how best to optimise reading development in different nations, for all children, and particularly at-risk learners. This knowledge is useful for all stakeholders involved in improving reading instruction, including teachers and schools,

education leaders, policymakers and reading researchers. Orthographic Advantage Theory is a useful tool for reflecting on these areas.

As shown in Figures 1 and 3, orthographic advantage starts with the ease and rapidity of word-reading, word-writing, and self-teaching development in regular-orthography nations, for all children, including children with disabilities. Their relatively rapid word-reading and word-writing has potential to generate advantages at individual citizen and national levels. This advantage is likely to include greater ease of school instruction in primary and secondary school, and improving of education and its outcomes. It is also likely to include less workplace illiteracy, adult life advantage, and generational advantage as literate parents are able to support their children's literacy development. Orthographic advantage and disadvantage are experienced by beginning readers, teachers, schools, education systems, and nations as a whole.

At the current time, Anglophone nations and other nations using a sole complex orthography, experience strong disadvantage in these areas, and improving literacy development and outcomes is a high priority. Orthographic advantage is experienced by regular-orthography nations, both those use a sole, highly-regular orthography (rapid-TESL nations), and those using an initial fully-regular orthography prior to use of their complex orthography (Facilitated-TESL nations).

Potential for optimising effectiveness of Anglophone word-reading and literacy instruction is clearly the answer towards mitigating current effects of English orthographic complexity and orthographic disadvantage (Knight et al., 2017; Landerl, 2000), and it seems likely that it is achieving success in the earliest years of Anglophone schooling that is crux if success in later school years is to be achieved. However, the benchmark set by high-achieving regular-orthography and multilingual nations is high, and current research shows continuing difficulties optimising Anglophone word-reading instruction and development, with many children having continuing word-reading reading weakness (Compton et al., 2014; Hindson et al., 2005; Knight et al., 2017; O'Connor, 2000; Torgesen, 2000).

Using Orthographic Advantage Theory and cross-linguistic and other research findings, Anglophone at-risk learners seem significantly disadvantaged in important areas which may be key to improving Anglophone instruction. These areas likely include the high cognitive load of current English word-reading and word-writing development; the high confusability of English GPCs that English orthographic complexity creates; likely weaker statistical learning because of GPC confusion; and the likely reduced readiness, resilience and working memory Anglophone children have for this learning, due to being much younger (4 to 5 years old) when learning to read and write.

Certainly there seems value in nations carefully considering the type and number of GPCs which are to be introduced for beginning readers, the order and timing of their

introduction, and the need for children to experience ongoing strong success, including being highly successful when reading early books and texts.

Towards each nation optimising reading and literacy development for its children and nation there is huge value in thinking at an international level, and reflecting on cross-linguistic differences and aspects of orthographic advantage and disadvantage.

Orthographic Advantage Theory is offered as a tool for researchers and educators, for multiple purposes. Orthographic Advantage Theory encourages reflection on the extent to which orthographic complexity impacts reading and literacy development, instruction, outcomes and difficulties. It also has potential to facilitate thinking in paradigmatically new ways towards optimising nations' reading and literacy development for all children, and especially at-risk and struggling readers. Further, it has potential to inspire needed useful research on currently underexplored aspects of potential cross-linguistic differences.

## REFERENCES

- Aro, M. (2004). *Learning to read: The effect of orthography*. Jyväskylä, Finland: University of Jyväskylä.
- Aro, M. (2017). Learning to read Finnish. In L. T. W. Verhoeven & C. A. Perfetti (Eds.), *Learning to read across languages and writing systems* (pp. 416-436). Cambridge: UK: Cambridge University Press.
- Borleffs, E., Maassen, B., Lyytinen, H., & Zwarts, F. (2017). Measuring orthographic transparency and morphological-syllabic complexity in alphabetic orthographies: A narrative review. *Reading & Writing, 30* (8), 1617-1638.
- Caravolas, M., Lervåg, A., Defior, S., Seidlová Málková, G., & Hulme, C. (2013). Different patterns, but equivalent predictors, of growth in reading in consistent and inconsistent orthographies. *Psychological Science, 24*(8), 1398-1407.
- Carrillo, M. S., Alegria, J., & Marin, J. (2013). On the acquisition of some basic word spelling mechanisms in a deep (French) and a shallow (Spanish) system. *Reading and Writing: An Interdisciplinary Journal, 26*(6), 799-819.
- Christopher, M. E., Hulslander, J., Byrne, B., Samuelsson, S., Keenan, J. M., Pennington, B., . . . Olson, R. K. (2015). Genetic and environmental etiologies of the longitudinal relations between prereading skills and reading. *Child Development, 86*(2), 342-361.
- Compton, D. L., Miller, A. C., Elleman, A. M., & Steacy, L. M. (2014). Have we forsaken reading theory in the name of "Quick Fix" interventions for children with reading disability? *Scientific Studies of Reading, 18*(1), 55-73.
- Cossu, G. (1999). The acquisition of Italian orthography. In M. Harris, & G. Hatano, (Eds.), *Learning to reading and write: A cross-linguistic perspective* (pp. 10-34). Cambridge: Cambridge University Press.
- Department of Education, Science & Training (DEST; 2005). *Teaching reading: Report and recommendations: National inquiry into the teaching of literacy*. Retrieved from <http://>

research.acer.edu.au/tll\_misc/5/.

- Downing, J. (1969). Initial teaching alphabet: Results after six years. *The Elementary School Journal*, 242-249.
- Downing, J. (1972). The orthography factor in literacy acquisition in different languages. *Literacy Discussion*, 3(3-4), 409-427.
- Frost, R. (2012). Towards a universal model of reading. *Behavioral and Brain Sciences*, 35(5), 263-279.
- Gabay, Y., Thiessen, E. D., & Holt, L. L. (2015). Impaired statistical learning in developmental dyslexia. *Journal of Speech, Language, and Hearing Research*, 58(3), 934-945.
- Galletly, S. A., & Knight, B. A. (2004). The high cost of orthographic disadvantage. *Australian Journal of Learning Disabilities*, 9(4), 4-11.
- Galletly, S. A., Knight, B. A., Dekkers, J., & Galletly, T. A. (2009). Indicators of late emerging reading-accuracy difficulties in Australian schools. *The Australian Journal of Teacher Education*, 34(5), 54-64.
- Galletly, S. A., & Knight, B. A. (2011a). A theory of differential disadvantage of Anglophone weak readers with language and cognitive processing weakness. *Australasian Journal of Special Education*, 35(1), 72-96.
- Galletly, S. A., & Knight, B. A. (2011b). Transition from Early to Sophisticated Literacy as a factor in cross-national achievement differences. *Australian Educational Researcher*, 38, 329-354.
- Galletly, S. A., & Knight, B. A. (2013). Because trucks aren't bicycles: Orthographic complexity as a disregarded variable in reading research. *Australian Educational Researcher*, 40(2), 173-194.
- Gathercole, S. E., & Pickering, S. J. (2000). Working memory deficits in children with low achievements in the national curriculum at 7 years of age. *The British Journal of Educational Psychology*, 70(2), 177-194.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading and reading disability. *Remedial and Special Education*, 7(1), 6-10.
- Greenberg, A., Bellana, B., & Bialystok, E. (2013). Perspective-taking ability in bilingual children: extending advantages in executive control to spatial reasoning. *Cognitive Development*, 28(1), 41-50.
- Hanley, J. R., Masterson, J., Spencer, L. H., & Evans, D. (2004). How long do the advantages of learning to read a transparent orthography last? An investigation of the reading skills and incidence of dyslexia in Welsh children at 10-years of age. *The Quarterly Journal of Experimental Psychology*, 57(8), 1393-1410.
- Harm, M. W., & Seidenberg, M. S. (2004). Computing the meanings of words in reading: Cooperative division of labor between visual and phonological processes. *Psychological Review*.
- Hindson, B., Byrne, B., Fielding-Barnsley, R., Newman, C., Hine, D. W., & Shankweiler, D. (2005). Assessment and early instruction of preschool children at risk for Reading Disability. *Journal of Educational Psychology*. Vol., 97(4), 687-704.
- Holmes, J., Gathercole, S. E., & Dunning, D. L. (2010) Poor working memory. Impact and interventions. *Advances in Child Development & Behavior*, 39, 1-43).
- Huang, H., & Hanley, J. R. (1997). A longitudinal study of phonological awareness, visual skills, and Chinese reading acquisition among first-graders in Taiwan. *International Journal of Behavioural Development*, 20(2), 249-268.
- Hulme, C., Nash, H. M., Gooch, D., Lervåg, A., & Snowling, M. J. (2015). The foundations of literacy development in children at familial risk of dyslexia. *Psychological Science*, 26(12), 1877-1886.



- Jimenez, J. E., Siegel, L. S., & Lopez, M. R. (2003). The relationship between IQ and reading disabilities in English-speaking Canadian and Spanish children. *Journal of Learning Disabilities, 36*(1), 15-23.
- Joshi, R. M. & McCardle, P. (2017). Models of Reading in Different Orthographies: An Introduction. *Journal of Learning Disabilities, Jul 1*, doi: 10.1177/0022219417718196. [Epub ahead of print]
- Knight, B. A., & Galletly, S. A. (2017). Effective literacy instruction for all students: A time for change. *International Journal of Innovation, Creativity & Change, 3*(1), 65-89
- Knight, B. A., Galletly, S. A., & Gargett, P. S. (2017). Managing cognitive load as the key to literacy development: Research directions suggested by crosslinguistic research and research on Initial Teaching Alphabet. In R. Nata (Ed.), *Progress in Education*, pp. 61-150). New York: Nova Science Publishers.
- Knight, B. A., & Galletly, S. A. (Submitted). The Literacy Component Model: A pragmatic universal model for researchers and educators.
- Kuo, L., & Anderson, R. C. (2010). Beyond cross-language transfer: Reconceptualizing the impact of early bilingualism on phonological awareness. *Scientific Studies of Reading, 14*(4), 365-385.
- Landerl, K. (2000). Influences of orthographic consistency and reading instruction on the development of nonword reading skills. *European Journal of Psychology of Education, 15*, 239-257.
- Landerl, K., Ramus, F., Moll, K., Lyytinen, H., Leppänen, P. H. T., Lohvansuu, K., . . . Schulte-Körne, G. (2013). Predictors of developmental dyslexia in European orthographies with varying complexity. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 54*(6), 686-694.
- Landerl, K., & Wimmer, H. (2008). Development of word reading fluency and spelling in a consistent orthography: An 8-year follow-up. *Journal of Educational Psychology, 1*, 150-161.
- Landerl, K., Wimmer, H. C. A., & Frith, U. (1997). The impact of orthographic consistency on dyslexia: A German-English comparison. *Cognition, 63*, 315-334.
- Leach, J. M., Scarborough, H. S., & Rescorla, L. (2003). Late-emerging reading disabilities. *Journal of Educational Psychology, 95*(2), 211-224.
- Liao, C.-H., Deng, C., Hamilton, J., Lee, C. S.-C., Wei, W., & Georgiou, G. K. (2015). The role of rapid naming in reading development and dyslexia in Chinese. *Journal of Experimental Child Psychology, 130*, 106-122.
- Maier, S. F., & Seligman, M. E. P. (2016). Learned helplessness at fifty: Insights from neuroscience. *Psychological Review, 123*(4), 349-367.
- Mazurkiewicz, A. J. (1973). I.T.A. Revisited. Paper presented at the Annual Meeting of the College Reading Assn. (17th, Silver Springs, Md., November 1-3, 1973).
- Morales, J., Calvo, A., & Bialystok, E. (2013). Working memory development in monolingual and bilingual children. *Journal of Experimental Child Psychology, 114*(2), 187-202.
- O'Connor, R. E. (2000). Increasing the Intensity of Intervention in Kindergarten and First Grade. *Learning Disabilities Research & Practice, 15*(1), 43-54.
- OECD. (2015). *Education at a Glance 2015*: OECD Indicators. Retrieved from <http://dx.doi.org/10.1787/eag-2015-en>.
- Olofsson, A., & Niedersoe, J. (1999). Early language development and kindergarten phonological awareness as predictors of reading problems: From 3 to 11 years of age. *Journal of Learning Disabilities, 32*(5), 464-472.
- Perfetti, C. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading,*

- 11(4), 357-383.
- Perfetti, C., & Stafura, J. (2014). Word knowledge in a theory of reading comprehension. *Scientific Studies of Reading*, 18(1), 22-37.
- Pollo, T. C., Treiman, R., & Kessler, B. (2007). Three perspectives on spelling development. In E. Grigorenko & A. Naples (Eds.), *Single-word reading: Behavioural and biological perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Poskiparta, E., Neimi, P., & Vauras, M. (1999). Who benefits from training in linguistic awareness in the first grade, and what components show training effects? *Journal of Learning Disabilities*, 32(5), 437 - 447.
- Prochnow, J. E., Tunmer, W. E., & Chapman, J. W. (2013). A longitudinal investigation of the influence of literacy-related skills, reading self-perceptions, and inattentive behaviours on the development of literacy learning difficulties. *International Journal of Disability, Development and Education*, 60(3), 185-207.
- Roberts, G., Torgesen, J. K., Boardman, A., & Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice*, 23(2), 63-69.
- Rose, J. (2006). *Independent review of the teaching of early reading: Final report*. Retrieved from <http://dera.ioe.ac.uk/5551/2/report.pdf>.
- Schneider, W., Ennemoser, M., Roth, E., & Kuspert, P. (1999). Kindergarten prevention of dyslexia: Does training in phonological awareness work for everybody? *Journal of Learning Disabilities*, 32(5), 429-442.
- Schmalz, X., Beyersmann, E., Cavalli, E., & Marinus, E. (2016). Unpredictability and complexity of print-to-speech correspondences increase reliance on lexical processes: More evidence for the orthographic depth hypothesis. *Journal of Cognitive Psychology*, 28(6), 658-672.
- Seymour, P. H. K., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, 94, 143-174.
- Seymour, P. H. K., & Duncan, L. G. (2001). Learning to read in English. *Psychologia*, 8(3), 281-299.
- Shapiro, L. R., & Solity, J. (2016). Differing effects of two synthetic phonics programmes on early reading development. *British Journal of Educational Psychology*, 86(2), 182-203.
- Share, D. L. (2008). On the Anglocentricities of current reading research and practice: The perils of overreliance on an 'outlier' orthography. *Psychological Bulletin*, 134(4), 584-615.
- Snowling, M. J., & Melby-Lervåg, M. (2016). Oral language deficits in familial dyslexia: A meta-analysis and review. *Psychological Bulletin*, 142(5), 498-545.
- Snowling, M., Stothard, S. E., Clarke, P., Bowyer-Crane, C. A., Harrington, A., Truelove, E., & et al., (2009). *York Assessment of Reading for Comprehension: GL Assessment*.
- Spencer, L. H., & Hanley, J. R. (2003). Effects of orthographic transparency on reading and phoneme awareness in children learning to read in Wales. *British Journal of Psychology*, 94 (1), 1-29.
- Spencer, L. H., & Hanley, J. R. (2004). Learning a transparent orthography at 5 years-old: Reading development of children during their first year of formal reading instruction in Wales. *Journal of Research in Reading*, 27(1), 1-14.
- Stuart, M., & Stainthorp, R. (2015). *Reading development and teaching*. London: SAGE Publications.
- Thomson, S., De Bortoli, L., & Underwood, C. (2016). *PISA 2015: A first look at Australia's results*. Retrieved from Australian Council for Educational Research (ACER): [research.acer.edu.au](http://research.acer.edu.au)
- Thomson, S., Hillman, K., Wernert, N., Schmid, M., Buckley, S., & Munene, A. (2012). *Highlights from TIMSS & PIRLS 2011 from Australia's perspective*. Retrieved from <https://www.acer.edu.au/>

- files/TIMSS-PIRLS\_Australian-Highlights.pdf
- Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (2012). *Test of Word Reading Efficiency 2 (TOWRE-2)*. Austin, Texas: Pro-Ed, Inc.
- Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice, 15*(1), p55 - 65.
- Torppa, M., Eklund, K., van Bergen, E., & Lyytinen, H. (2015). Late-emerging and resolving dyslexia: A follow-up study from age 3 to 14. *Journal of Abnormal Child Psychology, 43*(7), 1389-1401.
- Torppa, M., Parrila, R., Niemi, P., Lerkkanen, M. K., Poikkeus, A. M., & Nurmi, J. E. (2013). The double deficit hypothesis in the transparent Finnish orthography: A longitudinal study from Kindergarten to Grade 2. *Reading and Writing, 26*(8), 1353-1380.
- Tunmer, W. E., Chapman, J. W., Greaney, K. T., Prochnow, J. E., & Arrow, A. W. (2013). Why the New Zealand National Literacy Strategy has failed and what can be done about it: Evidence from the Progress in International Reading Literacy Study (PIRLS) 2011 and Reading Recovery monitoring reports. *Australian Journal of Learning Difficulties, 18*(2), 139-180.
- UK DfES. (2006). *The Primary Framework for literacy and mathematics: Core position papers underpinning the renewal of guidance for teaching literacy and mathematics*. UK Government: London.
- United States Government. (2004). The facts about Reading First. Retrieved from <http://www.ed.gov/nclb/methods/reading/readingfirst.pdf>.
- Ziegler, J. C., Perry, C., & Zorzi, M. (2014). Modelling reading development through phonological decoding and self-teaching: Implications for dyslexia. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 369*(1634), 20120397.
- Ziegler, J. C., Bertrand, D., Tóth, D., Csépe, V., Reis, A., Faísca, L., . . . Blomert, L. (2010). Orthographic depth and its impact on universal predictors of reading: A cross-language investigation. *Psychological Science, 21*(4), 551-559.
- Ziegler, J. C., & Goswami, U. C. (2005). Reading acquisition, developmental dyslexia and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin, 131* (1), 3-29.

**APPENDIX: EXPANDED VIEW OF ORTHOGRAPHIC ADVANTAGE THEORY’S SIX FACETS OF ADVANTAGE AND DISADVANTAGE**

Orthographic Advantage Theory proposes six aspects of advantage and disadvantage: Early Education Advantage, Later Education Advantage, Optimising Education Advantage, Generational Advantage, Workplace and Economic Advantage, and Adult Life Advantage.

Towards thinking more deeply on the dimensions of each of the six facets of orthographic advantage and disadvantage, this Appendix to the article has five tables detailing the differences between Anglophone and regular-orthography nations with regards to

- 1. Bases, rationale and categories for orthographic advantage and disadvantage.
- 2. The role of orthography in word reading and writing development and advantage.
- 3. Early education advantage and disadvantage from the impacts of low and high cognitive load.
- 4. Later education advantage and disadvantage.
- 5. Generational, workplace and adult life advantage and disadvantage.

BASES, RATIONALE & CATEGORIES FOR ORTHOGRAPHIC ADVANTAGE AND DISADVANTAGE	
REGULAR-ORTHOGRAPHY NATIONS experience orthographic advantage	ANGLOPHONE NATIONS experience orthographic disadvantage
<b>Basis for orthographic advantage:</b> Word reading & literacy development is easy & rapid because regular orthographies create very low cognitive load, making it easy for beginning readers learning to read & write words.	<b>Basis for orthographic disadvantage:</b> Word reading & literacy development is arduous & slow for all readers, and especially hard for at risk readers because English spelling creates high cognitive load, making it hard to learn to read & write.
<b>Reasons for choosing orthographic regularity:</b> Most nations use regular orthographies because they inexpensively expedite reading & literacy development, and provide the benefits of nationwide high literacy levels. Nations seem to vary in the extent to which they utilise their orthographic advantage.	<b>Reasons for orthographic complexity:</b> English orthography is vastly more complex than most orthographies. There seems to have been little thought of English spelling being a poor choice, making reading & literacy development complex and expensive (with the result being many children and adults having low literacy and the disadvantages associated with low literacy skills.

<b>BASES, RATIONALE &amp; CATEGORIES FOR ORTHOGRAPHIC ADVANTAGE AND DISADVANTAGE</b>	
<b>REGULAR-ORTHOGRAPHY NATIONS</b> experience orthographic advantage	<b>ANGLOPHONE NATIONS</b> experience orthographic disadvantage
<b>Categories of advantage:</b> Orthographic advantage is experienced by beginning readers, teachers, schools, education systems, & the nation as a whole:	<b>Categories of disadvantage:</b> Orthographic disadvantage is experienced by beginning & struggling readers, teachers, schools, education systems, & the nation as a whole:
<b>Early education advantage:</b> virtually all children are accurate readers and writers from very early in primary school, able to read and write all words.	<b>Early education disadvantage:</b> difficulties of providing effective resourcing and instruction for children progressing at different rates, and the major difficulties in achieving effective early intervention and remediation.
<b>Later education advantage:</b> proficient reading & writing enables easier, more efficient primary and high school education. It is likely much easier to teach & learn in those classes due to no children having reading difficulties, and the likelihood of fewer behaviour and social-emotional difficulties.	<b>Later education disadvantage:</b> highly diverse instructional needs due to many children having weak literacy; high needs for resourcing to support struggling readers; likely increased social emotional & behaviour difficulties due to frustration; reduced time available for sophisticated literacy instruction, and additional time needed for Core Literacy instruction.
<b>Optimising education advantage:</b> the ease of optimising literacy and academic teaching, learning and outcomes when virtually all children are effectively literate.	<b>Optimising education disadvantage:</b> difficulties optimising literacy & academic teaching, learning and outcomes due to classes having diverse word-reading and writing levels, with many children struggling with literacy and associated social-emotional issues.
<b>Generational advantage:</b> virtually all adults are literate and able to effectively support children prior to and during their school years.	<b>Generational disadvantage:</b> struggling readers become parents with difficulty building their children's pre-literacy and language skills, with children thus more likely to struggle with reading and literacy.
<b>Workplace and economic advantage:</b> high workplace literacy levels offer potential national economic advantage.	<b>Workplace and economic disadvantage:</b> many adult workers having low literacy levels and workplace illiteracy issues creates significant disadvantage and expense.
<b>Adult life advantage:</b> the education, career, income and social-emotional benefits adults have through high literacy.	<b>Adult life disadvantage:</b> adults with weak literacy may experience low career and income options, and lower social-emotional wellbeing.

# HOW WE HELP

## ENGLISH LANGUAGE & LITERACY

The **ENGLISH LANGUAGE & LITERACY** division integrates key essential learning components that are crucial in remediating students with learning difficulties.

- Phonemic Awareness and Phonics
- Reading Fluency
- Reading Comprehension
- Vocabulary
- Writing

## ELL PROGRAMMES:

### Main Literacy Programme

- iReaCH**
- iStudySmart**

## OTHER PROGRAMMES:

- Speech and Drama Arts
- Speech and Language Therapy
- Specialist Tutoring
- English Exam Skills
- Post-secondary
- Preschool
- Chinese
- Maths



## Educational Technology

is used in our classes as a complementary teaching tool to enhance students' academic success and independence too!

## FINANCIAL ASSISTANCE



DAS believes that no child should be left behind because he or she cannot afford the cost of DAS education. DAS Families can take advantage of the financial schemes available for SpLD Assessments, our Education Programmes and many more!



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

☎ 6444 5700  
🌐 [www.das.org.sg](http://www.das.org.sg)  
✉ [info@das.org.sg](mailto:info@das.org.sg)



**LIKE US ON FACEBOOK!**  
[facebook.com/dysSG](https://facebook.com/dysSG)



# Preventing teacher burnout and promoting job satisfaction and retention: work values in teachers of learners with dyslexia in relation to organisational initiatives.

Geetha Shantha Ram <sup>1\*</sup> and Ashraf Samsudin<sup>1</sup>

1. Dyslexia Association of Singapore

---

## ABSTRACT

Research suggests that Special Educational Needs (SEN) teachers are more significantly impacted by teacher burnout than other teachers, which inherently affects teacher retention and the quality of the service eventually rendered in SEN schools and organisations. This article presents the findings of an exploratory study that sought to understand the alignment between the work values of the teachers of a special educational needs organisation supporting learners with dyslexia, the organisational policies and incentives implemented and their impact on job satisfaction and teacher burnout. The basis of the study is the notion that the particular combination of work values and the work environment guided by organisational values, impacts the wellbeing and continued employment of SEN teachers and an alignment between teachers' work values and organisational Values encourages positive mental health through job satisfaction and therefore, a reduction in teacher burnout. To examine this, 111 Educational Therapists' work values are surveyed through the use of the ONET Work Importance Profiler and the findings are discussed in relation to the organisational incentives and policies to investigate the consonance of these sets of Values. The interpretation of the results is then presented together with recommendations to organisations aiming to improve retention, job satisfaction and prevent teacher burnout through an improved alignment of Values

**Keywords:** Values, Work Values, Teacher burnout, Theory of Work Adjustment, Job satisfaction, SEN teachers, SEN organisations

---

\*Correspondence to:

Geetha Shantha Ram, Director, SpLD Assessment Services, English Language and Literacy Division, Staff Professional Development and Head of the DAS Research Committee. Dyslexia Association of Singapore, Email: [geetha@das.edu.sg](mailto:geetha@das.edu.sg)

## DEFINING VALUES

The concept of Values as a seemingly simple, everyday concept masks a complexity when attempting to unravel them. For instance, in defining Values, an exploration across various domains is warranted. According to Philosophy Today (Thagard, 2018), Values are an abstraction revealing an ideal end state. While some values are perceived to be universal, others are reliant on human motivations. However, cognitive science proposes that Values are a convergence of the cognitive and the emotional, such as beliefs tied to emotional views. In summary, Values are defined as important and lasting beliefs that guide and influence what a person does or does not do. Values have a major influence on a person's behaviour and attitudes and serve as broad principles in all situations. They provide individuals with a yardstick to measure if an action is right or wrong, good or bad and desirable or undesirable.

While Values differ from individual to individual, Values may also differ from one generational group to another, and this is largely shaped by the political, social and cultural norms of the period. For instance, it is reported by Cennamo and Gardner that those born between 1946 and 1960 grew up in an optimistic, post-war world and therefore, they value "status and extrinsic rewards as recognition for loyalty and commitment," (2008, p.892). In the same report, and in contrast, it is noted that Generation X grew up amidst rapid technological advancement and they value personal growth over organisational loyalty. Although defining the boundaries between generations has always been problematic, for the purposes of this study, we defined the generations by adopting Lyons classification: Baby Boomers (born 1946-1961), Generation X (born 1962-1979) and Generation Y (born 1980 - 1999). Furthermore, we included Generation Z, also commonly known as millennials (born after 2000).

More specifically and in the context of career and work, Values can be broadly classified into two types: general and work-related values. General work values are applied to circumstances and individuals one interacts with daily and in varying capacities. Largely societal, but yet, closely dependant on one's family environment, life experiences and social, moral and religious beliefs. work values are related to but different from personality and interests. They are most similar to personal values and they have a greater impact on influencing the career decisions of adolescents and adults (Porfeli, 2008). The Theory of Work Adjustment, a major career development theory, describes work values as aspects of a job that promote job satisfaction. Donald Super (1980, p130) defined work values as "an objective, either a psychological state, a relationship or material condition, that one seeks to attain."

Naturally, work values have a wide ranging influence at work. Research has shown that aside from predicting job satisfaction (Round, 1990), promoting job satisfaction and acting as positive reinforcers (Hansen and Leuty, 2011), work values would also be able to predict vocational interests (Berings, De Fruyt, & Bouwen, 2004), choice of careers



and work performance (Swenson & Hershe, 1994). As values may differ across generations, research has shown that more recent generations such as Generations X and Y have different work values than the Silent and Baby Boomer generations (Hansen and Leuty, 2011). Consequently, it can be assumed that in understanding the work values of their teachers and responding appropriately with appropriate incentives and policies, organisations may improve job satisfaction, and in turn prevent teacher burnout. This paper explores this assumption through a study of an organisation's incentives and policies in relation to the work values of their teachers, and by providing recommendations to prevent further teacher burnout.

## THE ORGANISATION

The Dyslexia Association of Singapore (DAS) is a non-profit organisation that is part funded by the Ministry of Education and the National Council of Social Service. It has 14 learning centres across Singapore from which it supports over 4000 students through its programmes and the 155 Educational Therapists it hires.



Figure 1: Professional Development for DAS Educational Therapists

DAS is a firm believer in Continuing Professional Development and invests heavily to ensure that its staff are all properly skilled. In 2014, the Manpower Research & Statistics Department released the "Employer Supported Training 2014" report (Ministry of Manpower Singapore, 2018). The report stated that 8 of 10 employers now provide structured training. The national average training expenditure was \$726 per trainee (or \$410 per employee). However, at DAS, the training expenditure was 7 times that amount at to \$3,726 per trainee (and \$3,487 per employee). The professional development support comes in a variety of forms. Aside from the structured initial training that all staff will receive, staff will also get opportunities to be go on attachments, to be involved in action research and receive scholarships to further their education.

## TEACHER BURNOUT

The quality of the educational programmes delivered and their impact on the lives of many students with dyslexia is directly dependent on the performance of therapists in the classroom. In turn, the actions of the therapists are largely influenced by how satisfied the Educational Therapists are in the work that they do. Consequently, it becomes important for any organisation to study and look deeper into their work values and through this effort, better understand what motivates them to stay with the work that they do and the organisation that they work for thus, improving job satisfaction and preventing teacher burnout.

Special Educational Needs (SEN) teachers like DAS Educational Therapists are at a higher risk of burnout when compared with other professionals. Sahlberg (2010) notes that teaching is a profession which is typically driven by values, ethical motives or intrinsic motivation. Periods of stress may arise when teachers feel that they do not belong, that is, they feel a sense of dissonance with the values that the organisation or school upholds or stands for. It is therefore important that organisations evaluate and implement policies and incentives with an awareness of these values, in order to successfully satisfy and retain effective teachers.

Notably, DAS was able to maintain a consistent 12-14% attrition rate over the past years amongst the Educational Therapist. In 2017, this percentage went as low as 11.6%. This naturally points to the conclusion that the organisation had better measures than most organisations and responded effectively to the work values of the majority of therapists. Arguably, amongst other reasons one can suggest that this means the DAS achieved an organisational and individual match in values. Notwithstanding the drop in attrition, 11% of therapists did leave the organisation and the most common reasons cited were working hours and teacher burnout. The question then remains, can the organisation better understand if there is a continued mismatch in values and should the organisation respond to the reasons for this continued burnout experienced by a percentage of their Educational Therapists?

## THEORY OF WORK ADJUSTMENT

The Theory of Work Adjustment questionnaire has been widely used in a range of studies over the years, for example initially in 1992 with a study of job satisfaction in bank employment (Hesketh et al., 1992). A Second edition has been adapted and validated and this is the version used in our research. Of greater interest than the wider studies, from our point of view, are the studies with teachers across a range of backgrounds. These include studies on the reasons for beginning teachers pursuing success, (Johnson and Birkeland, 2003). This also includes studies on teachers in different cultural environments across the world for example the impact of organisational support in Thailand (Na-Nan et al.) and Iran (Mir safian, 2016), and studies of teachers' satisfaction in secondary schools (Louis, 1998).

To our knowledge, however, none of these studies have addressed the impact of teaching on teachers working with children with either special-needs or dyslexia. Inevitably the demands on these teachers are greater and the responsibility higher, especially in situations such as DAS in Singapore where teaching must be undertaken after school hours and at weekends.

Mentoring has proved to be particularly useful for beginner teachers in order to ensure that they develop feelings of competence and autonomy (Hobson et al., 2009, Hebert and Worthy, 2001), with evidence in support from a large scale meta-analysis of the literature (Ingersoll and Strong, 2011). The framework developed later by Scott and Kowalski in 2011 is also particularly salient here, focusing on socialisation, work adjustment, mutual adaptation and thriving at work as an ongoing process. A number of these elements have proved key in staff retention and provide motivation for the research reported here.

## AIM

Therefore, the purpose of this study is threefold. One, to better understand the work values of the Educational Therapists, two, to understand the match or mismatch of the current organisational incentives to the work values revealed and three, to review recommendations on improving the alignment between the organisational values and Educational Therapists work values to improve job satisfaction and prevent burnout. As such, the study was formed around these two research questions:

1. What do Educational Therapists value?
2. Does the DAS have the appropriate incentives to retain Educational Therapists?

METHODS

Participants

A total of 111 participants, working as Educational Therapists from DAS participated in the study. They range from staff who had just joined the organisation to those who have been around for more than 10 years (Table 2). The different generational age groups are also represented in Table 1. The teachers performance in their most recent annual quality assurance audit, an educational performance review, was also noted (Table 3). Trainee teachers who have yet to go through a performance review have been noted as NA. The participants are largely female (Table 4), representative of the actual gender demographics for teachers within the organisation.

Table 1: Age Group

AGE	SS
Baby Boomers (1946 to 1961)	10
Generation X (1962 to 1979)	20
Generation Y (1980–1999)	80
Generation Z (2000 +)	1

Table 2: Years of Experience

EXPERIENCE	SS
0 to 4	66
5 to 9	34
>10	11

Table 3: Educational Performance Review

QA SCORES	SS
Needs improvement	0
Below Ave	0
Met	20
Exceeding	62
Far Exceeding	16
NA	13

Table 4: Gender of Therapists

GENDER	SS
Female	98
Male	13

DESIGN

Participants in the study were asked to take the ONET Work Importance Profiler (WIP), a self-assessment career exploration tool that allows them to pinpoint what is important to them in a job. The WIP helps people identify occupations that they may find satisfying based on the similarity between their work values and the characteristics of the occupations. These tests were administered online and data collected simultaneously. The various work values and their corresponding definitions are provided in Table 5. Each work value may also have sub values that further elaborates what is important.

Furthermore, an analysis of the current organisational incentives implemented to support, encourage and motivate Educational Therapists was conducted. This enabled a review of the present alignment between work values and organisational incentives. The results are shown in the next section.

Table 5: Definitions of work values (Onetcenter.org, 2018)

S/N	WORK VALUE	DEFINITION	SUB VALUE
1	<b>ACHIEVEMENT</b>	Involves the need to use one's individual abilities and the need to obtain a feeling of accomplishment.	<ul style="list-style-type: none"> <li>♦ <b>Ability utilisation</b>—Need to use one's individual abilities.</li> <li>♦ <b>Achievement</b>—Need to obtain a feeling of accomplishment</li> </ul>
2	<b>INDEPENDENCE</b>	The Independence work value refers to the need to perform tasks on one's own and the need to use creativity in the workplace. It also involves the need to obtain a job where one can make his/her own decisions.	<ul style="list-style-type: none"> <li>♦ <b>Creativity</b>—Need to try out one's own ideas.</li> <li>♦ <b>Responsibility</b>—Refers to the need to make one's own decisions.</li> <li>♦ <b>Autonomy</b>—Need to work with little supervision</li> </ul>
3	<b>RECOGNITION</b>	The Recognition work value involves the need to have the opportunity for advancement, the need to obtain some prestige, and the need to have the potential for leadership	<ul style="list-style-type: none"> <li>♦ <b>Advancement</b>—Need to have opportunities for advancement.</li> <li>♦ <b>Authority</b>—Need to give directions and instructions to others.</li> <li>♦ <b>Recognition</b>—Need to receive recognition for the work one does.</li> <li>♦ <b>Social status</b>—Need to be looked up to by others in the company and community.</li> </ul>
4	<b>RELATIONSHIP</b>	The Relationships work value encompasses the need for friendly co-workers, the need to be of service to others, and the need to not be forced to go against one's sense of right and wrong.	<ul style="list-style-type: none"> <li>♦ <b>Co-workers</b>—Need to have co-workers who are easy to get along with.</li> <li>♦ <b>Ethics</b>—Need to do things that agree with one's sense of right and wrong.</li> <li>♦ <b>Social service</b>—Need to do things for other people.</li> </ul>
5	<b>SUPPORT</b>	The Support work value involves the need for a supportive company, the need to be comfortable with management's style of supervision, and the need for competent, considerate, and fair management	<ul style="list-style-type: none"> <li>♦ <b>Company policies</b> and practices</li> <li>♦ Need to be treated fairly by the company.</li> <li>♦ <b>Supervision - human relations</b>—Need for supervisors who back up their workers with management.</li> <li>♦ <b>Supervision - technical</b>—Need for supervisors who train their workers well</li> </ul>
6	<b>WORKING CONDITIONS</b>	The Working Conditions work value refers to the need to have one's pay compare well to that of others and the needs for job security and good working conditions. This work value also includes the need to be busy all the time and the need to have many different types of tasks on the job	<ul style="list-style-type: none"> <li>♦ <b>Activity</b>—Need to constantly be busy.</li> <li>♦ <b>Compensation</b>—Need to be well-paid in comparison to other workers.</li> <li>♦ <b>Independence</b>—Need to work alone.</li> <li>♦ <b>Security</b>—Need to have steady employment.</li> <li>♦ <b>Variety</b>—Need to have something different to do every workday.</li> <li>♦ <b>Working conditions</b>—Need to have good physical working conditions.</li> </ul>

## RESULTS

Table 6 Overall Results

TYPE		NO.	TOP VALUE	%	2ND VALUE	%
WHOLE SAMPLE		111	Achievement	65.77	Support	18.92
GENDER	Females	98	Achievement	65.31	Support	20.41
	Males	13	Achievement	69.23	Relationship	15.38
AGE	Baby Boomers (1946–1961)	10	Achievement	70.00	I-S-R	30.00
	Generation X (1962–1979)	20	Achievement	75.00	Relationship	15.00
	Generation Y (1980–1999)	80	Achievement	62.50	Support	23.75
YEARS OF EXPERIENCE	0-4 yrs	66	Achievement	74.24	Support	16.67
	5-9 yrs	34	Achievement	52.94	Support	17.65
	>10 yrs	11	Achievement	54.55	Support	36.36
EFFECTIVE (QUALITY)	Exceeding	62	Achievement	69.35	Support	17.74
	Far Exceeding	16	Achievement	62.50	Support	31.25

Table 7: Alignment of Organisational Incentives to Work Values

VALUE	ORGANISATIONAL INCENTIVES
RECOGNITION	<ul style="list-style-type: none"> <li>◆ CEO Commendation Award</li> <li>◆ Quantitative Performance Appraisal</li> <li>◆ Performance Bonus</li> <li>◆ Appraisal System</li> </ul>
*ACHIEVEMENT	<ul style="list-style-type: none"> <li>◆ Clarity of Mission and Vision</li> </ul>
WORKING CONDITIONS	<ul style="list-style-type: none"> <li>◆ 13th month Bonus</li> <li>◆ Comprehensive Medical Benefits</li> <li>◆ Appraisal System</li> </ul>
RELATIONSHIPS	<ul style="list-style-type: none"> <li>◆ Staff Event</li> </ul>
*SUPPORT	<ul style="list-style-type: none"> <li>◆ Appraisal System</li> <li>◆ Professional Development Pathway</li> <li>◆ Comprehensive Initial Teacher Training</li> <li>◆ Mentoring</li> </ul>
INDEPENDENCE	<ul style="list-style-type: none"> <li>◆ Professional Development Pathway</li> </ul>

Finally, an analysis was undertaken to compare the importance of achievement and support as values, firstly, in relation to experience levels, and secondly in the context of the number of years of service at DAS.

QUALITY	ACHIEVEMENT	SUPPORT	GAP
MET REQUIREMENTS	70.00	10.00	60
EXCEEDING	69.35	17.74	51.61
FAR EXCEEDING	62.50	31.25	31.25

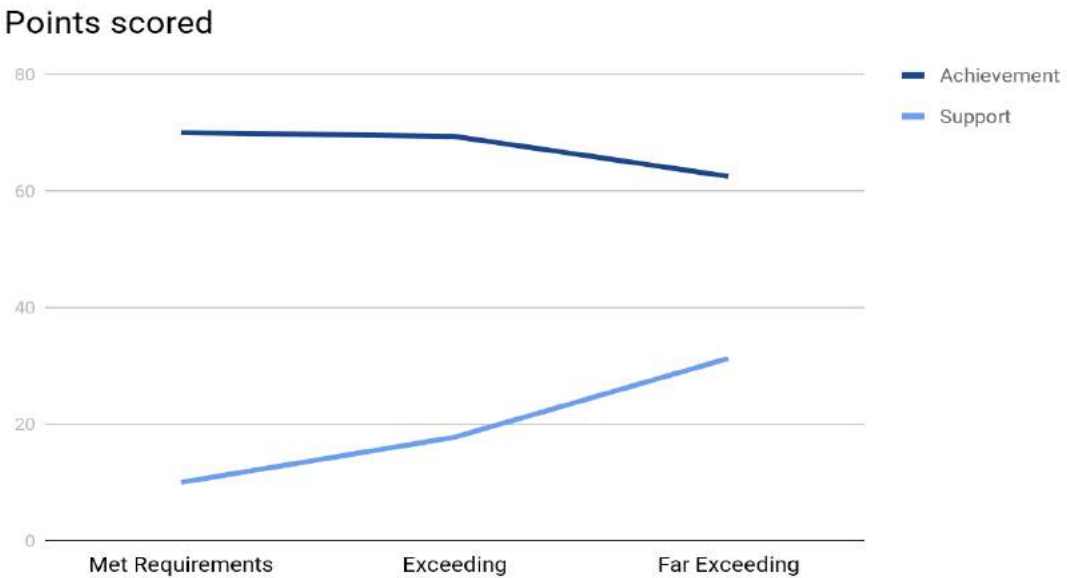


Figure 1: Comparison between Achievement and Support as Values over experience levels



YRS OF SERVICE	ACHIEVEMENT	SUPPORT	GAP
0-1	63.16	31.58	31.58
2-4	75.51	10.20	65.31
5-9	52.94	17.65	35.29
>10	54.55	36.36	18.19

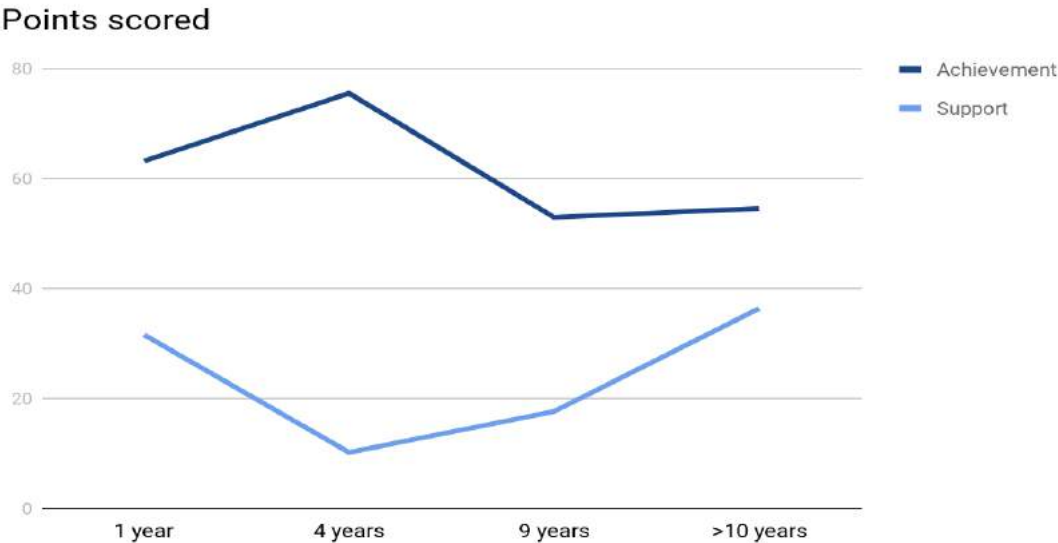


Figure 2: Importance of Support as a Value over years of service

DISCUSSION

A number of interesting issues emerged from the results of this study, and these will be discussed in detail before the implications for the organisation are considered further. The overall results from Table 6 reveal that Achievement - Support represent the top 2 work values amongst the Educational Therapists at DAS. It is interesting to note that this differs from the top 2 work values of the SEN teachers in the US who prioritise Relationships and Achievement instead (Pacareerzone.org, 2018). One can argue that the difference lies in the way educational therapists are recruited and DAS positively views individuals who have strong inclinations towards developing themselves further in the field of special education, which resonates with the organisation's support of such professional and personal development through work opportunities and further studies .

However, considering the success DAS has had with low attrition, it is evident that there is transparency and clarity among educational therapists on the vision and mission of the organisation. Besides the mission and vision, DAS encourages growth within the organisation, which is largely dependant on the personal motivations of educational therapists. Through the development of new initiatives and programmes for the learners and their supporting adults, educational therapists are empowered to explore their individual strengths and 'give back' to the population they are working with and in turn, feel their personal contribution and abilities effectively utilised to benefit their learners. Table 7 shows that while there is an alignment between the Support Value and organisational incentives, there seems to be limited alignment between the Achievement Value, which is the primary work value of DAS educational therapists and the organisational incentives. Table 7 also confirms that through significant organisational efforts to provide incentives that align with the work value of support, the more effective teachers are retained.

It is also observed that the more effective the teacher is, the more support appears to become an important value (see Figure 1). A number of further issues emerge from Figure 2, which addresses the importance of support as a value in relation to years of service. It is clear that the gap between Achievement and Support widens the longer the EdT stays with the organisation. However, this gap reduces when they stay on beyond 5 years. Moreover, Support as a value increases in importance the longer an EdT stays with the organisation. One can determine that the importance of the Support Value for educational therapists mirrors the significance and complexity of the task and effective teachers recognise this complexity. On further investigation, the increasing importance of the Support Value also reflects the changing job role of the educational therapists and increasing demands on their abilities to meet those needs as they receive more complex students and are expected to perform a range of duties such as supporting newer teachers and contributing to the enhancement of curricula.

In summary, these results highlight that the success DAS has achieved in retention can be related to the clarity in and consistency of its mission and vision, the opportunities for individual exploration of strength utilisation and the level of support for professional development within the organisation. However, as with all good research, the findings illustrate that more could be achieved with further modifications to the system. These recommendations are discussed below.

## RECOMMENDATIONS

Based on the success DAS encountered in improving job satisfaction and therefore retention, and given the comparison of the findings from both the Educational Therapist survey on work values and the analysis of the alignment of Organisational incentives to such values, it is apparent that organisations determined to retain educational therapists must consistently ensure consonance between the two.

Additionally, the need to offer diverse solutions is evident as staff will have differing Values at different stages in their career, especially since in addition to work environments, personal, social and cultural environments also significantly influence work values and consequently, job satisfaction. This is evident as we look at the positively changing importance of the Value of Support for Educational Therapists who stay longer in the organisation. Hence, the nature and options for support must evolve and be flexible to accommodate the changing needs of the educational therapist who continues within the organisation.

While solutions may be available, organisations must evaluate and implement policies and incentives with an awareness of these work values to retain educational therapists and promote job satisfaction. Consequently, periodically running work values surveys will keep an organisation prepared to adequately match the Values of the employees.

Further effort to create a sense of belonging through the use of a workplace counsellor will provide for more individualised solutions and a non-judgemental platform for expressions of concern. A deliberate policy that promotes consultative and collaborative organisational goals instead of one that is directive or centrally managed when initiatives are implemented maintains and further fosters that sense of belonging. School leadership keen on implementing changes should study successful organisations and their policies towards staff retention.

Finally, the above mentioned recommendations may improve retention of educational therapists and SEN teachers and should be carefully considered by all organisations aiming to promote positive mental health of their employees. However, as a cautionary word, in the midst of all the organisational solutions, one cannot undermine the importance of the individual in seeking solutions against stress and burnout. While conducting this study to seek an understanding of personal work values and their effect on stress and burnout, it was suggested that one could interpret this as an attempt to blame the 'victim' as the cause for the burnout and dissatisfaction. However, while organisations work at improving the work environment, individuals too must be aware of their own possible contributions to both the causes and solutions for a more satisfying work experience.

## REFERENCES

- Bachkirova, T. (2005). Teacher Stress and Personal Values. *School Psychology International*, 26(3), pp.340-352.
- Berings, D., De Fruyt, F., & Bouwen, R. (2004). Work values and personality traits as predictors of enterprising and social vocational interests. *Personality and Individual Differences*, 36(2), 349-364. doi:10.1016/s0191-8869(03)00101-6

- Bhardwaj, G., & Kumar, S. (2017). What Makes Teaching an Effective Teaching? – A Conceptual Study on Academic Environment. *International Journal of Information and Education Technology*, 7(3), pp.236-241.
- Bussema, E., & Nemec, P. (2006). Effective teaching. *Psychiatric Rehabilitation Journal*, 29(4), pp.315-317.
- Cennamo, L., & Gardner, D. (2008). Generational differences in work values, outcomes and person -organisation values fit. *Journal of Managerial Psychology*, 23(8), pp.891-906.
- Day, C. (2002). School reform and transitions in teacher professionalism and identity. *International Journal of Educational Research*, 37(8), pp.677-692.
- Day, C., Elliot, B., & Kington, A. (2005). Reform, standards and teacher identity: Challenges of sustaining commitment. *Teaching and Teacher Education*, 21(5), pp.563-577.
- Flores, M., & Day, C. (2006). Contexts which shape and reshape new teachers' identities: A multi-perspective study. *Teaching and Teacher Education*, 22(2), pp.219-232.
- Hebert, E., & Worthy, T. (2001). Does the first year of teaching have to be a bad one? A case study of success. *Teaching and Teacher Education*, 17, 897-911.
- Hesketh, B., McClachan, K., & Gardener, D. (1992). Work Adjustment Theory: An Empirical Test Using a Fuzzy Rating Scale. *Journal of Vocational Behavior* 40, 318-337.
- Hobson, A. J., Malderez, A., & Tomlinson, P. D. (2009). Mentoring Beginning Teachers: What We Know and What We Don't. *Teaching and Teacher Education*, 25, 207-216.
- Hansen, J., & Leuty, M. (2011). Work Values Across Generations. *Journal of Career Assessment*, 20 (1), pp.34-52.
- Korthagen, F. (2004). In search of the essence of a good teacher: towards a more holistic approach in teacher education. *Teaching and Teacher Education*, 20(1), pp.77-97.
- Lasky, S. (2005). A sociocultural approach to understanding teacher identity, agency and professional vulnerability in a context of secondary school reform. *Teaching and Teacher Education*, 21(8), pp.899-916.
- Mackenzie, S. (2011). I can't imagine doing anything else': why do teachers of children with SEN remain in the profession? Resilience, rewards and realism over time. *Journal of Research in Special Educational Needs*, 12(3), pp.151-161.
- Meng, L., Muñoz, M., King Hess, K., & Liu, S. (2016). Effective teaching factors and student reading strategies as predictors of student achievement in PISA 2009: the case of China and the United States. *Educational Review*, 69(1), pp.68-84.
- Ministry of Manpower Singapore. (2018). *Employer Supported Training 2014*. [online] Available at: <https://www.mom.gov.sg/newsroom/press-releases/2015/1005-employer-supported-training-2014> [Accessed 6 Dec. 2018].
- Onetcenter.org. (2018). [online] Available at: [https://www.onetcenter.org/dl\\_tools/WIP.pdf](https://www.onetcenter.org/dl_tools/WIP.pdf) [Accessed 6 Dec. 2018].
- Pacareerzone.org. (2018). *Special Education Teachers, Middle School*. [online] Available at: <https://www.pacareerzone.org/profile/25-2053.00> [Accessed 6 Dec. 2018].
- Porfeli, E. J., Hartung, P. J., & Vondracek, F. W. (2008). Children's Vocational Development: A Research Rationale. *The Career Development Quarterly*, 57(1), 25-37. doi:10.1002/j.2161-0045.2008.tb00163.x
- Rounds, J. B. (1990). The comparative and combined utility of work value and interest data in career counseling with adults. *Journal of Vocational Behavior*, 37(1), 32-45. doi:10.1016/0001-8791(90)90005-m
- Skaalvik, E., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, 99(3), pp.611-625.

- Skaalvik, E., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education, 27*(6), pp.1029-1038.
- Skaalvik, E., & Skaalvik, S. (2017). Dimensions of teacher burnout: relations with potential stressors at school. *Social Psychology of Education, 20*(4), pp.775-790.
- Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior, 16*(3), 282-298. doi:10.1016/0001-8791(80)90056-1
- Swenson, M. J., & Herche, J. (1994). Social Values and Salesperson Performance: An Empirical Examination. *Journal of the Academy of Marketing Science, 22*(3), 283-289. doi:10.1177/0092070394223009
- Thagard, P. (2018). What are Values?. [online] Psychology Today. Available at: <https://www.psychologytoday.com/us/blog/hot-thought/201304/what-are-values> [Accessed 6 Dec. 2018].
- Van den Hurk, H., Houtveen, A., & Van de Grift, W. (2016). Fostering effective teaching behavior through the use of data-feedback. *Teaching and Teacher Education, 60*, pp.444-451.

# We can provide one-to-one support for your child.

Specialist Tutoring is an individualised, one-to-one service that is tailored to meet the learning needs of students with specific learning differences.



**Numeracy & Literacy Skills**

**Writing Skills**



**Worldwide Support**



**Homework Support**



**Curriculum Support**

**Exam & Study Skills**

**School Readiness**

## SPECIALIST TUTORING

Speak to us today to learn more about how we can help your child succeed.

DAS International Specialist Tutors have extensive experience in supporting students with or without Specific Learning Differences. Our tutors are experienced in the International as well as the Ministry of Education (MOE) systems; they have an understanding of the curriculum and the demands that today's education systems place on your child.



**DAS International**  
EMPOWERING SUCCESSFUL LEARNING

☎ 6643 9600  
🌐 [www.dasint.org.sg](http://www.dasint.org.sg)  
✉ [enquiry@dasint.org.sg](mailto:enquiry@dasint.org.sg)



**LIKE US ON FACEBOOK!**  
[facebook.com/dasint](https://facebook.com/dasint)



# Children with learning difficulties and the move to Innovative Learning Environments

John Everatt<sup>1\*</sup> and Jo Fletcher<sup>1</sup>

1. University of Canterbury, New Zealand

---

## Abstract

*This paper discusses the perceptions of 283 New Zealand primary school principals and teachers about flexible learning spaces (Innovative Learning Environments), and the changes in pedagogical practices and classroom environments that these lead to, particularly in regard to outcomes in reading, writing and mathematics. Statements were general to all learners, but focused on struggling learners (students with learning difficulties), and targeted primary school educators given the importance of early learning for acquiring literacy and mathematics. An online questionnaire was distributed to both teachers and principals given their different influences on learning environments, management and teaching practices/interactions. Results indicated generally positive views of flexible learning spaces, though this varied with experience/professional development. Positive views were also less evident for questions related to low progress learners, suggesting that although New Zealand educators can see the benefits of flexible learning spaces, they seem more cautious about the value for those with learning problems.*

**Keywords:** Innovative Learning Environments; New Zealand primary school; reading, writing and mathematics; struggling learners / learning difficulties; questionnaire responses; experience/professional development.

---

\* Correspondence to:

Prof John Everatt, School of Teacher Education, College of Education, Health and Human Development, University of Canterbury, Christchurch 8140, New Zealand. email: [john.everatt@canterbury.ac.nz](mailto:john.everatt@canterbury.ac.nz)

## INTRODUCTION

The Centre for Educational Research and Innovation studies of Innovative Learning Environments (OECD, 2013) contends that there are four key elements for effective schooling: teachers, students, content and resources. The last of these incorporates physical resources, such as the type of school buildings, infrastructure and facilities provided for learning and teaching to take place. This movement to large teaching and learning spaces (OECD, 2015) with multi-teacher, multi-class teaching has the potential to impact on this key aspect of schooling and, therefore, may raise concerns about its effects on learning for all students, and particularly for those experiencing difficulties with learning. In New Zealand, new school buildings in State primary schools are being built as 'Innovative Learning Environments' in order to create multiclass flexible learning spaces (see discussion document of the Ministry of Education '*Shaping Education- Future Direction; Te Tāreinga Mātauranga*' at <http://shapingeducation.govt.nz/recovery-programme/background-2>). These teaching spaces accommodate between two to six teachers, with cohorts from approximately 40 to 160 students, and can be created to be flexibly reconfigured with breakout teaching areas for small and large groups (Shank, 2005). However, the policy has also meant the restructuring of existing school buildings to develop makeshift flexible learning spaces, which can lead to acoustics, lighting and space restrictions inhibiting flexible learning practices. Experiences of using these different types of spaces may, therefore, lead to very different perspectives on the usefulness of such spaces for teaching.

Additionally, from a pedagogical perspective, teachers working alongside colleagues in flexible learning spaces are able to have conversations and decisions in real time and receive support through collegial feedback and critique. Nevertheless, this can also attach a considerable layer of complexity to teaching processes, as teachers must spend time together to plan, evaluate, discuss information from across the large cohort of students, review logistics, and discuss and seek agreement on teaching strategies (Johnson, 2003). A major challenge, therefore, is the willingness and abilities of teachers to adapt to collaborative de-privatised environments where negotiation and compromise may be critical for developing a harmonious learning environment. In contrast, collaborative teaching methods may provide a way of increasing the support of children with different learning needs, given that different teachers within a cohort will have different practical and professional development experiences. However, a survey of New Zealand teachers and principals about the implications of Innovative Learning Environments in their school context found that there was a lack of clarity about the fundamental rationales for co-teaching in such environment. Some respondents indicated that they already implement innovative teaching pedagogies without being situated in Innovative Learning Environments. Similarly, a number of participants raised concerns around the high noise level in Innovative Learning Environments that would not be conducive to learning (Smardon, Charteris, & Nelson, 2015). Again experiences and



professional development in co-teaching, as well as the use of flexible learning spaces, may be an important influence of views about the use of these types of school areas.

Problems with open-plan classrooms related to noise and distraction have been an ongoing theme for such school spaces for many years. For example, research has suggested that the speech perception of young children was less efficient in open plan classrooms (Mealings, Demuth, Buchholz & Dillon, 2015; Shield, Greenland & Dockrell, 2010) unless appropriate measures are taken to reduce background noise – and better acoustics typically result from purpose-built environments or carefully restructured buildings. These difficulties may be perceived as a particular problem for literacy learning since an unclear utterance by a teacher may lead to poor learning of the connection between written letters and speech; and such connections have often been seen as a vital part of the development of reading strategies (see Gillon, 2004). Given that those with specific learning difficulties in reading (i.e., often referred to as dyslexia) have been found to show deficits in phonological awareness and processing (for example, see Gillon, 2004; Snowling, 2000), a noisy environment may be seen by educationalists as increasing difficulties for such children. Similarly, students who are struggling with learning may be more likely to show more off-task behaviours – to switch-off from the learning task (Everatt, Al-Sharhan, Al-Azmi, Al-Menaye & Elbeheri, 2011; Prochnow, Tunmer & Chapman, 2013). Increasing levels of potential distractions may also be perceived as particularly problematic for those tasked with the challenge to maintain attention of struggling learners. In New Zealand, children from low socioeconomic families have been found to be over-represented among those with lower levels of educational achievement (see Chamberlain, 2013), along with children from various cultural minority groups, such as those from Māori (the Indigenous people of New Zealand) or Pasifika (a term used to encompass students deriving from a range of Pacific Islands, such as Samoa, Tonga and Fiji) backgrounds, or those who may have immigrated to New Zealand with their families to escape problems in their home-country (see also McNaughton, Lai, MacDonald & Farry, 2004). Schools within areas of New Zealand comprising lower socioeconomic populations are distinguished by lower decile scores, and school staff from such lower decile areas, tasked with the responsibility to manage the learning of struggling learners, may have different views about the use of potentially more distractive school environments.

Therefore, children with learning difficulties may be perceived as a challenge for teachers in any context but particularly in more open-plan classrooms. However, the specific aspect of the challenge perceived by educators may depend on the underlying cause of the learning weakness: one caused by an underlying language weakness (e.g., dyslexia) may be considered differently from one due to lack of access to appropriate resources (i.e., due to a more deprived socio-economic background) – though the two are obviously going to interact. Therefore, perceptions of staff within the school context should provide a basis on which to determine the potential perceived impacts of changes to flexible learning spaces envisaged for the New Zealand education system.

More positive perspectives may lead to increased attempts to support, whereas negative attitudes may lead to a lack of perceived benefit for students with learning difficulties and hence little innovation, practice and improvement.

The focus of the current work is within primary schools, and learning difficulties associated with early school areas typically focus around problems with reading, writing and mathematics. Those related to reading difficulties are arguably the most widely studied, with dyslexia being the most likely to be quoted in the research literature. However, despite the research on dyslexia, educational policy related to learning difficulties such as dyslexia have only relatively recently been a focus in New Zealand (see Tunmer & Greaney, 2010). Dyslexia was formally recognised in government education literature in 2007: although a recent select committee report (Education and Science Committee, 2016) suggests a recognition of the growing importance within New Zealand of supporting children with learning difficulties. Indeed, concerns have been expressed in New Zealand about the persistent tail of students who under-achieve in reading (and writing) despite ongoing initiatives and programmes instigated by the New Zealand Ministry of Education to address the issue (see, for example, Chamberlain, 2013; Limbrick & Aikman, 2005; and see also Ministry of Education, 2010, 2011 and 2013). From 2001 to 2011, in the Progress in International Reading Literacy Study (PIRLS) of ten year-old students' achievement in reading, there has been no significant change in the mean scores of any of the four main ethnic groups (New Zealand European, Asian, Māori and Pasifika). Hence, school programmes that lead to additional problems for such learners may be perceived by staff as particularly problematic.

Similar difficulties have been associated with the learning of mathematics. Mathematics is integral to succeeding in everyday life. However, the Programme for International Student Achievement (PISA) results show that New Zealand achievement in mathematics has continued to decline from 2003 to 2012. As with the data on reading, children from low socioeconomic home backgrounds, and those belonging to minority cultures, are more highly represented as underachieving in mathematics, which is further exacerbated by having less equitable access to resources in schooling and in their homes (see, for example, Au 1998; Bishop 2003; Tuuta, Bradman, Hynds, Higgins, & Broughton, 2004). In a study of 23 high poverty schools in the US, Balfanz and Byrnes (2006) found links between under resourcing and achievement in mathematics. They suggested that sustained and effective teacher professional development combined with greater funding of resources were prerequisites in closing the achievement gap.

Consistent with the last point, one of the assumed benefits of a focus towards building and restructuring classrooms to be Innovative Learning Environments is the potential for increased flexibility in access to resources. Additionally, many of the support tools used for students with learning difficulties have been developed to be used via computer-based resources – and some students with learning difficulties seem to benefit (at least in terms of increased evidence of sustained motivation) from interactions with computer-

based tools (see, for example, discussions in: Beacham & Alty, 2006; Draffan, Evans & Blenkhorn, 2007; Elbeheri, Reid & Everatt, 2017; Smythe, 2010; Stetter & Hughes, 2010). Hence, perceptions of staff about such spaces may be more positive given such access to resources that can be used with students from more deprived contexts and with struggling learners. How this is perceived to support students with learning difficulties, though, is questionable since increased access to resources may positively impact only on those without an underlying learning difficulty. It may be argued that it is only if the increased access is used in a way to support those with specific needs that benefits to those with learning difficulties will be found.

The research reported in this paper, therefore, considers the views of educationalists within New Zealand schools who have varying levels of experience of using the innovative learning spaces that are the focus of the current work. Principals and teachers were asked to respond to a series of statements distributed via an internet-based survey system. Both were targeted by the research to give an indication of perceptions of the usefulness, or otherwise, of flexible learning spaces from those managing their use and development, and those tasked with using the spaces on a day-to-day basis.

## METHOD

A questionnaire was developed for the purpose of sampling the views of New Zealand primary school staff on flexible learning spaces, particularly in regard to their use with students who may be struggling with the acquisition of literacy and mathematics. The survey comprised questions on the background of the respondent (discussed in the following paragraphs to describe the cohort) and a series of statements about flexible learning spaces as they relate to teaching practice (e.g., *'Co-teaching in FLS allows teachers to plan and work together to better identify explicit needs in reading'*) and issues of professional development (e.g., *'In a traditional one-teacher per classroom setting, where a teacher works alone, there is a lack of opportunity for teachers to participate in genuine, ongoing professional learning about teaching reading and student learning in the context'*), as well as statements more focused on learners (e.g., *'Flexible learning classrooms are noisy, making it difficult for students to concentrate'*). (Table 1 shows the statements used, together with frequencies of responses; Table 2 shows how they were divided across the different issues targeted). Background questions included those asking about experience of using flexible learning spaces, and the type of classrooms in the school in which they are working, which were used as part of the analyses of the data (e.g., *'How would you rank the amount of professional development you have had on co-teaching in flexible learning spaces (Innovative Learning Environments)'*). Opportunities were also given for the respondents to provide comments to clarify their perceptions. The questions and statements aimed to cover those issues related to flexible learning spaces discussed in the introduction.

The questionnaire was loaded into the Qualtrics survey system and distributed to links on national web-sites and society/group email addresses across New Zealand. Emails, which included a link to the Qualtrics questionnaire, were sent to the links/emails that explained the survey and requesting participation in the survey. Principals were targeted through the distribution of the survey to organisation such as the New Zealand Principal's Federation and to regional primary principals associations, in order to access the views of those managing the development of flexible learning spaces within primary schools. Teacher's views were targeted by distribution through email lists of registered teachers. The Qualtrics site was open for about one month and 283 respondents from primary schools completed and submitted the questionnaire.

The responses were analysed via quantitative (multiple-choice statements) and qualitative (open-end comments) procedures. Quantitative analyses involved calculating the frequency of responses to items, mainly for description of the sample. A small number of  $\chi^2$  analyses were also conducted to describe the background of the sample in terms of relationships between exposure to flexible learning classrooms, professional development in co-teaching and the type of school classrooms spaces. Analyses of responses then continued by reducing statements eliciting views about flexible learning spaces to a set of factors. This involved principal component analysis leading to the selection of the number of factors for rotation: choosing factors with Eigenvalues greater than 1 meant that selection was mainly data driven, though a scree plot was produced to support selection. Factors were then rotated using a Varimax procedure, which assumes independent factors. (Alternative procedures, not assuming independent factors, were also used but produced similar results.) Kaiser normalisation procedures were used in the rotation: these involved scores being statistically normalised (i.e., transformed to approximate a normal distribution) for factor rotation and then denormalised back to the original data scale for interpretation. Interpretation of the meaning of these factors was based on an understanding of the development of the questionnaire statements on which each factor loaded. Factors scores were then used to assess potential differences between groups of respondents, primarily using analyses of variance. The reduction to a small number of factors based on correlated statements avoided the potential problem that a large numbers of analyses of individual statements would produce in terms of increased family-wise error (i.e., the increase in chance significant effects when performing several analyses with the same significance level).

Following the quantitative analyses, qualitative analysis of open-question responses were conducted. Initial analysis of the qualitative data identified emerging themes that were refined into coding categories (Fraenkel & Wallen, 2006; Watling & James, 2007). Links between these coding categories were identified based on interpretation of the researcher (see Strauss & Corbin, 1990). This entailed looking for concepts and themes in the data that linked with one another and/or formed clusters to give a denser net of support for emerging main ideas. Finally, selective coding was used to scan the data and prior codes to form the total analysis around a smaller set of core ideas (Charmaz,

2003; Strauss & Corbin, 1990). Throughout this process of selective coding the key codes that reappeared repeatedly directed the interpretation of the findings reported in this paper (Charmaz, 2003).

The 283 respondents comprised 125 principals and 95 teachers, with a further 60 in middle management roles (teachers with head of department responsibilities or deputy principals). In New Zealand, principals would typically have a solely managerial and leadership role, with no classroom teaching. School staff in middle management roles would be likely to have a mix of classroom teaching and release time for their management role. Teachers typically would be solely involved in teaching in classrooms. As each of these three categories of respondents have differing roles in a school, this research sought to ascertain their potentially differing perceptions. The majority (200 or 70%) were female and from New Zealand European background (235 or 83%; plus 24 from New Zealand Māori and 24 from non-NZ backgrounds). The majority had worked at their current school for more than five years (170 respondents; with the remaining 40% being equally distributed across the categories of having worked at the school for either 1 to 2 years or 3 to 4 years). The majority worked in full primary (46%) or contributing primary (47%) schools, with only 19 staff working in an intermediate school context. Most schools (93%) were state schools, with only 19 being integrated. Schools within which the staff worked were mainly in cities (148 respondents) or towns (70 respondents), with only about 22-23% being situated in more rural locations. Schools covered the full range of deciles used in New Zealand to classify the socioeconomic distribution of the communities within the catchment areas of state schools. However, there were more respondents from higher decile schools: 20% of respondents were from decile 10 schools, about 10 to 15% each from decile 7 to 9 schools, about 7 to 9% from decile 2 to 6 schools, and only 5% from decile 1 schools. About 40% of respondents considered that their school was multicultural in terms of the ethnicity of the students, and a roughly equal number considered that their school comprised 70 to 90% of students from New Zealand European backgrounds – less than 20% considered their school to comprise more than 90% New Zealand European background children.

An important question for the present work was the levels of flexible learning space experience of the respondents. Therefore, questions also asked for details about the type of classrooms in their school and their training in the use of these spaces and the practices needed to co-teach in such environments. Among the respondents, 91 (32%) indicated that they worked in schools with predominantly traditional classrooms (one teacher, one class cohort, configurations). A further 79 (28%) of respondents indicated that they worked in schools where traditional classrooms had been adapted to be flexible learning spaces. Another 90 respondents (again, about 32%) indicated that they were in schools where purpose-built flexible learning spaces had been recently built – and an additional 21 (7%) of respondents indicated that they worked in a recently built school comprising all flexible learning classrooms. These latter two groups were combined to consider the views of those experiencing purpose-built environments

compared to those with adapted classrooms and little experience of working in flexible learning spaces.

In terms of exposure to flexible learning spaces, most respondents indicated some level of exposure (150 or 53%), with 61 (22%) indicating minimal exposure and 72 (25%) indicating extensive exposure (this question provided these three closed responses for participants). These frequencies were consistent with the responses to the three classroom types discussed in the previous paragraph: those from schools with purpose-built or adapted flexible learning spaces showed a greater likelihood to indicate extensive exposure, whereas those from schools with predominantly traditional classrooms showed a greater likelihood to have minimal exposure ( $\chi^2 = 17.25$ ,  $df = 4$ ,  $p = .002$ ). In contrast, professional development in co-teaching in flexible learning spaces was more likely to be either minimal (39%) or some (44%), with only 48 respondents (17%) indicating extensive professional development (again, this questions provided these three closed responses for participants). However, levels of co-teaching in flexible learning spaces professional development were related to exposure to flexible learning spaces ( $\chi^2 = 129$ ,  $df = 4$ ,  $p < .001$ ), with increasing levels of exposure being more likely to be related to more co-teaching professional development. Levels of professional development were also related to the three classroom types, with those from schools with predominantly traditional classrooms showing a greater likelihood to have minimal professional development ( $\chi^2 = 17.66$ ,  $df = 4$ ,  $p = .001$ ).

The type of classroom used in the school of the respondent may also partially explain the bias towards more staff from high decile schools. For those in the lowest three decile levels (1 to 3), the modal (most frequent) response was for staff to be in schools with predominantly traditional classrooms, whereas for those in the highest three decile levels (8 to 10), the modal response was for staff to be in schools with purpose-built flexible learning spaces. For those in the four middle decile levels (4 to 7), the distribution of responses across classroom types was almost equivalent. This may have led to more staff from higher decile schools to respond given their background experience.

After one month of the questionnaire site being open, the data from the Qualtrics system were imported into a statistical package (SPSS version 24) and analysed. The procedures initially looked at frequency of responses to background questions (discussed above) and statements (Table 1). Factor analyses procedures were then implemented on the statements to reduce the number of analyses on statements (Table 2). Combined statements scores were then analysed to contrast background experience of the respondents with their responses to the statements. Given a significant effect for the combined statements scores, individual statements were then considered to determine relationships between specific views and background experience. This procedure allowed for a detailed consideration of the responses, but reduced the chance significant effects by reducing the number of analyses performed.

RESULTS

Quantitative data

Table 1 presents the frequency of responses to each of the statements in the current questionnaire. Where there is a clear modal response (at least 10 responses greater than the next response), this is individually highlighted: less clear modal responses are lighter shaded. Overall, these responses tend to be more positive towards flexible learning spaces and their potential usefulness for primary school education.

Responses were then analysed using Factor Analysis procedures. The results of these Factor Analysis procedures can be found in Table 2, which provides factor loadings for each statement based on a three-factor solution. This factor solution was determined initially using principal component analysis and Eigenvalues greater than 1; though determination of factors was also based on observation of a scree plot and a theoretical understanding of the statements development. A four-factor solution was also suggested, but the fourth factor comprised only one statement (*‘Collaboration amongst teachers is essential for effective use of a flexible learning space’*); most likely due to the fact that almost all respondents (237) strongly agreed with this statement. Given that other statements covered the similar concept of collaboration, and were more focused on literacy or mathematics, and this statement produced very little variance to analyse, it was removed from the analyses, which then produce the current three-factor solution. These three factors explained over 70% of the variance. The factor loadings in Table 2 were determined using a Varimax (with the default of Kaiser Normalization) rotation which converge in five rotations.

Table 2 shows the loadings for the statements on three factors. Statements that mainly load on Factor 1 focus on teaching and co-teaching in reading, writing and mathematics; henceforth referred to as a teaching factor. Statements that mainly load on Factor 2 focus on issues to do with the student/learner, or statements that lead to the teacher thinking about the student/learner; therefore, this factor will be referred to as a learner factor. Factor 3 comprises three statements that elicit views about professional learning in reading, writing and mathematics – and, therefore, will be referred to as a professional development factor. Five statements, which refer to low progress learners or issues related to student learning, and hence are related to the learner factor, also loaded on the teaching factor, which suggests that the respondents considered these statements as related to both teaching and learner issues. Therefore, these five statements will not be analysed in combination with the other three factors, but will be considered separately. However, theoretically, these statements were developed more as a feature of the learner, and the low progress statements were included for the specific purpose of eliciting views about flexible learning spaces and those who would be perceived as having difficulties with learning. Hence, they will be included in further analyses. Factors were then given a score by simply transforming response options to

Table 1. Frequency of responses of the respondents to each of the questionnaire statements

QUESTIONNAIRE STATEMENTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
Students in FLS have more opportunity to relate to others and develop effective interaction skills with a diverse range of people.	71	114	57	19	9
Students in flexible learning spaces have more opportunity to develop skills as self-regulated learners.	69	106	51	35	9
Flexible learning classrooms are noisy, making it difficult for students to concentrate.	27	60	94	79	10
Teaching in flexible learning spaces makes management of students difficult.	14	51	62	111	32
Teachers find it more time consuming working in FLS because more time is needed to plan ... and discuss teaching strategies.	42	73	65	68	22
Teaching in flexible learning spaces makes acceleration of low progress learners difficult.	15	32	53	138	32
The large cohorts of students taught in FLS can adversely affect teacher's judgements about individual children's learning.	18	46	73	105	28
Collaboration amongst teachers is essential for effective use of a flexible learning space.	237	26	3	0	3
Coteaching in flexible learning spaces allows teachers to plan and work together to better identify explicit needs in reading.	81	106	50	15	4
Teaching instructional reading effectively can be further enhanced in FLS when teachers have the opportunity to discuss ...	65	111	54	23	3
Coteaching in flexible learning spaces allows teachers to plan and work together to better identify explicit needs in writing.	71	122	46	14	3
In a traditional one-teacher per classroom setting, there is a lack of opportunity for professional learning about teaching reading.	26	67	50	87	26
Low progress learners in reading will benefit from being in a co-teaching flexible learning space.	29	71	108	37	11
Teaching writing effectively can be further enhanced in FLS when teachers have the opportunity to discuss ...	53	118	61	21	3
In a traditional one-teacher per classroom setting, there is a lack of opportunity for professional learning about teaching writing.	18	67	50	93	28
Low progress learners in writing will benefit from being in a co-teaching flexible learning space.	33	84	99	32	8
Coteaching in flexible learning spaces allows teachers to plan and work together to better identify explicit needs... mathematics.	62	122	55	10	6
Teaching mathematics effectively can be further enhanced in FLS when teachers have the opportunity to discuss ...	49	124	59	16	8
In a traditional one-teacher per classroom setting, there is a lack of opportunity for professional learning ... teaching mathematics.	18	66	58	94	20
Low progress learners in mathematics will benefit from being in a co-teaching flexible learning space.	28	89	96	35	8



Table 2. Factor loadings for each statement based on a three-factor solution

QUESTIONNAIRE STATEMENTS	FACTOR 1	FACTOR 2	FACTOR 3
Co-teaching in FLS allows teachers to plan and work together to better identify explicit needs in reading.	<b>.838</b>	.235	.141
Teaching instructional reading effectively can be further enhanced in FLS when teachers have the opportunity to discuss, observe and work alongside another teacher on a minute-by-minute, daily-basis in a FLS.	<b>.747</b>	.421	.188
Co-teaching in FLS allows teachers to plan and work together to better identify explicit needs in writing.	<b>.881</b>	.242	.125
Teaching writing effectively can be further enhanced in FLS when teachers have the opportunity to discuss, observe and work alongside another teacher on a minute-by-minute, daily-basis in a FLS.	<b>.650</b>	.432	.338
Co-teaching in FLS allows teachers to plan and work together to better identify explicit needs in mathematics.	<b>.860</b>	.291	.194
Teaching mathematics effectively can be further enhanced in FLS when teachers have the opportunity to discuss, observe and work alongside another teacher on a minute-by-minute, daily-basis in a FLS.	<b>.727</b>	.366	.345
Flexible learning classrooms are noisy, making it difficult for students to concentrate.	-.239	<b>-.747</b>	-.125
Teaching in FLS makes management of students difficult.	-.237	<b>-.829</b>	-.147
Teachers find it more time consuming working in FLS because more time is needed to plan, evaluate, share information, review logistics and discuss teaching strategies.	-.155	<b>-.534</b>	.002
Teaching in FLS makes acceleration of low progress learners difficult.	-.278	<b>-.777</b>	-.095
The large cohorts of students taught in FLS can adversely affect teacher's judgements about individual children's learning in curriculum areas.	-.292	<b>-.733</b>	-.146
Students in FLS have more opportunity to relate to others and develop effective interaction skills with a diverse range of people in a variety of contexts.	<b>.447</b>	<b>.496</b>	.317
Students in FLS have more opportunity to develop skills as self-regulated learners.	<b>.456</b>	<b>.480</b>	.288
Low progress learners in reading will benefit from being in a co-teaching FLS.	<b>.520</b>	<b>.544</b>	.350
Low progress learners in writing will benefit from being in a co-teaching FLS.	<b>.506</b>	<b>.550</b>	.334
Low progress learners in mathematics will benefit from being in a co-teaching FLS.	<b>.534</b>	<b>.569</b>	.342
In a traditional one-teacher per classroom setting, where a teacher works alone, there is a lack of opportunity for teachers to participate in genuine, ongoing professional learning about teaching reading and student learning in the context.	.183	.200	<b>.895</b>
In a traditional one-teacher per classroom setting, where a teacher works alone, there is a lack of opportunity for teachers to participate in genuine, ongoing professional learning about teaching writing and student learning in the context.	.227	.117	<b>.929</b>
In a traditional one-teacher per classroom setting, where a teacher works alone, there is a lack of opportunity for teachers to participate in genuine, ongoing professional learning about teaching mathematics and enhancing student learning in the context.	.238	.098	<b>.926</b>

values from 1 to 5, ensuring that these values within each set of responses indicated the same positive or negative valence, and totalling these response scores within each factor. These four total scores were then used in the following analyses which contrasted different groups of respondents, first using analysis of variance techniques and then chi-square analyses.

The first grouping variable was the type of classroom indicated by the respondents as occurring within their school, which was divided into three categories: schools with built flexible learning spaces, schools with adapted flexible learning spaces and schools with predominantly traditional classrooms. Analyses of variance contrasting the total response scores can be found in Table 3. These indicated significant differences between the respondents within the three classroom type categories for the teaching and learning factors (including the statements that loaded on both), but not for the professional development factor. Pairwise posthoc comparisons suggested that the traditional classroom group responded differently from the other two groups on the teaching and teaching+learner scores, but that only the adapted classroom group differed significantly from the traditional group on the learner scores: those in traditional classrooms were less positive in responses about flexible learning spaces.

Table 3. Comparisons of total response scores across the three types of classrooms indicated by respondents as occurring within their schools

		N	Mean	SD	Anova	
Teaching	Built FLS	97	2.06	.79	$F_{(2,250)}=10.55$ $p<.001$	built=adapted<trad
	Adapted FLS	74	1.90	.80		
	Trad-classes	82	2.45	.75		
Learner	Built FLS	106	3.18	.89	$F_{(2,265)}=4.97$ $p=.008$	adapted>trad
	Adapted FLS	75	3.42	.82		
	Trad-classes	87	3.01	.73		
Teaching+Learner	Built FLS	98	2.40	.87	$F_{(2,251)}=9.49$ $p<.001$	built=adapted<trad
	Adapted FLS	74	2.25	.81		
	Trad-classes	82	2.80	.78		
Professional Development	Built FLS	98	3.07	1.11	$F_{(2,251)}=1.31$ $p=.271$	NS
	Adapted FLS	74	3.03	1.12		
	Trad-classes	82	3.29	1.06		

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors; Built FLS = schools with built flexible learning spaces; Adapted FLS = schools with adapted flexible learning spaces; Trad-classes = schools with traditional classrooms*

The second grouping factors was the position held by the participant, in order to contrast views of principals and teachers; though a third category of middle managers was also included to ensure that the teaching and management responsibilities of this group of staff were taken into account. Analyses of variance contrasting the scores on the total response scores can be found in Table 4. These analyses produce significant differences between the groups for the teaching and the learner factors, but not for the professional development or teaching+learner totals. Posthoc pairwise comparisons argued for differences between principals and teachers, with the middle managers showing total scores more similar to those of the principals: teachers were less positive in their responses. Interactions with type of classroom were also considered given that experience of flexible learning spaces was predicted to influence views. These are also reported in Table 4 (bracketed 'Int' results), but were non-significant for all four total scores.

Table 4. Comparisons of total response scores across the positions currently held by respondents

		N	Mean	SD	Anova	
Teaching	Principal	112	2.04	.78	$F_{(2,249)}=3.86$	principal < teacher
	Middle management	58	2.04	.77	$p=.022$	
	Teacher	82	2.34	.88	(Int: $F_{(4,241)}=0.32$ $p=.862$ )	
Learner	Principal	122	3.35	.72	$F_{(2,264)}=7.40$	principal = middle > teacher
	Middle management	58	3.27	.93	$p=.001$	
	Teacher	87	2.91	.88	(Int: $F_{(4,256)}=0.29$ $p=.888$ )	
Teaching+Learner	Principal	112	2.42	.81	$F_{(2,250)}=1.33$	NS
	Middle management	58	2.42	.90	$p=.267$	
	Teacher	83	2.61	.89	(Int: $F_{(4,242)}=0.35$ $p=.843$ )	
Professional Development	Principal	112	3.04	1.06	$F_{(2,250)}=0.72$	NS
	Middle management	58	3.11	1.25	$p=.488$	
	Teacher	83	3.23	1.05	(Int: $F_{(4,242)}=0.57$ $p=.688$ )	

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors*

Table 5. Comparisons of total response scores across school deciles

		N	Mean	SD	Anova	
Teaching	decile 1 to 3	48	2.20	.90	$F_{(2,252)}=.31$ $p=.734$ (Int: $F_{(4,244)}=0.05$ $p=.995$ )	NS
	decile 4 to 7	90	2.17	.72		
	decile 8 to 10	117	2.10	.86		
Learner	decile 1 to 3	52	3.18	.92	$F_{(2,266)}=1.06$ $p=.349$ (Int: $F_{(4,258)}=0.74$ $p=.566$ )	NS
	decile 4 to 7	95	3.09	.82		
	decile 8 to 10	122	3.26	.83		
Teaching+ Learner	decile 1 to 3	48	2.55	.94	$F_{(2,252)}=1.31$ $p=.271$ (Int: $F_{(4,244)}=0.17$ $p=.955$ )	NS
	decile 4 to 7	90	2.58	.75		
	decile 8 to 10	117	2.39	.90		
Professional Development	decile 1 to 3	48	3.18	1.18	$F_{(2,252)}=1.00$ $p=.368$ (Int: $F_{(4,244)}=1.48$ $p=.209$ )	NS
	decile 4 to 7	90	3.23	1.04		
	decile 8 to 10	117	3.02	1.11		

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors*

The third and fourth grouping variables considered were the demographic backgrounds of the schools, since students from lower socioeconomic and minority background may be predicted to show evidence of greater learning problems than those from higher socioeconomic and dominant New Zealand European ethnic backgrounds. These analyses can be found in Table 5 and 6. For these analyses, deciles were combined into 1 to 3, 4 to 7 and 8 to 10; whereas student ethnic backgrounds were categorised in 90%+ New Zealand European, 70 to 90% New Zealand European, and multicultural. For all four total scores, non-significant analyses of variance were produced; and interactions with classroom type were also non-significant.

The final two grouping variables considered the level of exposure to flexible learning spaces and the level of professional development in co-teaching. For exposure to flexible learning spaces, all four total score analyses produced significant effects such that those with extensive exposure were more positive about Innovative Learning Environments than those with some or minimal exposure (see Table 7): this effect showed

Table 6. Comparisons of total response scores across student ethnic background profiles

		N	Mean	SD	Anova	
Teaching	90%+ NZEuropean	47	2.20	.88	$F_{(2,251)}=.17$	NS
	70-89% NZEuropean	108	2.12	.76	$p=.840$	
	Multicultural	99	2.15	.87	(Int: $F_{(4,245)}=2.09$ $p=.082$ )	
Learner	90%+ NZEuropean	49	3.15	.84	$F_{(2,266)}=.06$	NS
	70-89% NZEuropean	114	3.19	.78	$p=.943$	
	Multicultural	106	3.20	.91	(Int: $F_{(4,258)}=0.43$ $p=.786$ )	
Teaching+ Learner	90%+ NZEuropean	48	2.53	.88	$F_{(2,252)}=.35$	NS
	70-89% NZEuropean	108	2.44	.81	$p=.704$	
	Multicultural	99	2.53	.90	(Int: $F_{(4,244)}=0.88$ $p=.478$ )	
Professional Development	90%+ NZEuropean	48	3.18	1.04	$F_{(2,252)}=1.43$	NS
	70-89% NZEuropean	108	2.99	1.12	$p=.241$	
	Multicultural	99	3.25	1.10	(Int: $F_{(4,244)}=1.17$ $p=.324$ )	

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors*

no evidence of interacting with classroom type (see 'Int' analyses in Table 7). For the co-teaching professional development grouping, significant effects were found for all total scores except for the professional development factor (see Table 8); but there was no interaction with classroom type ('Int' analyses in Table 8). Overall, the greater the level of co-teaching professional development, the more positive the responses were about Innovative Learning Environments.

In order to investigate potential relationships between experience of flexible learning spaces and staff's views of their effects on learners, the statements that formed the learner factor and those that loaded on both teaching and learner factors were further analysed by contrasting frequency of responses on these statements against the categorisation of classroom type. The latter variable was chosen given its significant effects on learner total scores above and because it was related to the exposure to flexible learning spaces and professional development in co-teaching variables, which also showed effects on learner scores. The results of these analyses can be found in

Table 7. Comparisons of total response scores across category of exposure to flexible learning spaces

		N	Mean	SD	Anova	
Teaching	minimal	51	2.47	.86	$F_{(2,252)}=8.82$ $p<.001$ (Int: $F_{(4,244)}=0.29$ $p=.885$ )	minimal=some> extensive
	some	138	2.17	.79		
	extensive	66	1.85	.77		
Learner	minimal	54	2.76	.91	$F_{(2,267)}=11.56$ $p<.001$ (Int: $F_{(4,259)}=0.66$ $p=.621$ )	minimal<some< extensive
	some	148	3.14	.76		
	extensive	68	3.63	.75		
Teaching+ Learner	minimal	51	2.86	.85	$F_{(2,253)}=16.58$ $p<.001$ (Int: $F_{(4,245)}=0.63$ $p=.643$ )	minimal=some> extensive
	some	139	2.57	.80		
	extensive	66	2.03	.79		
Professional Development	minimal	51	3.32	1.11	$F_{(2,253)}=3.83$ $p=.023$ (Int: $F_{(4,245)}=0.46$ $p=.765$ )	minimal=some> extensive
	some	139	3.20	1.04		
	extensive	66	2.82	1.15		

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors*

Tables 9 and 10. In Table 9, the frequency of responses for each statement that references low progress learners is contrasted against the different classroom types. In Table 10, the frequency of responses for statements not specifically referring to low progress learners is contrasted against the classroom variable. In all analyses, standardised residuals were calculated to determine higher or lower than expected response frequencies, and chi-square analyses for the relationship between classroom type and statements response frequencies were performed. For all analyses, there was evidence for a relationship between classroom type and response frequencies, except for the statement about teachers’ judgements about individual children’s learning (i.e., ‘*The large cohorts of students taught in FLS can adversely affect teacher’s judgements about individual children’s learning in curriculum areas*’). With this exception, the significant relationships suggested that those in schools with adapted flexible learning spaces were generally more positive about Innovative Learning Environments than those

Table 8. Comparisons of total response scores across category of professional development in co-teaching

		N	Mean	SD	Anova	
Teaching	minimal	91	2.36	.82	$F_{(2,252)}=8.05$ $p<.001$ (Int: $F_{(4,244)}=0.72$ $p=.579$ )	minimal >extensive
	some	117	2.12	.79		
	extensive	47	1.79	.78		
Learner	minimal	100	2.90	.85	$F_{(2,267)}=12.98$ $p<.001$ (Int: $F_{(4,259)}=0.13$ $p=.972$ )	minimal<some< extensive
	some	123	3.27	.76		
	extensive	47	3.60	.83		
Teaching+ Learner	minimal	91	2.75	.80	$F_{(2,253)}=10.51$ $p<.001$ (Int: $F_{(4,245)}=0.93$ $p=.449$ )	minimal>some> extensive
	some	118	2.45	.85		
	extensive	47	2.08	.81		
Professional Development	minimal	91	3.26	1.08	$F_{(2,253)}=2.30$ $p=.103$ (Int: $F_{(4,245)}=2.01$ $p=.093$ )	NS
	some	118	3.14	1.04		
	extensive	47	2.84	1.24		

*Note: Teaching = Factor 1; Learner = Factor 2; Profess Develop = Factor 3; Teaching+Learner = statements that loaded on both teaching and learner factors*

in schools with predominantly traditional classrooms. The interesting contrast, however, was with those in schools with purpose built flexible learning spaces who were more mixed in their responses than the adapted group. Despite this group indicating overall more exposure to flexible learning spaces and more professional development in co-teaching for such spaces, they were not uniformly positive in their responses. In contrast to those in the adapted flexible learning spaces group, and more consistent with the traditional classrooms group, neutral was the modal response for the statement about flexible learning spaces being noisy and difficult for concentration. Similarly, there was a tendency for them to be more likely than expected (see residual scores greater than 1) to agree or to strongly agree that such flexible learning spaces increased difficulties in the management of students and the time needed by teachers to plan, evaluate, share information, review logistics and discuss teaching strategies. And they were slightly less positive than those in the adapted classrooms group about students being able to relate

Table 9. Statements related to low progress learners

		STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	
Difficult acceleration for low progress learners	Built FLS	9 (1.5)	11 (-.5)	17 (-.9)	53 (-.2)	16 (.9)	$\chi^2=30.48,$  p<.001
	Adapted FLS	1 (-1.5)	7 (-.7)	7 (-2.0)	47 (1.4)	13 (1.4)	
	Trad- classes	4 (-.3)	14 (1.1)	29 (2.8)	37 (-1.1)	3 (-2.3)	
Benefit for low progress learners in reading	Built FLS	13 (.5)	29 (.4)	40 (-.3)	11 (-.8)	5 (.4)	$\chi^2=16.41$  p=.037
	Adapted FLS	14 (1.9)	22 (.4)	26 (-1.0)	11 (.2)	1 (-1.2)	
	Trad- classes	2 (-2.4)	19 (-.8)	42 (1.2)	14 (.7)	5 (.8)	
Benefit for low progress learners in writing	Built FLS	15 (.6)	37 (.9)	31 (-1.2)	11 (-.4)	4 (.8)	$\chi^2=17.80,$  p=.023
	Adapted FLS	15 (1.7)	24 (0)	27 (.3)	7 (-.8)	1 (-.7)	
	Trad- classes	3 (-2.3)	22 (-.9)	41 (1.6)	14 (1.1)	2 (-.2)	
Benefit for low progress learners in maths	Built FLS	11 (.1)	44 (1.7)	28 (-1.5)	11 (-.6)	4 (.5)	$\chi^2=20.75,$  p=.008
	Adapted FLS	14 (2.0)	22 (-.7)	29 (.2)	8 (-.6)	1 (-.9)	
	Trad- classes	3 (-2.0)	22 (-1.2)	39 (1.4)	15 (1.2)	3 (.3)	

to others and develop better interaction skills. Similarly, for the statements about low progress learners, those in schools with purpose built flexible learning spaces were more mixed in their views about whether such environments would make acceleration difficult for students with learning weaknesses. Finally, the purpose build flexible learning spaces group showed evidence of seeing benefits for low progress learners when it came to mathematics, but they were more neutral about the benefits for reading – indeed, the modal response for all groups was neutral about the benefits for poor readers.



Table 10. Other statements related to learners

		STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	
Noisy, difficult for students to concentrate	Built FLS	11 (.2)	23 (-.2)	37 (0)	28 (-.5)	7 (1.5)	$\chi^2=16.58$  p=.035
	Adapted FLS	6 (-.5)	17 (.1)	18 (-1.6)	32 (2.2)	2 (-.5)	
	Trad- classes	9 (.2)	20 (.1)	39 (1.5)	18 (-1.5)	1 (-1.2)	
Management of students difficult	Built FLS	6 (.4)	25 (1.1)	16 (-1.7)	46 (.4)	13 (.1)	$\chi^2=24.01$  p=.002
	Adapted FLS	2 (-.9)	10 (-1.1)	15 (-.6)	32 (.2)	16 (2.4)	
	Trad- classes	5 (.4)	16 (-.1)	31 (2.4)	32 (-.6)	3 (-2.3)	
Teachers find it more time consuming	Built FLS	21 (1.2)	28 (-.1)	19 (-1.3)	30 (.6)	8 (-.2)	$\chi^2=21.45$  p=.006
	Adapted FLS	11 (-.1)	19 (-.3)	14 (-1.0)	19 (0)	12 (2.4)	
	Trad- classes	9 (-1.2)	25 (.3)	32 (2.4)	19 (-.7)	2 (-1.9)	
Adverse to judgements about individual children's learning	Built FLS	7 (.1)	18 (0)	30 (.2)	36 (-.8)	15 (1.2)	$\chi^2=9.78$  p=.281
	Adapted FLS	4 (-.3)	11 (-.5)	15 (-1.2)	36 (1.3)	9 (.4)	
	Trad- classes	6 (.2)	17 (.5)	28 (.9)	32 (-.3)	4 (-1.7)	
Students can relate to others and develop interaction skills	Built FLS	28 (0)	49 (.6)	21 (-.3)	5 (-.8)	3 (-.3)	$\chi^2=27.27$  p=.001
	Adapted FLS	32 (2.7)	29 (-.5)	8 (-2.0)	5 (0)	1 (-1.0)	
	Trad- classes	11 (-2.5)	35 (-.3)	28 (2.2)	8 (.9)	5 (1.2)	
Students can develop as self-regulated learners	Built FLS	33 (1.1)	37 (-.7)	23 (.6)	10 (1.0)	3 (-.1)	$\chi^2=19.70$  p=.012
	Adapted FLS	24 (1.1)	35 (1.0)	7 (-1.9)	8 (-.6)	1 (-.8)	
	Trad- classes	12 (-2.2)	33 (-.2)	21 (1.1)	17 (1.7)	4 (.9)	

## QUALITATIVE RESPONSES

In the open sections allocated for respondents' comments, concerns for special needs learners in these large flexible learning spaces were further expressed/clarified. For example, a female deputy principal from a school where some recently built flexible learning spaces were added to a traditional single teacher classroom school, stated:

*Special needs children find flexible learning spaces particularly challenging.*

Another, middle management leader from a school where some of the classrooms had been adapted to flexible learning spaces, indicated that the quality of the teachers was key, but had concerns about special needs students not always being supported appropriately in their learning in flexible learning spaces.

*It all depends on the quality of the teachers not the spaces. We have Instructional Rounds where teams observe a teacher teaching and give feedback and feed forward. Some inclusive education students can get lost in these big spaces.*

Although the idea of low progress learners 'getting lost' in this type of learning environment is potentially worrying, the qualitative comments emphasised that the teacher and pedagogical approaches implemented were critical, irrespective of the type of learning spaces. For example, a male principal from a school where there were many traditional classrooms converted to flexible learning spaces suggested that the quality of the teaching for low progress learners was dependent on the teacher rather than the physical spaces and the number of teachers within these spaces.

*Flexible spaces allow for much more teacher interaction and benefit to learners, but the progress of low achieving children will still depend on the 1:1 or personalised tutoring and the richness of the activities - which can happen in either style class. However, the ability to interact with others in the flexible space is built in to the programme, but - again - can also happen in single cell rooms.*

In a flexible learning space there is an opportunity for the students to have more than one teacher. One middle management respondent expressed her concern about the mobility of the early years' readers amongst the teachers in the flexible learning space in the newly built flexible learning spaces school where she was working.

*I have real concerns that junior reading needs are NOT being addressed when teachers swap groups every week or two so the child has no continuity of teaching. Whether or not they discuss the child's needs, no two teachers teach the same and so the child doesn't have the same instruction.*

## DISCUSSION

Overall, the results were generally positive about flexible learning spaces in New Zealand schools. This positive perspective was fairly consistent across decile and ethnic groupings of the schools within which the respondents were working. Although, principals were slightly more positive than teachers, these differences were less evident when low progress learners in reading, writing and mathematics were the focus. It is interesting to note that despite teachers and pedagogy being seen as critical in the open-responses, there was a dearth of comments addressing explicit knowledge of meeting the learning needs of low progress learners within these changes to types of school buildings. Considering the tail of students in New Zealand schools who are underachieving in reading, writing and mathematics (see, for example, Chamberlain, 2013), it would be reassuring to know that school leaders were viewing these students' learning outcomes as a priority and that they were articulating some specific data to show that effective teachers are providing supportive learning for low progress learners within these innovations in school buildings. Unfortunately, schooling can have a tendency to validate the status quo of who achieves and changes in school environments may lead to the same outcome. For example, Peterson's (1979) research on open plan classrooms of the 1960s to 1980s found that it was the high achieving, task orientated students who were more successful in their learning when in an open plan, student directed learning environment. This was particularly the situation in the teaching of reading, writing and mathematics, which often involved a direct instruction approach (Peterson, 1979). What remains uncertain is how the most at risk students (such as low progress learners or those with learning difficulties) fare in larger teaching areas with between 40 to 140 students and two to six teachers within in flexible learning space schooling. The present data from staff in New Zealand suggest that they may be uncertain about the benefits and challenges. Even those with evidence of more experience of flexible learning spaces (in terms of working in purpose built spaces, and having more exposure and training) showed trends to be more cautious about the influence of flexible learning spaces on students with learning difficulties.

Such findings may be consistent with some of the points covered in the introduction to this paper (see discussions related to: Everatt et al., 2011; Mealings et al., 2015; Prochnow et al., 2013; Shield et al., 2010). Potential increases in distraction, which have been associated with open plan classrooms with large numbers of students, may be seen as impacting specifically on students with difficulties in learning. In addition, large numbers of students may be seen as making it more difficult for staff to monitor students who may be seen as finding self-engagement in learning more challenging (typically, those who are seen as struggling). Without careful planning in the use of flexible learning spaces, these influences may negate any benefits there may be from the increase in technical resources available with such spaces, and the potential advantage of co-teaching with colleagues who may have more experience of supporting students with learning problems. Those with greater experience of flexible learning spaces also

seem more aware of the potential time and management issues needed to make these teaching environments effective. This would fit with the need for additional planning that is often of primary importance when working with low progress learners, particularly those with varying types of learning difficulties (see discussions in Reid, Elbeheri & Everatt, 2015) – hopefully, the additional time and management will include a focus on those with specific needs. The evidence that these concerns do not show interactions across decile or ethnic composition of schools argues for them being seen as important by staff from a range of New Zealand primary school backgrounds. This consistency across primary schools would be worthy of further investigation, but is in line with concerns being viewed as issues for children with learning difficulties rather than due to potential limitations in opportunity associated with lower socio-economic status or to cultural backgrounds that may lead to problems integrating within the school system.

Of course, any such research of respondents' views requires some caution in terms of generalisation. A survey of this type would more likely be answered by those with strong opinions on the subject outlined in the introduction to the questionnaire. Hence, it may be the case that more moderate views would be found through other research methods. Similarly, although the use of quantitative and qualitative data can reduce some of the risks to validity that only one type of data may present, both quantitative and qualitative analyses involved interpretation by the same researchers, meaning that interpretation of one set of data is likely to be associated with the interpretation of the second. For example, a finding in the quantitative data may be more likely to be seen as a concept in the qualitative analyses. Even though the quantitative and qualitative analyses were performed by different researchers, they came at the data from a similar theoretical understanding of the statements in the questionnaire. However, the generally cautious positive responses of participants in the current survey were consistent with those of more in-depth case-study procedures incorporated in research by Mackey, O'Reilly, Fletcher and Jansen (2017) in New Zealand; though this previous study did not consider specific views related to children with difficulties in literacy and mathematics. Further research considering different samples would, therefore, be worthwhile. This would be even more worthwhile if the views of the students themselves were incorporated into the data collection; and possibly data contrasting students with varying levels of literacy/mathematics achievement across the different types of learning environments covered in the present study. It would be of particular interest to combine the soliciting of self-perceptions with direct classroom observation to better understand if learners who have been identified as having specific learning difficulties, such as those with dyslexia, 'would be able to focus/concentrate on curriculum tasks on a sustained basis when there are multiple activities happening in these large learning spaces.

Therefore, to conclude, although there are positive signs from staff within New Zealand for the growth of Innovative Learning Environments, there are also challenges that both future research and practice will need to consider. This will certainly be the case when considering students who struggle with learning. The task will be to build on the benefits

and reduce the specific challenges associated with different learning environments; and the work in New Zealand over the coming years has the potential to inform practice in how to better accomplish this vital educational task.

## REFERENCES

- Au, K. (1998). Social constructivism and the school literacy learning of students of diverse backgrounds. *Journal of Literacy Research*, 30(2), 297-319.
- Balfanz, R., & Byrnes, V. (2006). Closing the mathematics achievement gap in high-poverty middle schools: Enablers and constraints. *Journal of Education for Students Placed at Risk (JESPAR)*, 11(2), 143-159.
- Beacham, N. A., & Alty, J. L. (2006). An investigation into the effects that digital media can have on the learning outcomes of individuals who have dyslexia. *Computers & Education*, 47(2), 74-93.
- Bishop, R. (2003). Changing Power Relations in Education: Kaupapa Maori messages for 'mainstream' education in Aotearoa/New Zealand. *Comparative Education*, 39(2), 221-238.
- Chamberlain, M. (2013). PIRLS 2010/11 in New Zealand: An overview of national findings from the third cycles of the Progress in International Reading Literacy Study (PIRLS). <http://www.educationcounts.govt.nz/publications/series/2539/114981/125051> (last retrieved May 2017)
- Charmaz, K. (2003). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. Lincoln (Eds.), *Strategies of qualitative inquiry* (2nd ed., pp. 249-291). Thousand Oaks: Sage.
- Draffan, E. A., Evans, D. G., & Blenkhorn, P. (2007). Use of assistive technology by students with dyslexia in post-secondary education. *Disability & Rehabilitation: Assistive Technology*, 2(2), 105-116.
- Education and Science Committee (New Zealand) (2016). *Inquiry into the identification and support for students with the significant challenges of dyslexia, dyspraxia, and autism spectrum disorders in primary and secondary schools*. Report of the Education and Science Committee presented to the House of Representatives November 2016. [https://www.parliament.nz/en/pb/sc/reports/document/51DBSCH\\_SCR71769\\_1/inquiry-into-the-identification-and-support-for-students](https://www.parliament.nz/en/pb/sc/reports/document/51DBSCH_SCR71769_1/inquiry-into-the-identification-and-support-for-students) (last retrieved May 2017)
- Elbeheri, G., Reid, G., & Everatt, J. (2017). *Motivating children with Specific Learning Difficulties: A teacher's practical guide*. Abingdon: Routledge.
- Everatt, J., Al-Sharhan, A., Al-Azmi, Y., Al-Menaye, N., & Elbeheri, G. (2011). Behavioural/attentional problems and literacy learning difficulties in children from non-English language/cultural backgrounds. *Support for Learning*, 26(3), 127-133.
- Fraenkel, J., & Wallen, N. (2006). *How to design and evaluate research in education* (6th ed.). Boston: McGraw Hill.
- Gillon, G. (2004). *Phonological Awareness: From Research to Practice*. New York: Guilford Press.
- Johnson, B. (2003). Teacher collaboration: Good for some, not so good for others. *Educational Studies*, 29(4), 337-350.
- Limbrick, L., & Aikman, M. (2005). New times: The place of literacies and English in the curriculum. *Curriculum Matters*, 1, 29-48.

- Mackey, J., O'Reilly, N., Fletcher, J., & Jansen, C. (2017). What do teachers and leaders have to say about co-teaching in flexible learning spaces? *Journal of Educational Leadership, Policy and Practice (Special edition: Leading innovative learning environments)*, 32(1) 93-106.
- McNaughton, S., Lai, M. K., MacDonald, S., & Farry, S. (2004). Designing more effective teaching of comprehension in culturally and linguistically diverse classrooms in New Zealand. *Australian Journal of Language and Literacy*, 27(3), 184-197.
- Mealings, K. T., Demuth, K., Buchholz, J. M., & Dillon, H. (2015). The effect of different open plan and enclosed classroom acoustic conditions on speech perception in Kindergarten children. *Journal of the Acoustical Society of America*, 138(4), 2458-2469.
- Ministry of Education (New Zealand) (2010). *The literacy learning progressions*. Wellington: Learning Media.
- Ministry of Education (New Zealand) (2011). *Tātaiako: Cultural competencies for teachers of Māori learners*. Wellington: New Zealand Teachers Council : Te Pouherenga Kaiako o Aotearoa.
- Ministry of Education (New Zealand) (2013). *Pasifika Education Plan 2013-2017*. Wellington: Ministry of Education.
- Ministry of Education (New Zealand) (no date). *Shaping Education- Future Direction; Te Tāreinga Mātauranga*. Last retrieved May 2015 from <http://shapingeducation.govt.nz/>
- OECD. (2013). *Innovative learning environments*. Paris: OECD Publishing. DOI: <http://dx.doi.org/10.1787/9789264203488-en>
- OECD. (2015). *Schooling redesigned: Towards innovative learning systems*. Paris: OECD Publishing. DOI: <http://dx.doi.org/10.1787/9789264245914-en>
- Peterson, P. L. (1979). Direct instruction: Effective for what and for whom. *Educational Leadership*, October, 46-48.
- Prochnow, J. E., Tunmer, W. E., & Chapman, J. W. (2013). A longitudinal investigation of the influence of literacy-related skills, reading self-perceptions, and inattentive behaviours on the development of literacy learning difficulties. *International Journal of Disability, Development and Education*, 60(3), 185-207.
- Reid, G., Elbeheri, G., & Everatt, J. (2015). *Assessing children with specific learning difficulties: A teacher's practical guide*. Abingdon: Routledge.
- Shank, M. J. (2005). Common space, common time, common work. *Educational Leadership*, 62(8), 16-19.
- Shield, B., Greenland, E., & Dockrell, J. (2010). Noise in open plan classrooms in primary schools: A review. *Noise & Health*, 12(4), 225-234.
- Smardon, D., Charteris, J., & Nelson, E. (2015). Shifts to learning eco-systems: Principals' and teachers' perceptions of Innovative Learning Environments. *New Zealand Journal of Teachers' Work*, 12(2), 149-171.
- Smythe, I. (2010). *Dyslexia in the digital age*. London: Continuum.
- Snowling, M. J. (2000). *Dyslexia* (second edition). Oxford: Blackwell.
- Stetter, M. E., & Hughes, M. T. (2010). Computer-assisted instruction to enhance the reading comprehension of struggling readers: A review of the literature. *Journal of Special Education Technology*, 25(4), 1-16.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Tunmer, W., & Greaney, K. (2010). Defining dyslexia. *Journal of Learning Disabilities*, 43(3), 229-243.

- Tuuta, M., Bradman, L., Hynds, A., Higgins, J., & Broughton, R. (2004). *Evaluation of the Te Kauhua Māori Mainstream Pilot Project*. Report to the New Zealand Ministry of Education. Retrieved May 2015 from [https://www.educationcounts.govt.nz/publications/maori/english-medium-education/evaluation\\_te\\_kauhua\\_pilot\\_project](https://www.educationcounts.govt.nz/publications/maori/english-medium-education/evaluation_te_kauhua_pilot_project)
- Watling, R., & James, V. (2007). The analysis of qualitative data. In A. Briggs & M. Coleman (Eds.), *Research Methods in Educational Leadership and Management* (2nd ed., pp. 350-366). London: Sage.



**ON-SITE TEACHING** is aimed at supporting students with specific learning differences at your site.

### SUPPORTING SPECIFIC LEARNING DIFFERENCES

Early identification is vital in helping a child to succeed academically and socially. Some, but not all, children have a diagnosis for specific learning differences. However, their symptoms and difficulties in learning are similar to a typical child with learning differences. Many of them are struggling to cope with academic requirements and need specialised intervention. We have strategies to help them compensate for their difficulties and enable them to achieve success in their learning.

**DAS Educational Therapists and Speech & Language Therapists** are professionals who are trained to provide specialist intervention for children with various specific learning differences.

For the full range of services that DAS provides, please visit our website at [www.das.org.sg](http://www.das.org.sg)

### WE PROVIDE:

- ◆ **Dyslexia remediation**
- ◆ **Reading Recovery**
- ◆ **Maths**
- ◆ **Speech & Language therapy**

Our programmes are diagnostic and prescriptive tailored to meet the specific learning needs of each child or group of children.

### CONTACT US:

If you would like to know more about On-site Teaching, contact:

**Ms. Surjati Soekraman**

**E:** [surjati@das.org.sg](mailto:surjati@das.org.sg)

**T:** 6786 0838 / 9729 8531



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

The Dyslexia Association of Singapore (DAS) is a non-profit organisation in Singapore which aims to build a world class organisation dedicated to helping dyslexic people achieve. It provides services ranging from screening and assessments to diagnose for dyslexia and other specific learning differences, to educational therapy and tutoring services for students with dyslexia and other specific learning differences.





# Barriers undermining the implementation of the students' mental health promotion process in schools: teachers' perceptions.

Dalal Alradaan<sup>1\*</sup>, Suad Albeshier<sup>1</sup> and Abdullah Alosaimi<sup>1</sup>

<sup>1</sup> College of Basic Education | Educational Psychology Department - Kuwait

## Abstract

*This study investigates teachers' perceptions about contextual barriers that could affect their understanding of mental health issues; thus, hinder their role in promoting students' mental health in the context of Kuwaiti secondary schools. The study also attempted to explore teachers' perceptions regarding the changes required to put students' mental health promotion processes into practice in the Kuwaiti educational context. A mixed-methodological research approach including two stages was adopted: A systematic survey conducted on 500 Kuwaiti secondary school teachers, and semi-structured interviews conducted on 30 teachers were chosen to address this purpose. Findings from the study showed that teachers' perceptions were markedly affected within the socio-cultural and religious context in the State of Kuwait. A variety of personal, interpersonal, socio-cultural and structural-organisational barriers were reported by teachers that could undermine and impact in terms of moving towards the implementation of promoting students' mental health.*

**Keywords :** Mental health, Perceptions, Barriers, Socio-cultural context.

\* Correspondence to:

Dalal Alradaan, College of Basic Education | Educational Psychology Department - Kuwait, Email: dalalpy@hotmail.com

Suad Albeshier, College of Basic Education | Educational Psychology Department - Kuwait, Email: Drsuaad@thawabt.com

## INTRODUCTION

There is a growing view that teachers in schools are expected to be more keenly involved in the promotion of mental health amongst students, doing more than simply educating and adhering to the national curriculum (World Federation for Mental Health, 2003; Lines, 2002). This means that additional responsibility for the early recognition of mental health issues must be shouldered by teaching staff, as well as referring affected students to the most suitable help and services. The current study has been completed as a reflection of the global interest in promoting young people's mental health, as well as in consideration to the high frequency of mental health problems amongst students, alongside ever-growing waiting lists for professionals in this area, namely counsellors (Capey, 1997; Baxter, 2002; Neil & Christensen, 2007). Additionally, the study could be considered a reaction to the available evidence emphasising the positive impact of promoting students' mental health on their own personal, social, mental well-being, and academic achievement. The study may help to develop better understanding of teachers' perceptions and perceptions towards promoting the mental health of students within a specific socio-cultural context; thus, it could direct policymakers' attention to the value of hearing and considering the neglected views of teachers concerning changes in the education system.

## THE TERM 'MENTAL HEALTH'

There is growing global awareness of the shift from defining mental health in narrow quasi-medical terms as the absence of a diagnosable problem and widely associated with mental illnesses, to a positive concept emphasising the prevention of mental disorders and the promotion of social and emotional development (Tudor, 1996; Wilson, 2003). Such positive aspects of mental health have been reflected in the field of psychology, particularly within the perspective of 'positive psychology', which holds that mental health comprises more than simply not being diagnosed with mental disorders (Kitchener & Jorn, 2002, Alradaan, 2017; 2018). Such a view considers mental health as a positive quality, and further echoes the early efforts of the World Health Organisation (1964) in redefining the concept of mental health into more positive terms. The WHO has provided a positive definition for the term of 'mental health', positioning the term as an integral component of the individual's whole health, as health is defined as 'a complete state of physical, mental and social well-being and not only the absence of infirmity or disease', and mental health as an 'integral component of health, through which each person realises his or her own cognitive, effective and rational capacities to cope with the stresses of normal life and work to participate effectively and productively in his or her community' (WHO, 2001, p. 1).

The positive conceptualisation of the concept of mental health has been reflected in a number of other definitions of mental health that have been posited, centred on the ability of a person to adapt to change as a response to their environment's demands

and stresses, and corresponding psychological and social considerations, equipping them with cognitive, personal and social skills in maintaining a good relationship and achieving goals (Anderson & Anderson, 1995; Health Education Authority, 1998; Surgeon General's Report, 2000; Department of Health and Aged Care, 2000). Within the Arab context, the mental health concept conforms to social and cultural values alongside religious considerations. In the Islamic and Arabic culture, good mental health is concerned with 'conformity', which includes feelings of being satisfied and secure, achieved through creating a balance between one's psychological capability and environmental demands within the socio-cultural context, 'including religious principles and cultural values (El-Islam, 2006). It also seems that the views of Arabic and Muslims families who have mentally ill members have been affected by the negative social ideas prevailing towards mental illness; thus they hide them at home, and they believe that mental disorders do not deserve seeking counselling therapists help (Mogran & Alradaan, 2017).

The positive concept also could be understood further through the continuum concept, where the degree of a person's mental health quality is situated on a scale. Keyes (2002) suggests a model that illustrates such a continuum, with the scholar presenting the term 'flourishing', which describes mentally healthy individuals possessing a notable degree of satisfaction, happiness, personal growth and emotional well-being, and the ability to oppose stressful life events. He also adopts 'languishing' as a term to describe a person who does not enjoy complete mental health, but is not experiencing serious mental health disorders; despite being diagnosed by mental illnesses, Keyes holds that an individual's mental health can be enhanced.

## PROMOTING STUDENTS' MENTAL HEALTH

Promoting mental health focuses on improving individuals' knowledge and perceptions towards mental health issues and seeking the coping skills required to facilitate social, personal and mental-wellbeing (Hodgson, Abbasi & Clarkson, 1996; Adelman & Taylor, 2006). The current study supports promoting young people's mental health based on the 'asset' model of promoting mental health, which adopts the 'salutogenic' perspective. The former aims at investigating and assessing the origins of disease through approaching preventive paradigm, rather than curing the disease. In addition, this perspective considers the promotion of all individuals' mental well-being—not only that of those who have been diagnosed with mental illnesses—and emphasises less dependence on professional services (Rappaport, 1977; Tew, 2005; Morgan & Ziglio, 2006). The model is founded on a conception of young people's resiliency, where they have the ability to succeed in learning, playing and developing physically, socially and psychologically, regardless of the risk factors that can pull young people back from successful life through delivering supportive environments wherein academic, personal and social skills can be enhanced (Davidson, 2008).

The continuum model seems to fit here, as the key issues revolve around what happens should a young person become stuck or overwhelmed by their feelings, and unable to function well in their life (YoungMinds, 1996). These young people are not 'mentally ill' but do demonstrate significant 'mental health problems', though these problems may not match the criteria of mental disorders or mental illnesses, and are manageable with help and support (Paternite et al., 2008). Within the school context, this study focuses on the potential support available from teachers, who have direct contact with those young people.

Young people have the right to live in a mentally healthy way, and to have their mental health supported and promoted by individuals surrounding them, as has been recognised across multiple dimensions, including ethics, legislation, psychology and education (Department of Health, 2004; The Convention on the Rights of the Child, published by the United Nations, 1998). Schools are in a unique position to integrate the essential protective factors shown to contribute to mental health development, by reorienting their systems, including ethos, culture, policy, curriculum and school environment (Roth, Leavey & Best, 2008; Wells, Barlow & Stewart-Brown, 2003; Weare, 2000). Undoubtedly, teachers hold a unique position in promoting students' mental health due to their daily and direct contact with those young individuals; however, previous studies have shown the paucity of research carried out in the area of investigating teachers' perspectives towards their role as promoters of their students' mental health.

## RESEARCH QUESTIONS

The study in its two phases has attempted to answer the following questions:

1. What are Kuwaiti secondary school teachers' perceptions concerning the barriers undermining their role in terms of promoting students' mental health?
2. What factors do Kuwaiti secondary school teachers perceive as affecting their perceptions in promoting mental health?
3. What are Kuwaiti middle school teachers' perceptions concerning the changes necessary to put promoting students' mental health into practice?

## RESEARCH APPROACH

A mixed-methodological approach related to the pragmatic framework, consisting of two complementary research design stages, is implemented in this study. The adoption of this approach is based on the belief that a mixed-methodological approach can profitably amalgamate study approaches, depending on their overall significance in terms of answering specific study questions (Johnson & Onwuegbuzie, 2004). It also may be referred to as multi-purpose, or a 'what works' approach, thereby enabling the researcher to deal with questions that may not be efficiently answered if aligned with a narrower research methodology (Creswell, 2003).

Additionally, the literature suggests that perceptions cannot be measured through direct observation; rather, they must be inferred; however, they can be deduced by considering the way in which individuals behave, the beliefs they hold, as well as what they feel (Ajzen & Fishbein, 1980; Eagly & Chaiken, 1993; Silverman, 2006). Moreover, a review of the literature in the field of Mental Health Education indicates that research related to perceptions has mostly been carried out within the field of epidemiology or psychology, encompassing only positivist approaches, using surveys (Norwich, 1998; Brockington, Hall, Levings & Murphy, 1993). Surveys can help researchers to shed light on perceptions; however, they cannot explain how these perceptions are shaped and might influence behaviour (Secker & Platt, 1996).

## RESEARCH DESIGN, SAMPLE, AND DATA COLLECTION METHODS

A systematic survey was carried out, utilising a large sample of Kuwaiti teachers, totalling 500, with all individuals chosen randomly from four Kuwaiti educational administration authorities. A Perceptions scale 5 point Likert scale was conducted on teachers concerning their perceptions and perceived barriers in promoting students' mental health. In the second stage, semi-structured interviews were utilised with a purposive sample of 30 teachers, who agreed to be interviewed. The quantitative data from the survey were fed into SPSS software (Statistical Package for Social Science; version 16.0 for Windows XP). Two types of statistical analysis were performed: descriptive and inferential. A factor analysis statistical method (principal component using Varimax rotation) was employed in the pilot study so as to determine whether groups of barriers scale items tend to bunch together to form distinct clusters, referred to as factors (dimensions) (Bryman & Cramer, 2001). Transcripts, post-interview analysis notes, and writing memos, data management, data reduction and data display, and coding were used (Cohen, Manion & Morrison, 2007; Delamont, 1992, Maxwell, 1996)

## FINDINGS AND DISCUSSION

The analysis of the data indicated that the barriers that might undermine teachers' role in the area of promoting students' mental health have been broken down into four main groups: personal, interpersonal, structural-organizational, and socio-cultural barriers. Each of these groupings comprises categories and sub-categories. Firstly, personal barriers relate to the teachers themselves. Secondly, interpersonal barriers refer to the impact of various individuals with whom the teacher comes into contact throughout the educational process. Thirdly, structural-organizational barriers are associated with the education system, school context and daily practices. Fourthly, the socio-cultural barriers relate to the social context (see figure 1). All the groups and categories were linked and interact, which affects the way in which teachers perceive mental health promotion amongst students, the attitudes of teachers concerning students' mental health promotion, and the application of the promotion process.

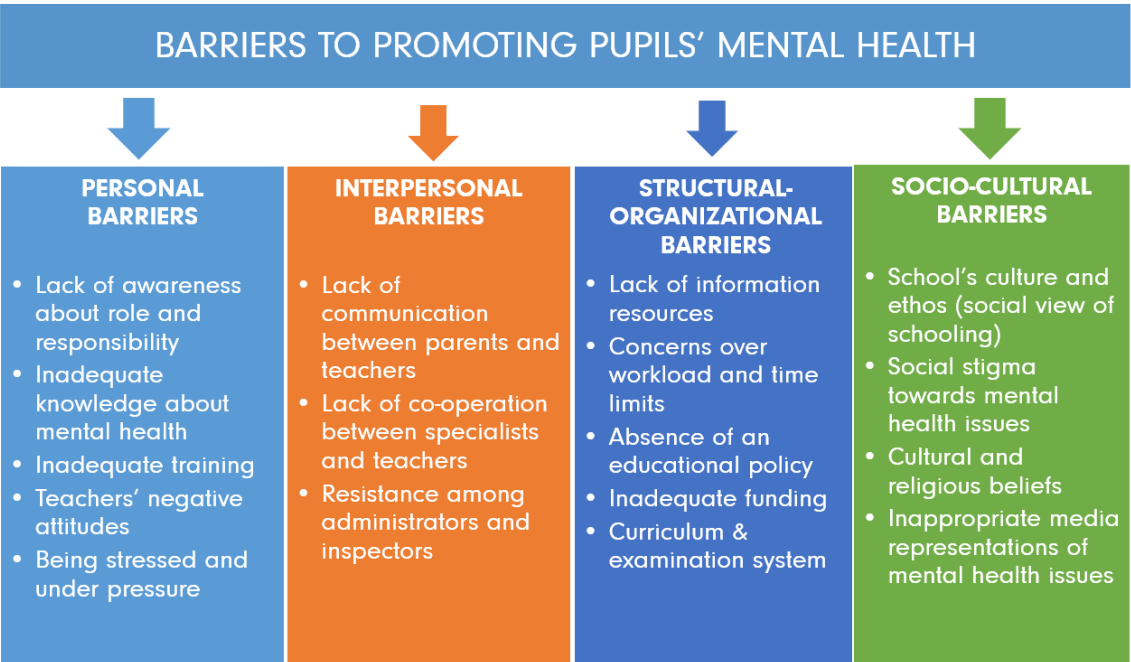
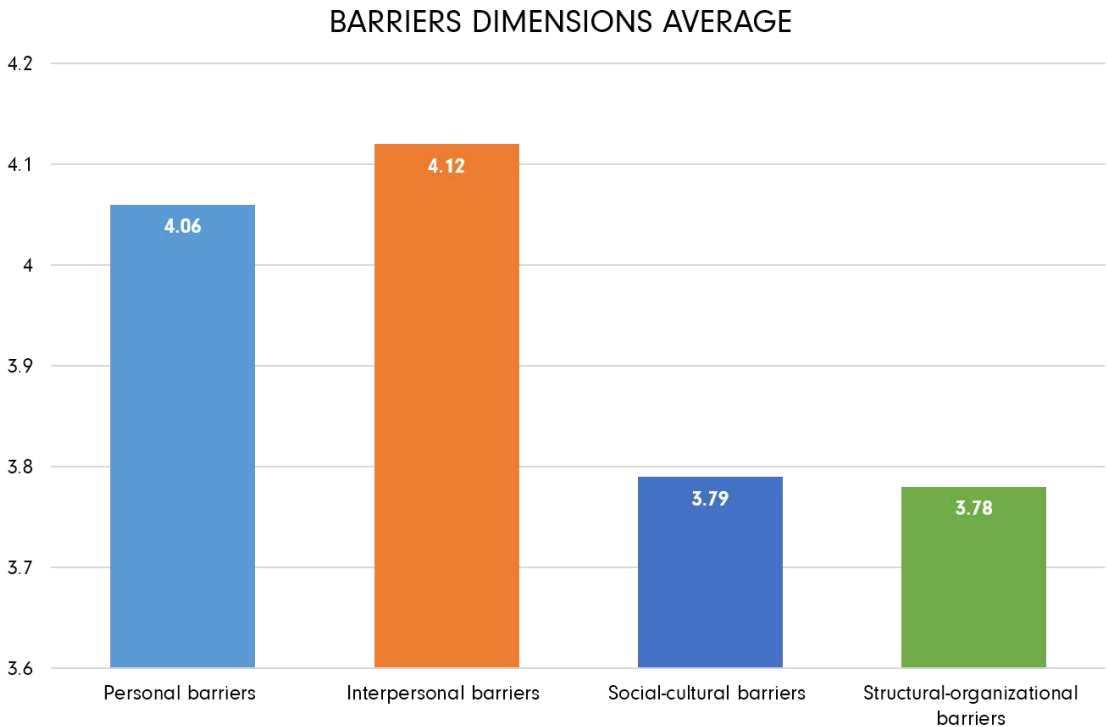


Figure (1) Barriers to promoting students' mental health

Generally, the survey analysis showed that barriers hindering the promotion of students' mental health can be categorised into four types—personal, interpersonal, structural-organisational and socio-cultural—as they perceived them mildly positively ( $M=3.93$ ,  $SD=.73$ ). The results indicated that teachers agree strongly with the existence of interpersonal and personal barriers ( $M=4.06$ ,  $SD=.76$ ;  $M=4.12$ ,  $SD=.56$ ) ; however, the overall mean score of their beliefs concerning the existence of structural-organisational and socio-cultural barriers were more neutral ( $M=3.78$ ,  $SD=.80$ ;  $M=3.79$ ;  $SD=.80$ ) (see table 1) (see Figure 2).

Table (1) Means and SD of the barriers dimensions

BARRIERS DIMENSIONS	MEAN	STD. DEVIATION
(1) Personal barriers	4.06	.76
(2) Interpersonal barriers	4.12	.56
(3) Structural-organizational barriers	3.78	.80
(4) Social-cultural barriers	3.79	.80



*Figure 2: Descriptive statistics for the four dimensions of barriers scale*

Personal barriers refer to factors related to the teachers themselves, such as lack of knowledge, lack of training, lack of awareness of responsibility and the teachers’ attitudes. Generally, the data derived from the survey indicate that middle school teachers in Kuwait tend to have a high level of agreement with beliefs about the existence of personal barriers to promoting students' mental health. They had a mean overall agreement score of 4.06 out of 5.00 for their beliefs about this area and the associated standard deviation of .76 shows relatively low variation in scores.

Examination of Table (2) indicates that 81.6% of the teachers perceived their negative attitudes to issues related to students' mental health as the most significant personal barrier (M=4.10, SD=.86). Similarly, the next personal barrier identifies two barriers: a lack of awareness about the teacher’s role and responsibility regarding students' mental health (M=4.09, SD=.89) was perceived by 81.8% of teachers, and inadequate training to recognize the early signs of students' mental health problems (M=4.09, SD=.89) was perceived by 83.7% of teachers. Inadequate knowledge regarding students' mental health issues was perceived by 85.0% as the lowest rating of personal barriers to promoting pupils’ mental health (M=4.07, SD=.85).

Table (2) Frequencies and percentages of personal barriers

N	Items	SA	A	N	D	SD	Mean	Std. D
Ba4	Teachers' negative attitudes towards students' mental health issues.	165 34.4%	226 47.2%	69 14.4%	9 1.9%	10 2.1%	4.10	.86
Ba1	Lack of awareness about the teacher's role and responsibility regarding students' mental health.	185 38.6%	207 43.2%	52 10.9%	16 3.3%	19 4.0%	4.09	.89
Ba3	Inadequate training to recognize the early signs of students' mental health problems.	161 33.6%	240 50.1%	55 11.5%	7 1.5%	16 3.3%	4.09	.89
Ba2	Inadequate knowledge and personal education about students' mental health issues.	143 29.9%	264 55.1%	48 10.0%	11 2.3%	13 2.7%	4.07	.85

The Interpersonal barriers refer to the influence of people with whom teachers deal during the educational process, such as the school administration and inspectors, parents and professionals. Table (2) shows that 83.9% of the teachers perceived a lack of partnership between themselves and parents as the most significant interpersonal barrier (M=4.21, SD=.85). Similarly, the next interpersonal barrier identifies two barriers: school administration and inspectors' resistance to change (M=4.10, SD=.84) was perceived as a barrier by 81.8% of teachers and a lack of partnership between themselves and specialists such as counselors and educational psychologists (M=4.10, SD=.86) was perceived as a barrier by 76.6% of the teachers.

Additionally, the data shows that teachers tend to show a moderate level of agreement concerning the existence of the structural-organisational barriers, perceiving workload and limited time, and the lack of information resources related to mental health in school, as critical structural-organisational barriers. The results showed that curriculum, pedagogy and the examination system received the lowest rating of the structural-organisational barriers. Moreover, the data derived from the survey indicates that teachers agreed moderately with the existence of the social-cultural barriers. School culture and ethos, social stigma towards talking about mental health problems and



Table (3) Frequencies and percentages of interpersonal barriers

N	Items	SA	A	N	D	SD	Mean	Std. D
Ba12	Lack of partnership between parents and teachers.	206 43.0%	196 40.9%	59 12.3%	11 2.3%	7 1.5%	4.21	.85
Ba13	Resistance among administrators and inspectors.	163 34.0%	229 47.8%	69 14.4%	9 1.9%	9 1.9%	4.10	.84
Ba14	Lack of partnership between specialists (e.g. counselors, educational psychologists) and teachers	128 26.7%	239 49.9%	90 18.8%	8 1.7%	14 2.9%	4.10	.86

labelling, and inappropriate media representations, and cultural and religious beliefs centred on mental health problems, were perceived by 82.4% of teachers as significant social-cultural barriers. Furthermore, 83.1% of the teachers believed that cultural and religious beliefs about dealing with mental health problems are important barriers.

Socio-cultural barriers encompass those related to social context. They include factors related to the social view of mental health and promoting mental health, such as cultural and religious beliefs, media representations of mental health and social stigma around talking about mental health problems and labeling. Generally, the data derived from the survey indicates that middle school teachers in Kuwait tend to hold moderate levels of agreement with the existence of the social-cultural barriers to promoting pupils' mental health. They had a mean overall agreement score of 3.79 out of 5.00 for their beliefs about this area, and an associated standard deviation of .80. Examination of Table (4) reveals that 74.7% of teachers perceive school culture and ethos regarding promoting pupils' mental health as the most significant social-cultural barrier (M=3.90, SD= .87). Next, 83.5% of the teachers agreed that social stigma towards talking about mental health problems and labeling is an important socio-cultural barrier to promoting pupils' mental health (M=3.84, SD=.86). Similarly, the third socio-cultural barrier identifies two aspects:

Table (4) Frequencies and percentages of socio-cultural barriers

N	Items	SA	A	N	D	SD	Mean	Std. D
Ba17	School culture and ethos (social view of school and schooling).	152 31.7%	206 43.0%	77 16.1%	13 2.7%	31 6.5%	3.90	.87
Ba15	Social stigma towards talking about mental health problems and labeling.	140 29.2%	260 54.3%	30 6.3%	21 4.4%	28 5.8%	3.84	.86
Ba18	Inappropriate media representations of mental health problems.	127 26.5%	268 56.9%	43 8.9%	20 4.2%	21 4.4%	3.70	.86
Ba16	Alternative cultural and religious beliefs about the ways of dealing with mental health problems.	168 35.1%	230 48.0%	44 9.2%	26 5.4%	11 2.3%	3.70	.86

inappropriate media representations of mental health problems (M=3.70, SD=.86) were perceived as a barrier by 82.4% and alternative cultural and religious beliefs about dealing with mental health problems were perceived by 83.1% of teachers as a barrier.

Data from the interviews indicated that teachers hold fears of being ill-equipped to recognise mental health problems amongst their students, and recognise their lack of familiarity and understanding of the positive terminology of mental health concept, consequently viewing the term as belonging to a medical and professional context, in a way that leads teachers to avoid using mental health language for fear of causing harm or stigmatising students (Rogers & Pilgrim, 2005). The teachers interviewed reported that their views in this area are mainly based on explicit signs of students' externalised problems, considering such students as troublemakers or as having special education needs. In relation to these aspects of achievement and behaviour, recent research highlighted the heightened incidence of mental health problems in all types of SEN associated with reading disorders, making these issues particularly meaningful for this group (Hendren et al., 2018). The results from the current study are in line with the findings of Bowers (1996), Meltzer et al., (2000), Farmer et al., (2003) and Poulou & Norwich (2000), all of whom reported that teachers appear to be more comfortable using language that is grounded in education, using terms such as 'emotional and behavioural difficulties' (EBD) or special educational needs. As is known, EBD is a term

widely accepted by the educational community as covering a wide range of inappropriate behaviours, including mental health problems (Fox & Avramidis, 2003; Clare & Maitland, 2004).

The findings have shown that beliefs of the teachers interviewed are oriented morally towards what we refer to as a 'value discourse', founded on their religious beliefs, relating to the equality of rights amongst human beings, and the necessity to provide sympathy and support to those experiencing difficulties, which are key and valued aspects of Islam, where values and morals are significant components of people's ethical heritage (Long, 2000). It was recognised amongst some of the teachers interviewed that paying more attention to mental health issues (or students facing such issues) is a 'wrong use of time' in class, as there is an underlying assumption that time should be used appropriately and only in mind of fulfilling educational demands, so as to meet academic standards. The contradiction in teachers' responses regarding their responsibility towards promoting students' mental health represents and rationalises factors that are interrelated and rooted in the socio-cultural and educational contexts. Firstly, they viewed that the promotion of students' mental health is not their job, that professionals, such as school counsellors and social workers, should take the primary responsibility for this task. Additionally, the teachers reported fears about dealing with their students' mental health, and how doing so may be, in large part, explained by their lack of knowledge and training skills, which is a view in line with findings derived by Walter, Gouze & Lim (2006), Rothi, Leavey & Best, (2008) and Repie (2006). A solution to this would be reflected in training in the ability to appropriately deal with students' mental health, resulting in more confident and skilled staff with the ability to recognise issues and who are capable of making appropriate referrals to psychiatric and mental health professional services; teachers require a sense of confidence in their own ability to act. The analysis of the interviews identified young person-related variables, such as the severity and type of mental health problem, as a significant barrier that could influence teachers' perceptions in this area. These findings also are in line with the works of Loades & Mastroyannopoulou (2010) and Rothi & Leavey (2006).

The interviews addressed more detailed views of teachers' suggestions of training and mental education courses requirements in terms of the 'quality' and 'nature' of the training and educational courses that should be provided for them. The teachers interviewed also propose that administrators and inspectors need to be involved in mental health education and training, which would result in a greater degree of flexibility in promotion strategies. This means that knowledge relating to mental health might be important in relation to promoting students' mental health, but is not, in itself, sufficient to induce positive mental health promotion and early identification of mental disorders among students; therefore, the lack of information in the field of mental and mental health might lead to misunderstanding and mis-handling (Al-Tarawneh, 2002). The teachers interviewed perceive a lack of partnership between themselves and parents, who are affected by religious and cultural beliefs considering mental health problems, as

God punishes people for neglecting their religious duties and God tests a person's piety and patience (Rones & Hoagwood, 2000; Keyes, 2002). Teachers reported that such religious and traditional beliefs lead parents to ignore the possibility of counselling for their children, and instead seek help from traditional and religious healing (Mukalel & Jacobs, 2005; Funk, 2005; El-Islam, 2006; Al-Ansari et al., 1989). The results garnered from the interviews reported that social stigma and inappropriate representations in the media representing mental health issues and showcasing negative perceptions towards mentally ill people have a significant impact on the degree of co-operation between teachers, parents and counsellors, with such media showing a 'lack of confidence and trust in teachers' skills'. These results are in line with various works (Corrigan & Kleinlein, 2005; Edney, 2004; Al-Maleh, (2009). Additionally, some interviewed teachers highlighted the need for support with delivering practical help and in being provided with mental health education courses, as well as reconsideration to rewards and salaries, and ensuring their mental health could overcome the stress and pressure associated with such a role.

The qualitative data derived from the interviews showed that those teachers who show lower behavioural intention towards promoting students' mental health identify more barriers to the promotional process in two ways. One is that the barriers they perceive are real for them, and so they are discouraged from promoting students' mental health, whilst those teachers who have higher behavioural intentions regarding the perceived barriers as not affecting them might feel this way because of their commitment to mental health promotion. Alternatively, teachers with low behavioural intention may be justifying their low behaviour intentions by using external barriers as 'reasons' for not promoting mental health—a kind of rationalisation.

Regarding the interconnections between perceptions of behavioural intentions and the educational context, which were seen clearly through the current study, these could be a good example of the correlation between structural-organisational barriers and teachers' perceptions of behavioural intentions towards the implementations of the promotional processes. It is unsurprising that school teachers may feel stressed, over-worked and disempowered, and that there is no room for them to recognise students' mental health within the education system, which adopts an extensive and demanding academic curriculum to be covered in a limited time, with large class sizes and traditional teaching style to consider, which places power in the hands of administrators and inspectors in terms of controlling the educational process, with such individuals then able to resist change in this domain (Hargreaves et al., 1998). This number of features could hinder teachers in having positive perceptions towards promoting students' mental health. Thus, the application of students' mental health promotion in Kuwaiti education seems to be a significant challenge, with the process associated with designing and adopting such a framework necessitating a great deal of reform of the education policy and system in Kuwait. Throughout the interviews, four key suggestions of change within the educational context were highlighted related to developing educational policies, organisational and

structural changes within schools, societal awareness, and teachers' commitment, which ultimately would help in the promotion of mental health. Accordingly, change flourishes in a cooperative and co-ordinated environment, with good levels of prepared and trained staff, all of whom should hold positive perceptions and perspectives concerning the promotion of mental health, with such professionals also afforded the right resources—administrative, educational, financial and political.

## IMPLICATIONS OF THE STUDY

The results showed that teachers' perceptions of promoting students' mental health are complicated and context-dependent, according to a more social constructivist view; perceptions cannot be easily understood in isolation from wider circumstances (Eiser, 1994; Brockington et al., 1993). Barriers and factors need to be taken into account in order to ensure that teachers' perceptions are understood, rather than engaging in simplistic 'victim-blaming' (Ingstad & Whyte, 1995).

Practically, the study calls for policy reform and the development of practice in the field of promoting students' mental health in schools in Kuwait, which could be achieved through implementing a shift away from the more conventional pathological 'deficit' model, as currently practised, towards a wide-ranging ecological and interactive position, supporting the 'asset model' of promoting mental health, focusing on protective factors, empowerment and encouraging individuals' levels of self-esteem, resulting in lesser dependence on professional services (Masten & Reed, 2005). Additionally, there is a need to focus on raising awareness among university students who are specialists in subjects where they can deal directly with students in schools through workshops, training and educational programs, which might be helpful for decreasing the negative attitudes towards mental issues and make dealing with students easier (Sevensson et al., 2014; Almosawy, 2010).

Methodologically, the utilisation of a mixed-methodology strategy in the present research has proven to be extremely valuable, in contrast to dependence on a positivistic-scientific framework—the most prevalent strategy in Kuwait. The study provides evidence that utilising a single quantifiable instrument may suppress participants' subjectivities and deprive them of the chance to have their voices heard. It has further provided the foundations and opened opportunities for the implementation of a mixed-methodology approach within the context of the education environment in Kuwait. This may assist other researchers in this same context; helping to provide answers to questions that could not be answered through the use of one individual strategy by providing a clear and in-depth image concerning social phenomena (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2003; Creswell & Plano Clark, 2007; Punch, 2005). This study has implications for the understanding of teachers' perceptions towards mental health across the region, particularly for those students with special needs, who are found to be at increased risk for mental health issues, on account of their ongoing learning difficulties (Hendren et al., 2018).

## REFERENCES:

- Adelman, H. & Taylor, L. (2006). Mental Health in Schools and Public Health. *Public Health Rep. Association of Schools of Public Health*, 121(3), 294–298.
- Ajzen, I. & Fishbein, M. (1980). *Understanding Perceptions and Predicting Social Behaviour*. Englewood Cliffs, NJ: Prentice-Hall.
- Al-Ansari, E. A., Emara, M. M., Mirza I. A. & El-Islam, M. F. (1989). Schizophrenia in ICD-10: A Field Trial of Suggested Diagnostic Guidelines. *Comprehensive Psychiatry*, 30, 416–419.
- Al-Maleh, H. (2009). Mental Health and the Importance of the Media - Psychological Awareness (Arabic). A seminar held at the University of Damascus, Faculty of Education, 17-18 / 3 / 2009.
- Al-mosawy, H. (2010). Beliefs and Attitudes towards the Illness and the Psychiatric Patient in a Sample of Students of the Basic Education College in Kuwait, *Egyptian Journal of Psychological Studies*, 66, 2, 225-245.
- Alradaan, D. (2017). *Young people mental health in schools: promoting young people mental health*. LAP, Lambert Academic Publishing.
- Alradaan, D. (2018). *Manual in Mental Health (Concept-Theory-Disorders)*. Dar Al Academia. Kuwait.
- Al-Tarawneh, H. (2002). The Psychiatric and Non-Psychiatric Patients relatives' attitudes and its' relation to some variables. *Journal of Psychology*, (64), 22-39.
- Anderson, K. N., & Anderson, L. E. (1995). *Mosby's Pocket Dictionary of Nursing, Medicine and Professions Allied to Medicine* UK Eden. London: Mosby.
- Baxtor, J. (2002). Creative Partnerships: Public and voluntary services working together. *Educational Psychology in Practice*, 18, 1, 63–72.
- Bowers, T. (1996). Putting the 'E' back in 'EBD', *Emotional and Behavioural Difficulties*, 1, 8–13.
- Brockington I., Hall, P., Levings, J., & Murphy, C. (1993). The Community's Tolerance of the Mentally Ill. *British Journal of Psychiatry*, 162, 93–99.
- Bryman, A., & Gramer, D. (2001). *Quantitative Data Analysis with SPSS Release 10 for Windows: A Guide for Social Scientist*. London: Routledge.
- Capey, M. (1997). *Counselling for Students and Young Adults: Examples of what LEAs and schools provide*. Slough: Education Management Information Exchange, NFER.
- Clare, A., & Maitland, J. (2004). *A Mental Health Reader* (First draft) Unpublished, YJB.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education*. London: Routledge.
- Corrigan, P. W., & Kleinlein, P. (2005). The Impact of Mental Illness Stigma. In P. W. Corrigan (Ed.), *On the stigma of mental illness. Practical strategies for research and social change* (pp 11 –44). Washington, DC: American Psychological Association.
- Creswell. J. W. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. (2nd ed.) London: Sage Publications.
- Davidson, J. (2008). Children and Young People in Mind: The Final Report of the National CAMHS Review. DfCSF & DoH.
- Delamont, S. (1992). *Fieldwork in Educational Settings: Methods, Pitfalls and Perspectives*. Lewes: Falmer Press.
- Department of Health. (2004). *National Service Framework for Children, Young People and Maternity Services: The Mental Health and Psychological Well-being of Children and Young People*. London: DoH.
- Department of Health and Aged Care. (2000). *Promotion, Prevention and Early Intervention for Mental Health: A Monograph*. Canberra: Mental Health and Special Programs Branch,

- Commonwealth Department of Health and Aged Care.
- Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Perceptions*. Fort worth, TX: Harcourt Brace Jovanovich.
- Edney, D. R. (2004). *Mass Media and Mental Illness*. London: Routledge.
- Eiser, J. R. (1994). *Perceptions, Chaos and the Connectionist Mind*. Oxford: Blackwell.
- El-Islam, M. F. (2006). The Socio-cultural Boundaries of Mental Health: Experience in two Arabian Gulf countries. *World Cultural Psychiatry Research Review: Official Journal of World Association of Cultural Psychiatry* (pp. 143-146). Retrieved March 20, 2011, from <http://www.Wcpr.org/Pdf/juloct06143146.pdf>.
- Farmer, E., Burns, B., Phillips, S., Angold, A., & Costello, E. (2003). Pathways into and through mental health services for children and adolescents. *Psychiatric Services*, 54, 60-66.
- Fox, P., & Avramidis, E. (2003). An Evaluation of an Outdoor Education Programme for Students with emotional and behavioural difficulties. *Emotional and Behavioural Difficulties*, 5(4), 267-283.
- Funk, M. (2005). *Child and Adolescent Mental Health Policies and Plans*. World Health organisation: Geneva.
- Hargreaves, A., Liberman, A., Fullen, M., & Hopkins, D. W. (Eds.). (1998). *International Handbook of Educational Change*. Dordrecht: Kluwer Academic Publishers.
- Health Education Authority (1998). *Mental Health Promotion: A quality of framework*. London: HEA.
- Hendren, R. L., Haft, S. L., Black, J. M., White, N. C., and Hoeft, F. (2018) Recognising psychiatric comorbidity with reading disorder, *Frontiers in Psychiatry*. 9, 1-10.
- Hodgson, R., Abbasi, T., & Clarkson, J. (1996). Effective mental health promotion: a literature review. *Health Education Journal*, 1, 55-74.
- Ingstad, B., & Whyte, S. R. (Eds.). (1995). *Disability and Culture*. Berkeley: University of California Press.
- Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A research paradigm whose time has come. *Educational Researcher*, 33 (7) 14-26.
- Keyes, C. (2002). The Mental Health Continuum: From languishing to flourishing in life. *Journal of Health and Social Behaviour*, 43, 207-222.
- Kitchener, B., A., & Jorn, A., F. (2002). Mental Health First Aid Training for the Public: Evaluation of effects on knowledge, perceptions and helping behaviour. *BMC Psychiatry*, 2(10), 147-244.
- Lines, D. (2002). *Brief Counselling in Schools*. London: Sage Publications.
- Long, M. (2000). *The Psychology of Education*. London: Rutledge.
- Luthar, S. (1991). Vulnerability and Resilience: A study of high-risk adolescents. *Child Development*, 62, 600-616.
- Masten, A. S., & Reed, M. J. (2005). Resilience in Development. In C.R. Snyder & S.J. Lopez (Eds.). *Handbook of Positive Psychology*. New York: Oxford University Press.
- Maxwell, J. A. (1996). *Qualitative Research Design: An interactive approach*. Thousand Oaks, CA: Sage Publications.
- Meltzer, H., Gatward, R., Goodman, R., & Ford, T. (2000). *The Mental Health of Children and Adolescents in Great Britain*. London: The Stationery Office.
- Moqran, M., & Alradaan, D. (2017). College of Education students' attitudes towards of mental illness in the light of some demographic variables "cross-cultural study", *The specialized international educational magazine*, VI. 5. May
- Morgan, A., & Ziglio, E. (2006). Foreword in M. Bartley (ed.) *Capability and Resilience: Beating the Odds*. London: University College London.
- Mukalel, M., & Jacobs, F. (2005). *Beyond Cultural and Religious Biases: Asian Indians and mental*

- health issues*. Retrieved September 14, 2010, from <http://www.naswnyc.org/Asian Indian Mental Health Issues.htm>.
- Neil, A. L., & Christensen, H. (2007). Australian School-based Prevention and Early Intervention Programs for Anxiety and Depression: A systematic review. *Medical Journal of Australia*, 186(6), 305–308.
- Norwich, B. (1998). Research methods in educational psychology: Traditional and new paradigm. *Educational and Child Psychology*, 15(3), 8–14.
- Paternite, C. E., Weist, M.D., Burke, R., & Flaspohler, P. (2008). Mental Health issues in Schools. *Encyclopaedia of counselling*, 1, 288–293. New York: Sage.
- Poulou, M., & Norwich, B. (2000). Teachers' Perceptions of Students with Emotional and Behavioural Difficulties: Severity and prevalence. *European Journal of Special Needs Education*, 15(2) 171–187.
- Punch, K. F. (2005). *Introduction to Social Research-Quantitative & Qualitative Approaches*. Thousand Oaks, CA: Sage Publications.
- Rappaport, J. (1977) *Community Psychology: Values, Research and Action*. New York: Holt, Rinehart and Winston.
- Repie, M. S. (2006). A School Mental Health Issues Survey from the Perspective of Regular and Special Education Teachers, School Counsellors, and School Psychologists. *Education and Treatment of Children*, 28(3), 279–298.
- Rogers, A., & Pilgrim D. (2005). *A Sociology of Mental Health and Illness*. Maidenhead: McGraw-Hill.
- Rones, M., & Hoagwood, K. (2000). School-based Mental Health Services: A research review. *Clinical Child and Family Psychology Review*, 3(4), 223–241.
- Rothi, D. A., Leavey, G., & Best, R. (2008). On the Front-Line: Teachers as active observers of pupils' mental health. *Teaching and Teacher Education*, 24 (5), 1217–1231.
- Secker, J., & Platt, S. (1996). *Why Media Images Matter*. In Philo, G. (Ed.), *Media and Mental Distress*. Longman, London.
- Silverman, D. (2006). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction* (3rd ed.). London: Sage Publications.
- Svensson, B., Brunt, D., Bejerholm, U., Eklund, M., Gyllensten, A., Leufstadius, C., Markström, U., Sandlund, M., Östman, M., & Hansson, L. (2014). Health Care Students' Attitudes towards People with Schizophrenia—A Survey of Eight University Training Programs. *Open Journal of Psychiatry*, 4, 309–316.
- Surgeon General. (2000). *Report on the Surgeon General's Conference on Children's Mental Health (2000): A National Action Agenda*. Washington, DC: Department of Health and Human Services.
- Tashakkori, A., & Teddlie, C. (2003). *Handbook of Mixed Methods in Social and Behavioural Research*. Thousand Oaks : Sage Publication.
- Tew, J. (2005). Core Themes of Social Perspectives. In J. Tew (Ed.) *Social Perspectives in Mental Health: Developing Social Models to understand and Work with Mental Distress*. London: Jessica Kingsley Publishers.
- Tudor, K. (1996). *Mental Health Promotion: Paradigms and practice*. London: Routledge.
- United Nations. (1989). The United Nations Convention on the Rights of the Child. Retrieved February 20, 2010, from <http://www.unicf.org>.
- Walter, H., Gouze, K., & Lim, K. (2006). Teachers' Beliefs about Mental Health Needs in Inner City Elementary Schools. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45 (1), 61–68.



- Weare, K. (2000). *Promoting Mental, Emotional and Social Health: A whole school approach*. Routledge: London.
- Wells, J., Barlow, J., & Stewart-Brown, S. (2003). *A Systematic Review of Universal Approaches to Mental Health Promotion in Schools*. *Health Education, 103*, 197–220.
- WHO. (2001). *Mental Health: Strengthening mental health promotion. Factsheet no. 220*. Geneva, World Health Organisation.
- Wilson, P. (2003). *Young Minds in our Schools: A guide for teachers and others working in schools*. London: Young Minds.
- World Federation for Mental Health. (2003). *Emotional and Behavioural Disorders of Children and Adolescents*. Baltimore, MD: WFMH.
- Young Minds. (1996). *Mental Health in your School: A guide for teachers and others working in schools*. London: Jessica Kingsley.



# ENGLISH EXAM SKILLS PROGRAMME

**Specialised  
Educational  
Services**  
UNLOCKING POTENTIAL

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

## OUR AIM

The aim of the English Exam Skills Programme is to provide students with direct support to equip them with the knowledge, skills, strategies and attitudes to cope with the demands of the English language syllabus in school, leading to their PSLE paper.

## RECOMMENDED FOR

Students with difficulties in various English exam components such as Synthesis and Transformation and Comprehension.

## COMPONENTS COVERED IN A TYPICAL LESSON:

- Grammar
- Editing
- Synthesis & Transformation
- Comprehension
- Annotation Skills

## OUR APPROACH

The programme provides an extension to what students have been taught in the Main Literacy Programme (MLP) and helps to put the skills learned into practical use in their examinations.

In class, students will be exposed to various language components and related strategies in order to cope with their language needs in their English examinations.

The curriculum has been carefully designed and frequently evaluated by our team to ensure its suitability for our students. Lessons are in line with the MOE English Language Syllabus, and reference the Orton-Gillingham principles.

For more info, visit [www.das.org.sg](http://www.das.org.sg)



# The construction and evaluation of an English Exam Skills test for primary school students with dyslexia

Edmen Leong<sup>1\*</sup> and Hu Guangwei<sup>2</sup>

1 Dyslexia Association of Singapore

2 The Hong Kong Polytechnic University

---

## Abstract

In this article, the construction of a test previously used successfully with dyslexic children and low achievers to assess performance is formally evaluated. An English Exam Skills Programme (EESP) was developed and implemented in 2013 with the goal of helping primary school students with dyslexia develop their English Language skills and achieve in their school and national examinations. The design of the EESP adhered to the Orton Gillingham principles and aimed to ensure that the pedagogy would allow students to transfer skills and concepts learnt to their examination performance. Leong (2015) reports a study conducted to evaluate the progress of students in the EESP using a pre-test and a post-test design. Results from the study suggested that the EESP was effective in addressing the English Language development and examination needs of primary school learners with dyslexia. The study however was based on tests that were designed by the curriculum developers of the EESP and were not subjected to a full validation process. To accurately establish the effectiveness of the EESP, it is also important to ensure that the testing procedures used are optimally reliable and valid. In order to achieve this goal, a new English Exam Skills test for primary students enrolled in the EESP has been developed and validated, following McNamara's (2000) "testing cycle" of the design stage, the construction stage, the try-out stage, and the operational stage. Results obtained from the trialling and validation of the test, including item and whole test analyses, were used to refine and finalize the test. Test takers' performances on this test (both the original and revised versions) were compared with their performances on a test conducted in mainstream primary schools. Substantial correlations constituted evidence of convergent validity. The analyses not only helped to establish the construct validity of the newly developed test but made it possible to predict EESP students' performance on their school and national examinations. In addition, such analyses helped to gauge the effectiveness of the EESP curriculum and the English Language development of dyslexic learners in primary schools.

**Keywords:** Dyslexia, English Exam Skills, Language testing and assessment, Test validation, Test design

---

\* Correspondence to: Edmen Leong, Dyslexia Association of Singapore. Email: [edmen@das.org.sg](mailto:edmen@das.org.sg)

## INTRODUCTION

The English Exam Skills Programme (EESP) was established in 2013 by a group of educational therapists in the Dyslexia Association of Singapore (DAS) with the goal of helping their primary school students with dyslexia achieve in their school and national examinations. Special effort was made in the development of the EESP curriculum to adhere to the Orton Gillingham principles so that lessons would be delivered in a direct, explicit, progressive, and multisensory manner (Leong, Asjamiah, & Wang, 2017) and students would be able to transfer concepts and skills learnt in EESP to answering questions in their examination papers. The EESP curriculum developers used curriculum design processes adapted from Nation and Macalister (2010) as well as Richards (2001) as guidelines to ensure that the curriculum designed and implemented would be in line with the goals of the EESP.

Leong (2015) reports a study conducted to evaluate the progress of students in the EESP. In this study, a pre-test and a post-test were administered to evaluate the effectiveness of the Programme. A quantitative comparison of a synthesis and a transformation component of the pre-test and the post-test revealed the progress made by students who completed the Programme. Results from this study suggested that the EESP was effective in addressing the English examination needs of primary school learners with dyslexia. A subsequent study conducted by Leong, Asjamiah, and Wang (2017) explored classroom practices in the EESP classroom. The study found that the progress of enrolled students was attributable to how the educational therapists taught the classes. The systematic, progressive, and multisensory teaching practices contributed to the students' success in the Programme. The most recent study on this approach, by Elfira, See, Tan, and Leong (2018), found that the designed Programme had similar benefits for struggling learners who were not diagnosed with dyslexia.

While the findings from the above studies on the EESP were encouraging, it is important to note that they were based on tests designed by the curriculum development team that had not been subjected to a full validation process. To firmly and accurately establish the effectiveness of the EESP, it is also important to ensure that the testing procedures used to evaluate this effectiveness are optimally reliable and valid. In order to achieve this goal, a new English Exam Skills test for Primary three and four students enrolled in the EESP has been developed and validated, following McNamara's (2000) "testing cycle" of the design stage, the construction stage, the try-out stage, and the operational stage. Results obtained from the trialling and validation of the test, including item and whole test analyses, were used to evaluate and refine the test. The performance of test takers on this test was correlated with their performance on a Primary 4 English language test modelled on the PSLE exam and constructed from a mixture of items from school test papers set by various schools. The item and whole test analyses not only helped to establish the construct validity of the newly developed test, but also made it possible to predict EESP students' performance on their school and national

examinations. In addition, such analyses helped to further gauge the effectiveness of the EESP curriculum by ensuring robust testing procedures.

## RESEARCH AIMS

Given the importance of having a valid and reliable measure of the progress of the EESP students, the primary aim of this study is to construct an achievement test for primary three and four children enrolled in the EESP that has desirable psychometric properties, namely reliability and validity. While it is imperative that the designed test accurately measures the achievements of EESP students as they progress academically, it is also important that the test can reasonably well predict the students' progress as evaluated by their mainstream school tests. The secondary aim of this study is therefore to compare the designed test with a test of similar language knowledge and skills that would be typically administered in Singapore primary schools. Finally, it is also desirable to track the progress of these students undergoing the EESP with the new test.

In summary, the primary and secondary research aims of this study are as follow:

1. to construct and validate a new achievement test for the EESP;
2. to compare how target students fare on the new test and a test of similar language knowledge and skills typically administered in Singapore primary schools;
3. to ascertain if the new test is able to track the progress of students in the EESP.

## METHOD

### Research design

To address the primary and secondary research aims, two tests were prepared for this study: a self-developed EESP test (to be described in the next section) and a school-based test mirroring a typical test administered in Singapore primary schools. The school-based test was constructed by selecting sections from past English exam papers set by various primary schools. This was to ensure that none of the students participating in the study would have taken the test previously. This school-based test was then distributed to five primary school teachers, who helped with ensuring that the contents of the test were in line with a typical test in primary schools. The research design is described in stages below and summarised in Figure 1.

### Stage 1 (Week1):

Students who enrolled for the EESP Programme sat for both the designed EESP test and the school-based test upon enrolment.

**Stage 2 (Week 2 to week 39):**

Upon completion of the tests, the students underwent 3 terms to a year of the EESP intervention. The EESP test as a whole and its individual items were analysed, and problematic test items identified in the process were removed from the test. These procedures were intended to achieve the first research aim of this study, that is, to construct and validate a new EESP test. Items on the school-based test were rearranged to create an alternate form of the test for use as a post-test.

**Stage 3 (Week 40):**

Upon completion of the EESP intervention, students sat for the revised EESP test and the alternate form of the school-based test.

**Stage 4 (After week 40):**

The students’ performances on the EESP test (both the original and the revised version) and the school-based test (both the pre-test and the post-test) were analysed to achieve the two secondary aims of this study. First, a Pearson’s correlation analysis was conducted to assess the convergence of the EESP test and the school-based test. Second, paired-samples t-tests were run to compare the pre-test and post-test scores of both the EESP test and the school-based test. In all these analyses, the EESP test items that were found problematic and dropped from the revised version were removed from the computation of the pre-test and post-test scores.

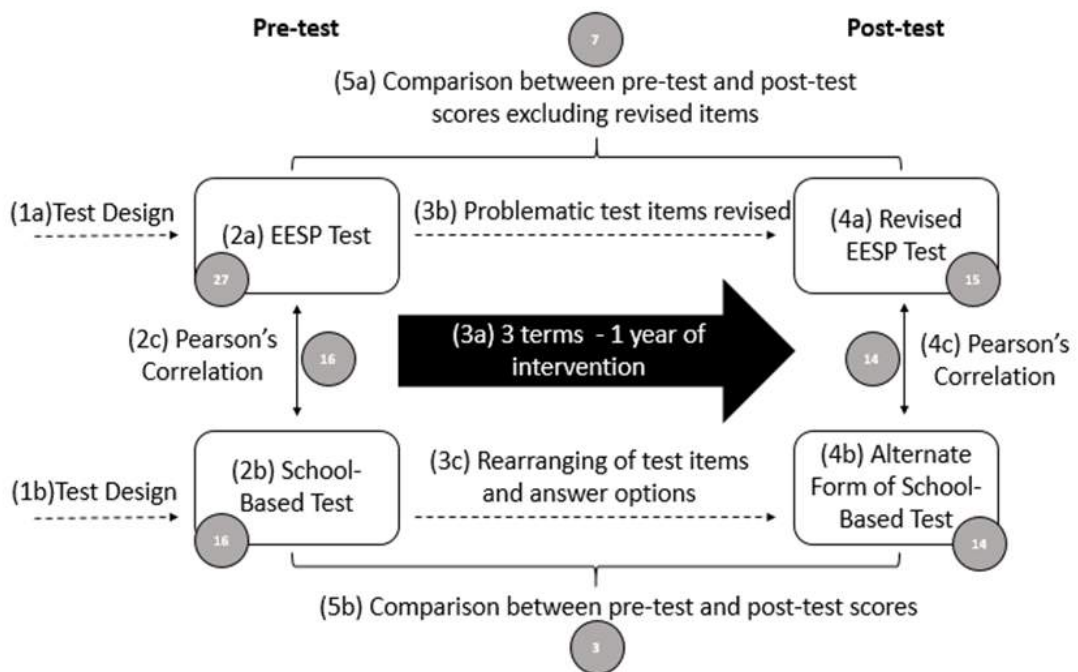


Figure 1. Research design: tests, procedures, and analyses

Participants

Primary 3 and 4 students diagnosed with dyslexia and enrolled in the EESP participated in the study. Since students enrolled and left the EESP throughout the 4-term duration of the study, and because there were absentees during some of the test sessions, the number of participants taking each test was different. A total of 27 students took the EESP pre-test, 15 students sat for the EESP post-test, and 7 students participated in both. A total of 16 students took the school-based pre-test, 14 students sat for the school-based post-test, and 3 students participated in both. The EESP test and item analyses were based on the data from the 27 students who took the EESP pre-test. The comparison between EESP pre- and post-test performances, however, was based on the data from the 7 students who participated in both tests and went through the intervention Programme. The comparison between the school-based pre- and post-test performances was also based on the 3 students who participated in both the pre- and post-tests and went through the intervention. Table 1. Summarizes the mean age and gender of the students who were part of the item analysis, and EESP and school-based pre- and post-test analyses.

Table 1. Summary of profile of students who participated

	No. of students	Gender		Mean age
Item Analyses	27	12 boys	5 girls	9.81
EESP Pre- and Post-test	7	6 boys	1 girl	9.57
School-based Pre- and Post-test	3	3 boys	1 girl	10

EESP Test content and structure

The EESP test was designed as an achievement test to assess mastery of curricular content covered in the Programme. The curricular content includes grammar, editing, and reading comprehension. These curricular areas have been selected to be part of the Programme since the EESP students are particularly weak in them. Grammar is also an area that students need to master sufficiently in order to answer several types of questions commonly found in their school exam papers. The newly designed EESP test had 31 questions allotted a total of 37 marks, including 12 one-mark grammar questions (GR1 – GR12), 11 one-mark editing questions (ED1 – ED11), and 8 comprehension questions assessing 14 sub-skills and attracting 14 marks (CP1 – CP14). These questions tested for the grammatical concepts, editing abilities, and comprehension skills taught and developed in the EESP throughout the year of intervention. A copy of the test is presented in Appendix A.

## Analyses conducted to validate the EESP test

Given the small number of test takers involved, classical item analysis was conducted (Alderson, Clapham, & Wall, 1995). The Facility Value (FV) and the Discrimination Index (DI) of each of the test items were calculated to measure how difficult each test item was and how well an item discriminated between the weak and strong test takers respectively. The FV (ranging from 0 to 1) of each item in the test was computed as the percentage of students who answered the question correctly. An FV of 0 would mean that none of the students answered the question correctly, while an FV of 1 would mean that all students provided the correct answer. Thus, the lower an FV was, the more difficult the test item was. Following Alderson et al., (1995), the 27 students who took the pre-test were divided equally into 3 groups according to their total test scores to calculate the DI values. Nine students with the highest scores were classified as the Top Group, the 9 students with the lowest scores as the Bottom Group, and the remaining 9 as the Middle Group. The DI (ranging from -1 to +1) of each item was calculated with the following formula:

$$DI = (RT - RB) / NT$$

Where RT and RB refer to the number of students in the Top Group and the Bottom Group who correctly answered the question respectively, and NT is the number of students in the Top or Bottom Group. A positive DI value would mean that more top than bottom students answered the question correctly, and a negative DI value would mean that more bottom than top students gave the correct answer. The greater the DI value was, the better the test item discriminated between high- and low-performing students. A multiple-choice question (MCQ) analysis was also conducted to evaluate how well the options provided for each question worked. The analysis involved examining the spread of answer choices of the students in the Top, Middle, and Bottom Groups. The analyses described above were intended to identify good and problematic test items. Based on the results of the FV, DI and MCQ analyses, the well-performing test items were kept intact in the revised version of the EESP test, and the problematic items were revised for validation in a new testing cycle.

Whole test analyses were also conducted to assess how reliable the revised EESP test was and to obtain different kinds of validity evidence (Bachman & Palmer, 1996; Popham, 2003). Following the formula and procedure presented by Alderson et al., (1995, p.280), split half reliability estimates were calculated for the revised EESP (both the pre-test and the post-test). Pearson's correlational analyses were run between the EESP test and the school-based test administered as the pre-tests and post-tests to obtain evidence of convergent validity, one manifestation of construct validity. Convergent validity measures how much tests that are theoretically related are actually related, whereas construct validity reflects the degree to which a test measures what it purports to measure. Paired-samples t-tests were also conducted as described in Stage 4 to gather evidence of the EESP test's sensitivity to test takers' progress, which could be



taken as a reflection of the test’s content validity (how well it measures the different facets of learning). If the test takers truly made progress as a result of participating in the EESP Programme, they could be reasonably expected to gain scores from the pre-test to the post-test, if the test covered the curricular content adequately (Popham, 2003).

**FINDINGS AND DISCUSSION**

**Results of the EESP Test and Item Analyses**

To evaluate the EESP Test, the following steps were taken. The test items and test scores of the 27 students who took the EESP test were analysed. Their test scores are presented in Appendix B. The descriptive statistics for the whole test are presented in Table 2. The mean score indicated that the students answered, on average, a minority of the test questions correctly. Both the large standard deviation and the wide range suggested that there was considerable variation among the students.

Table 2. Descriptive statistics for the EESP pre-test

Maximum score possible	37
Mean	15.60
Standard deviation	4.98
Standard error	0.96
Highest score	26
Lowest score	7
Range	19

The FVs and DIs for the test items are presented in Table 3. Items with FVs close to 0 or 1 and DIs below 0.3 were investigated. The FVs and DIs indicated that of the 37 test items, 19 items functioned well. These items were able to distinguish the top-performing and the low-performing students. They were also of a moderate difficulty level, apparently appropriate for this specific group of learners with dyslexia. These 19 questions were therefore retained in the revised EESP test. The remaining items of the test were investigated closely in order to ensure that an appropriate range of difficulty was maintained to allow test takers to demonstrate improvement from pre to post-test. GR5 and CP9 had both low FVs and negative DIs. Under normal circumstances, such items should be removed from a norm-referenced test (Alderson et al., 1995). However, items with low FVs have a place in an achievement tests such as the present one if few of the test takers have mastered the curricular content (Davidson, 2000; Hughes, 2003). Indeed, this was the case with GR5 and CP9 because a great majority of the students did not

Table 3. Results of item analyses, decisions, and justifications

ITEM	FV	DI	POTENTIAL PROBLEMS	DECISION	JUSTIFICATION FOR KEEPING
GR1	0.48	0.33		Retained	
GR2	0.37	0.22	Low DI	Revised	
GR3	0.48	0.67		Retained	
GR4	0.26	0.56		Retained	
GR5	0.26	-0.11	Negative DI	Retained	Only a minority of students had the required knowledge. There was some guesswork.
GR6	0.67	0.22	Low DI	Revised	
GR7	0.37	-0.22	Negative DI	Revised	
GR8	0.41	0.33		Retained	
GR9	0.59	0.22	Low DI	Revised	
GR10	0.74	0.33		Retained	
GR11	0.70	0.11	Low DI	Revised	
GR12	0.30	0.00	Low DI	Retained	A great majority of students lacked the relevant knowledge.
ED1	0.96	0.11	Low DI	Revised	
ED2	0.37	0.56		Retained	
ED3	0.41	0.67		Retained	
ED4	0.41	0.78		Retained	
ED5	0.74	0.56		Retained	
ED6	0.11	0.33		Retained	
ED7	0.00	0.00	Low FV and DI	Revised	
ED8	0.78	0.44		Retained	
ED9	0.19	0.22	Low FV and DI	Revised	
ED10	0.67	0.33		Retained	
ED11	0.85	0.22	Low DI	Revised	
CP1	0.78	0.22	Low DI	Retained	A low DI was acceptable for an easy item in an achievement test.
CP2	0.44	0.67		Retained	
CP3	0.00	0.00	Low FV and DI	Retained	No student had the required skill, which would be covered in the EESP Programme.
CP4	0.19	0.44		Retained	
CP5	0.33	0.33		Retained	
CP6	0.19	0.22	Low DI	Retained	Few students knew the tested vocabulary to be covered in the EESP Programme.
CP7	0.04	0.11	Low FV and DI	Retained	Few students knew the tested vocabulary to be covered in the EESP Programme.
CP8	0.04	0.11	Low FV and DI	Retained	Few students knew the tested vocabulary to be covered in the EESP Programme.
CP9	0.04	-0.11	Low FV and negative DI	Retained	All students lacked the target skill of inferring. The only correct answer was guesswork.
CP10	0.67	0.33		Retained	
CP11	0.30	0.33		Retained	
CP12	0.22	0.22	Low DI	Retained	A great majority of the students lacked knowledge of what an adverb is.
CP13	0.74	0.33		Retained	
CP14	0.52	0.67		Retained	

have the required knowledge to answer the questions. The correct answers from the Bottom Group, which resulted in the negative DIs appeared to be merely guesswork. Since the knowledge tested by these two questions would be taught in the EESP Programme, they were kept intact for the post-test. GR12, CP3, CP7, CP8, and CP9 were also kept without revision because all or most of the students did not have the required knowledge/skills to answer the questions correctly, though the relevant knowledge/skills would be part of the EESP curriculum (see the last column of Table 3 for the justifications). CP1, CP6, and CP12 were retained in the revised test because test items with low FVs and DIs have a legitimate place in an achievement test if test-takers' answers truly reflect their level of mastery (Davidson, 2000; Hughes, 2003). Finally, the FVs and DIs of all the remaining items were cross-checked with the results of the multiple-choice question analysis mentioned earlier, as well as scrutinising the patterns of responses, and all of the items found to be problematic in one way or another were subsequently revised carefully for future validation in another testing cycle.

The MCQ analysis mentioned above was conducted on the options provided for each multiple-choice question to evaluate how well the correct answer and distractors worked, following Alderson et al's, (1995) approach. This analysis yielded further insights into why certain test items did not function well. For example, the grammar question below (GR2) had a low DI, and the MCQ analysis suggested that option 2 was a wasted distractor because none of the students selected it (see Table 4). Since the present participle (-ing) of verbs would normally co-occur with an auxiliary verb, option 2 was plainly incorrect to all students who took the test. Furthermore, option 4 obviously distracted the wrong students (i.e., 3 students in the Top Group but none in the Bottom Group) due to the ambiguity of the tenses involved (past or present). The rest of the GR questions were analysed similarly, and the results are presented in Appendix C.

2. This basketball team \_\_\_\_\_ three players who are over six feet tall.
- 1) have

2) having

3) has

4) had

Table 4. MCQ distractor analysis for item GR2

	1	2	3*	4	Total
Top Group	2	0	4	3	
Middle Group	3	0	4	2	
Bottom Group	7	0	2	0	
Total	12	0	10	5	27

Based on the detailed item analyses presented above, a revised version of the EESP test was produced. Of the 37 items in the original EESP test, 28 were identified as functioning well and were retained in the revised EESP test, and the remaining 9 were revised for further work. These revised items were excluded from the further analyses conducted for this study. The 28 items kept unchanged in the revised EESP test were administered as the post-test, as described in Stage 4a of Figure 1. The descriptive statistics for the post-test scores are presented in Table 5. As the pre-test contained more items than the post-test and because different students took the pre-test and post-test (with the exception of the 7 students who took both tests), no direct comparison can be made between the descriptive statistics presented in Table 2 and Table 5. However, it is still important to note that the mean score for the post-test was considerably higher than that for the pre-test relative to the maximum score possible, and there was less heterogeneity, as indexed by the standard deviation and the range, in the post-test performances than in the pre-test ones.

Table 5. Descriptive statistics for the EESP post-test

Maximum score possible	28
Mean	13.36
Standard deviation	4.63
Standard error	1.24
Highest score	21
Lowest score	6
Range	15

The revised 28-item EESP test was divided into an odd-numbered and an even-numbered group for the calculation of its split half reliability indices (Alderson et al., 1995). The split half reliability, obtained with the Spearman Brown correction formula, was .80 for the pre-test scores (obtained at Stage 2a in Figure 1) and .78 for the post-test scores (obtained at Stage 4a in Figure 1). Given the relatively small numbers of test takers involved and test items included, these reliability indices were acceptable for an achievement test (Hughes, 2003).

**Convergent validity**

As described earlier, Pearson’s correlational analyses were conducted on the scores of the revised EESP test and the school-based test to gauge convergent validity, a subtype of construct validity. Given that the two tests assessed overlapping constructs of English

language achievement, the scores of the students taking the two tests concurrently would be significantly correlated if there was good convergent reliability. The correlation between the EESP pre-test and the school-based pre-test was substantive,  $r(14) = .577$ ,  $p = .019$ . This was an acceptable index of convergent validity since the two tests did not measure exactly the same knowledge/skills, although there was considerable overlap. Indeed, when the items of the school-based test unrelated to the 3 areas (i.e., grammar, editing, and reading comprehension) assessed by the EESP test were excluded from the correlational analysis, an exceptionally strong correlation was found,  $r(14) = .946$ ,  $p < .001$ . The moderate relationship indexed by the first coefficient suggested that each test assessed some knowledge and skills unique to it, and the strong relationship indexed by the second coefficient indicated that students' performances for similar components (i.e., grammar, editing, and reading comprehension) of the EESP test and the school-based test were highly comparable. Thus, students' performances on the revised EESP test could be used to predict their performances on a mainstream exam paper such as the school-based test used in this study.

Similar correlational analyses were run on the students' scores for the EESP post-test and the school-based post-test. The correlation between the revised 28-question EESP test and the full school-based test was not statistically significant,  $r(12) = .449$ ,  $p = .107$ . A similar correlation coefficient,  $r(12) = .491$ ,  $p = .075$ , was obtained when only the relevant areas (i.e., grammar, editing, and reading comprehension) of the school-based post-test were included in the analysis. The two correlation coefficients were not statistically significant largely due to the small sample size, nevertheless, their magnitudes still indicated medium effect sizes based on the benchmarks recommended by Plonsky and Oswald (2014) for language learning studies. In comparison with the correlations observed in the pre-tests, the reduced strength of the correlations between the post-tests appeared to be a function of the effectiveness of the EESP Programme (see the results of the analyses reported in the following section). Thanks to the EESP Programme, the students made significant gains from the EESP pre-test to the EESP post-test, and the inter-student variability in test performance was reduced. On the other hand, the students did not make equal improvements from the school-based pre-test to the school-based post-test, some of whose content was not covered by the EESP Programme. These factors worked together to reduce the strength of the correlations found for the post-test data.

Taken together, the results reported above provided consistent and robust evidence of the revised EESP test's convergent validity and, by extension, construct validity. They also indicated that the revised EESP test contributed some unique variance to the construct of English language achievement over and beyond the school-based test.

### **Sensitivity to student progress and content validity**

As explained earlier, when the students enrolled in the EESP Programme mastered the curricular content well, they would be able to make significant gains from the pre-test to

the post-test if the test sampled the curricular content adequately. In other words, if the revised EESP test had good content validity, it should be able to track the students’ progress if they indeed improved in their relevant language knowledge and skills as a result of participating in the EESP Programme. Therefore, a paired-samples t-test was run to compare the pre-test and post-test scores of the 7 students who took both versions of the EESP test. For the sake of comparison, another paired-samples t-test was conducted to determine if the 3 students who took both the school-based pre-test and post-test improved significantly in their scores over time. The results of the t-tests are summarized in Table 6. The mean scores for the EESP pre-test and post-test showed drastic improvements, and the difference was statistically significant at  $p < .001$ . The effect size, as measured by Cohen’s  $d$ , was a large one by conventional standards (Cohen, 1988). Notably, the standard deviation for the post-test scores was markedly smaller than that for the pre-test scores, indicating that the 7 students performed more similarly to each other on the post-test than on the pre-test. Both the statistically significant difference between the mean scores and the markedly smaller standard deviation for the post-test scores constituted clear evidence that the EESP Programme was effective in improving the students’ language knowledge and skills assessed by the revised EESP test. These results were consistent with the findings of previous studies conducted on the progress of students in the EESP Programme (Leong, 2015; Leong et. al, 2017; Elfira et. al. 2018).

Table 6. Results of t-tests on the pre- and post-test of the revised EESP and the school-based test

Measure	Pre-test		Post-test		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	M	SD	M	SD				
EESP test	7.71	4.61	14.60	3.95	-6.79	6	.000	1.6
School-based test	5.33	4.04	10.33	3.06	-3.27	2	.041	1.4

As only 3 students took both the school-based pre-test and post-test, the t-test results obtained with such a small sample size were only indicative. The results of the t-test also revealed a statistically significant improvement from the pre-test to the post-test. The effect size measured by Cohen’s  $d$  was large in itself but smaller than that observed for the revised EESP test. Taken together, these tentative results suggested that the students made relatively less improvement in language knowledge and skills that were not covered by the EESP Programme but were assessed in the school-based test. This differential pattern of improvement on the revised EESP test and the school-based test contributed to the lower correlation found between the post-tests reported in the preceding section.

## CONCLUSION

This study has provided clear evidence of reliability and validity for a newly developed language test for students with dyslexia. The classical item analyses and whole test analyses (chosen over the more sophisticated statistical apparatus for test validation because of the small sample sizes available) have revealed that the revised EESP test has desirable psychometric properties to function as an assessment tool for research and educational purposes. Equally importantly, the study has provided a robust framework for developing and validating a new test for use in educational contexts such as ours. In such contexts, students who are available to participate in the validation activities are often rather limited in number, making it impossible to employ more advanced analyses such as Rasch modelling (Chen, Lenderking, Jin, Wyrwich, Gelhorn, & Revicki, 2014). As this study has demonstrated, such restrictions do not mean that we should give up the goal of ensuring the validity and reliability of a new test.

The process of analysing individual test items, as we have done in our study, allows the test developers and curriculum designers additional insights into the strengths, weaknesses, and thought processes of students who completed the test. Thus, engagement in such analyses could lead the test and curriculum developers to better understand the educational needs of the target students and to make further enhancements to the educational Programmes developed for them. In our future research, the validated EESP test will be used with new cohorts of students enrolled in the EESP Programme to determine if the effectiveness of the EESP Programme can be replicated with a view to further improving this programme. Meanwhile, we also plan to start a new testing cycle to validate newly designed items as well as the items culled from the EESP test and revised for further research. Only when a sufficiently large pool of good test items is created can we construct parallel versions of the EESP test that are needed for further research on whether and how explicit and progressive teaching can benefit learners with dyslexia.

## REFERENCES

- Alderson, J. C., Clapham, C., & Wall, D. (1995). *Language test construction and evaluation*. Cambridge, UK: Cambridge University Press.
- Bachman, L. F., & Palmer, A. S. (1996). *Language testing in practice: Designing and developing useful language tests*. Oxford, UK: Oxford University Press.
- Chen, W-H., Lenderking, W., Jin, Y., Wyrwich, K. W., Gelhorn, H., & Revicki, D. A. (2014). Is Rasch model analysis applicable in small sample size pilot studies for assessing item characteristics? An example using PROMIS pain behavior item bank data. *Quality of Life Research*, 23, 485-493.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Davidson, F. (2000). The language tester's statistical toolbox. *System*, 28, 605-617.
- Elfira, T., See, E., Tan, S. H. J., & Leong, E. (2018). Exploring the effectiveness of the English Examination Skills Programme on struggling non-dyslexic learners. *Asia Pacific Journal of Developmental Differences*, 5(2), 141-162.
- Hughes, A. (2003). *Testing for language teachers* (2nd ed.). Cambridge, UK: Cambridge University Press.
- Leong, E. (2015). Improving English exam skills for dyslexics in primary education in Singapore. *Asia Pacific Journal of Developmental Differences*, 2(2), 184-201.
- Leong, E., Asjamiah, S., & Wang, A. (2017). Exploring the classroom practices of the English Exam Skills Programme for Singaporean primary school children. *Asia Pacific Journal of Developmental Differences*, 4(2), 167-194.
- McNamara, T. (2000). *Language testing*. Oxford, UK: Oxford University Press.
- Nation, I. S. P., & Macalister, J. (2010). *Language curriculum design*. London, UK: Routledge.
- Plonsky, L., & Oswald, L. F. (2014). How big is "big"? Interpreting effect sizes in L2 research. *Language Learning*, 64, 878-912.
- Popham, W. J. (2003). *Test better, teach better: The instructional role of assessment*. Alexandria, VA: Association for Supervision and Curriculum Development
- Richards, J. C. (2001). *Curriculum development in language teaching*. Cambridge, UK: Cambridge University Press.





## APPENDIX A

6. These are \_\_\_\_\_ presents. The rest are \_\_\_\_\_.
- 1) you're.....there's                      2) your's.....theirs
- 3) yours.....their                              4) your.....theirs                      (           )
7. Neither John nor his classmates \_\_\_\_\_ their homework.
- 1) has done                                      2) has did
- 3) have done                                      4) have did                                      (           )
8. The twins \_\_\_\_\_ home when they found a wallet on the pavement.
- 1) walk    2) was walking
- 3) were walking                                      4) walked                                      (           )
9. If she \_\_\_\_\_ early, who would not have woken up late.
- 1) has slept                                      2) had slept
- 3) have slept                                      4) had slept                                      (           )
10. Lisa \_\_\_\_\_ home early to catch her flight to Japan tonight.
- 1) is leaving                                      2) was leaving
- 3) were leaving                                      4) was left                                      (           )
11. "It is alright! We can do this \_\_\_\_\_!" the students said to their teacher.
- 1) ourself    2) yourself
- 3) ourselves    4) ourselve                                      (           )
12. The class of students \_\_\_\_\_ on a field trip to Malacca this weekend.
- 1) are going    2) was going
- 3) were going    4) is going                                      (           )

**APPENDIX A****Part 2: Editing**

Fill in the boxes with the correct spelling of the words in bold. (11 Marks)

[ ]  
Susan was **swimming** under water when something came near her. It had a round  
[ ] [ ]  
**middal** with eight long arms **stiking** out of it. Each arm had rows of little cups that could  
[ ] [ ]  
hold things tightly. In its **sentre** was a mouth with two beaks as **shurp** as knife blades.  
[ ]  
In the past, many **sailers** had been afraid of this animal. But Susan was not afraid.  
  
She was a scientist learning about the octopus. She knew that it eats crabs and other  
[ ]  
small shellfish from the bottom of the sea. She knew that many **octopuss** give off lots of  
[ ] [ ]  
ink when they feel in **danjer**. This makes a **screan** so their enemies can't see them slip  
[ ] [ ]  
away. Susan **hopped** this would not happen because she wanted to **wach** the octopus  
  
so she could learn more about it.

Adapted from early reading comprehension in varied subject matter – Jane Ervin

## APPENDIX A

### Part 3: Comprehension (Open-Ended)

Read the following passage.

A deer went for a drink and saw his reflection in the water. "What magnificent antlers I have!" he exclaimed proudly. Then, he looked down at his legs and sighed.

"What's wrong?" asked a fish.

"I hate my long and thin legs. I would rather have no legs like you," 5  
groaned the deer.

"I doubt it," replied the fish, but before it could say more, the forest was filled with the barking of hunting dogs.

**That** prompted the deer to take to his heels and flee like the wind to safety. Just as he thought he was safe, his antlers got caught in the branches of a tree. 10  
**They** caused a nest to fall off the tree.

"Don't struggle," said a bird, "or you will become more tangled. The dogs will be here and those antlers will be the death of you."

Though the deer's every instinct was to struggle, he took the bird's advice. He managed to free himself calmly soon after and return safely to his family. 15

The deer heaved a sigh of relief and said, "I've just realised something. The part of me I was most proud of almost killed me and the part I despised most has saved me."

**APPENDIX A**

**Based on the above passage, answer the questions below.**

1. Write down one word in line 1 that has the same meaning as an 'image.' (1m)

2. Box up the adjective in this sentence - "What magnificent antlers I have!" (1m)

"What magnificent antlers I have!"

3. What does 'That' in line 9 refer to? (1m)

\_\_\_\_\_

4. What does 'They' in line 11 refer to? (1m)

\_\_\_\_\_

- 5a Read the question below.

Circle the question word. (1m)

Underline the verb. (1m)

Box up the target words. (1m)

Bracket the quoted words. (1m)

Which four-word phrase in paragraph 5 has the same meaning as 'ran'?

- 5b Write down your answer for the above question in the line below. (1m)

\_\_\_\_\_

**APPENDIX A**

- 6a Put a tick in the box next to the sentence that is correct. (1m)

An adverb tells you how something look like.	
An adverb tells you how an action is done.	

- 6b Box up the adverb(s) in the sentence below. (2m)

He managed to free himself calmly and return safely to his family.

7. Which part of its body did the deer not like? (1m)

\_\_\_\_\_

8. Which word in paragraph 8 has the same meaning as the word 'hated'? (1m)

--

APPENDIX B—STUDENTS’ EESP TEST SCORES

COMPONENT	GRAMMAR (GR)												EDITING (ED)												COMPREHENSION (CP)																TOTAL	CAT.
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
Student 1	0	0	0	0	1	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
Student 2	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
Student 3	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
Student 4	0	0	0	1	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
Student 5	0	1	1	0	0	1	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
Student 6	0	0	0	0	0	1	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
Student 7	1	1	0	0	0	0	1	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
Student 8	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
Student 9	1	0	0	0	1	1	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
Student 10	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
Student 11	0	1	0	1	0	1	0	0	1	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Student 12	1	0	0	1	0	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Student 13	0	0	1	0	0	1	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Student 14	1	0	0	0	1	0	0	1	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Student 15	0	0	1	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Student 16	0	1	0	0	0	1	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
Student 17	0	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	
Student 18	1	1	1	0	0	0	0	1	1	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	
Student 19	1	1	1	0	0	0	1	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	
Student 20	1	0	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	
Student 21	0	1	1	1	0	1	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	
Student 22	1	0	1	1	1	0	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	
Student 23	0	0	0	0	1	1	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	
Student 24	0	1	1	0	0	1	0	1	1	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	
Student 25	1	0	1	1	0	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	
Student 26	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	
Student 27	1	0	1	1	1	1	1	1	0	1	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	
TOTAL	13	10	13	7	7	18	10	11	16	20	19	8	26	10	11	11	20	3	0	21	5	18	23	21	12	0	5	9	5	1	1	1	1	1	1	1	1	1	1	1	14	

# APPENDIX C—MCQ ANALYSIS

MCQ distractor analysis for item GR2					
	1	2	3*	4	Tot.
HA	2	0	4	3	
MA	3	0	4	2	
LA	7	0	2	0	
Tot.	12	0	10	5	27

MCQ distractor analysis for item GR5					
	1	2	3*	4	Tot.
HA	3	5	1	0	
MA	0	7	0	2	
LA	4	4	1	0	
Tot.	7	16	2	2	27

MCQ distractor analysis for item GR6					
	1	2	3*	4	Tot.
HA	1	0	1	7	
MA	1	1	1	6	
LA	3	0	1	5	
Tot.	5	1	3	18	27

MCQ distractor analysis for item GR7					
	1	2	3*	4	Tot.
HA	5	1	2	1	
MA	5	0	4	0	
LA	4	0	4	1	
Tot.	14	1	10	2	27

MCQ distractor analysis for item GR9					
	1	2*	3	4	Tot.
HA	1	2	6	1	
MA	3	3	2	0	
LA	3	2	3	1	
Tot.	7	7	11	2	27

MCQ distractor analysis for item G11					
	1	2	3*	4	Tot.
HA	1	0	7	1	
MA	2	0	6	1	
LA	2	1	6	0	
Tot.	5	1	19	2	27

MCQ distractor analysis for item GR12					
	1	2	3*	4	Tot.
HA	5	1	0	3	
MA	2	1	4	2	
LA	5	1	0	3	
Tot.	12	3	4	8	27





# Early Markers of Executive Functions and Their Relation to Dyslexia: Cross Patterns and the Level of Initial Activation

Piero Crispiani<sup>1</sup>, Mary Mountstephen<sup>2</sup>, Eleonora Palmieri<sup>3</sup>

1 Macerata University – Italy

2 University of Reading, United Kingdom

3 Psychological and Pedagogical Victor Center, Italy

---

## Abstract

*This article focuses on the importance of executive function and motor control in dyslexia in relation to school readiness in the early years. A functional and a coordinated system of cross pattern communication in the brain is necessary for many everyday actions, for example walking and riding a bike. This is especially true for many higher order functions, relating to school performance, and academic skills such as reading, writing and maths. For this reason, cross patterns are important expressions of effective functioning and the neurophysiological interactions between a range of brain regions for overall inter-hemispheric exchange within the developing brain. Reading is highly dependent on motor planning control, demanding greater efficiency of the cross system, because reading is driven by kinetic organization. This is based on the prompt activation (incipit) of important early markers of executive function which are critical for reading, such as planning direction from left to right, visual tracking, cognitive control, self-regulation, organization in space and time, inhibitory processes and monitoring a state of alertness. In contrast, when planning is dysfunctional, disorganized, discontinuous and ineffective during a complex cognitive task such as reading, it leads to a disorganized performance that extends well beyond the difficulties in reading and writing identified as dyslexia. In fact, more and more frequently, the phenomenon has been associated with a disorder of executive functions relating to all wider behaviours.*

---

\* Correspondence to:

Piero Crispiani, Full Professor Macerata University – Italy, Email: [pierocrispiani@gmail.com](mailto:pierocrispiani@gmail.com)

Mary Mountstephen, Doctoral Candidate at the University of Reading (UK)E: [kcsmary1@gmail.com](mailto:kcsmary1@gmail.com)

Eleonora Palmieri, Clinical Psychologist, Director of Psychological & Pedagogical Victor Center, Italy E: [palmieri.eleonora1@gmail.com](mailto:palmieri.eleonora1@gmail.com)

*In our article, the level of this initial activation and execution assumes a central importance in understanding the variability in executive functioning between dyslexic and non-dyslexic students. This reflects executive consistency (fluidity), especially in reading performance, where the dyslexic tends to perform either too slowly or too rapidly. Difficulties in executive function, particularly in neural circuits which depend on effective exchange between the hemispheres, form the basis for our Cognitive Motor Training, utilising cross pattern exercises as part of a larger research programme. The Crispiani Method has undertaken a dynamic approach to training in promoting cognitive enhancement.*

**Keywords:** Cognitive Processing, Self-Regulation, Executive Functions, Dyslexia, Cross Patterns

---

## INTRODUCTION

Since the early years of the 21st Century, a range of concepts have been associated with dyslexia, which are now generating new theoretical stances, within neurological and pedagogic frameworks. As many authors have observed, both in Europe and in the United States (Orton 1929) important contributions have been confirmed in relation to neuromotor, psychomotor, spatial-temporal and coordinative aspects of dyslexia. This progressive support, relating to the emergence of executive disorders, lack of automaticity, proceduralisation, sequencing, and dyspraxia, has led to a paradigm shift (Kuhn, 1962/70) in understanding dyslexia. This relates specifically to the dominant theory of phonological deficit and the range of symptoms involved in the identification of dyslexia, which are now acknowledged to extend beyond phonology.

This new position, driven by neurophysiological and pedagogical developments in neuroscience and education, expands the role of neurobiology, emphasising neuro-psycho-motor views. These are based on a broader analysis of the whole child, which includes disturbances in reading and writing, slowness, disorders in executive processes, involving sequential or procedural order or tracking and space-time elements of human actions, (Chiarenza 1998, 2013, 2014; Crispiani, 2011, 2016; Fawcett Nicolson and Dean, 1996, 2001; Nicolson and Fawcett, 2007, 2010; Stein & Walsh, 2001).

This analysis of the phenomenon of dyslexia leads towards a more organic theoretical framework based on the convergence of cognitive and motor vectors into a cognitive motor paradigm, (Crispiani, 2011; Crispiani & Palmieri, 2017; Leismann et al., 2016).

## DEVELOPMENT OF MOTOR SKILLS

There is a growing awareness, both at research level and within the educational community, about the significance of the role that physical aspects of development contribute to cognitive skills and development.

Historically, motor development and cognitive development have been studied as two separate areas, with an understanding that motor development precedes cognitive development. The terms 'movement' and 'motor' are often used interchangeably, although the term 'movement' is used more in relation to observable behaviours in posture or locomotion, whereas the term 'motor' refers more to non-observable neurological processes associated with observable movement. (Carta et al.). The term cognitive-motor reflects more precisely the dynamic inter-relationship between motor development and children's understanding of the physical and social contexts that they inhabit, and the influence of motor skills on perceptual and cognitive processes (Libertus and Hauf, 2017).

These authors suggest that the relationship between motor skills and other developmental domains is particularly strong in the first three years of life, diminishing after this point, apart from a continuing relationship between motor skills and Maths, until the age of six. The implication is that the developmental status of fine motor skills, static balance and other motor skills can be predictive of cognitive skills and, as such, should perhaps play a greater role in establishing school readiness and in providing early intervention programmes that target motor skills.

This is supported by the research of Grissmer et al., (2010) that suggests that evidence from neuroscience and associated research indicates the significance of early motor skills in relation to later cognitive development. They cite neuro-imaging evidence of two-way neural communication between motor and cognitive areas that is also congruent with current embodied cognition research. Koziol, Ely Budding & Chidekell, (2011) also stress the importance of the links between cognitive and motor functions and suggest that motor activity plays a substantial role in the development and performance of cognitive actions.

Effective cognitive-motor development can be perceived as a necessity for adequate physical and healthy psychological development as well as sensory-motor, language, perception, higher cognitive functioning, and emotional and social development. The implication is that these should be taken into account in all school teaching, including a greater emphasis on motor education.

It is interesting to note that there is a developing interest in the interdependence of cognitive and motor development that is reliant on mature vestibular and proprioceptive senses that develop through an active early childhood. It is acknowledged that

practitioners report that children are less ready for school than 10 years ago, however, Frostig, (1970) was making comparable statements nearly 50 years ago. McClelland, Pitt and Stein (2015) have also drawn on evidence from neuroscience and psychology that has highlighted what they refer to as a 'radically different model' of brain/ body systems, that links into the current work on embodied cognition (Ionesco and Vasc, 2014). This implies that our bodies and perceptually guided motions are critical in achieving our goals.

Links between learning and acquiring accurate muscle control and higher level elements of cognition and executive function skills have formed the basis of a physical activity intervention that includes visual tracking and cross lateral activities that have produced encouraging improvements in research studies relating to standardized literacy and numeracy tests (Palmieri and Crispiani, 2015; Crispiani and Palmieri, 2017).

## EXECUTIVE FUNCTIONS

Observation of dyslexics indicates that there is a tendency for disorganized performance in complex cognitive tasks, which means they are dysfunctional, ineffective and lacking in fluency. Combining cognitive-motor and educational influences allows us to understand Executive Functions and their variations in order to activate useful interventions from an early age.

Focusing on the qualitative nature of the disorder, rather than the quantitative aspects, a series of deficits in executive functions can be identified. These are, important components of human action, defined as 'ordered and fluent execution of intentional actions in relation to environments'. They\* are related to a number of neurophysiological conditions that optimise global human action: general coordination, activation (the 'incipit' or speed of initiation of action) self-regulation, spatial-temporal organisation, lateral dominance and emotional control.

The approach we propose opens up an analytic perspective with a strong neurophysiological basis drawing on theoretical approaches in the management of executive disorders in relation to:

Attention to complex underlying neurophysiological processes rather than perceptual processes

- ◆ Cognitive processing speed
- ◆ Information processing speed
- ◆ Speed of initiation (incipit)
- ◆ Self-regulation and self-inhibition processes
- ◆ Inter-hemispheric fluidity

---

\* Cfr. P. Crispiani, *Dislessia come disprassia sequenziale*, edizioni junior Parma 2011, p.145

## CORRELATION WITH READING-WRITING

Many researchers, since the early 20th century, have theorized about the complex connections between the neurophysiological and neuro-motor processes that are today defined as executive functions, and how these relate to reading, writing, or in other cases, language. Diamond, (2013) for example highlights the importance of executive function in both school readiness and school success notably that inhibitory, control working memory and higher order skills of cognitive flexibility can be improved. She also notes that children who show the greatest deficits can benefit most from programmes that emphasise motor training with repeated practice, where demands are incrementally increased over time. Moreover, Diamond and Kelly (2011) report research showing that aerobic exercise that ramps up in difficulty which includes bi-manual co-ordination is effective in sustained improvement in Executive function.

Supported by motor coordination, spatio-temporal organization, visual tracking, fluidity, and brain plasticity, activities such as reading, writing and mathematics require broad functional activation and intense solidarity between anatomical-functional structures and brain networks. These are implicated in horizontal tracking from left to right, maintenance of fluidity, brain elasticity and many other functions.

Reading and writing are complex processes that are multi-componential by nature, (Karmiloff-Smith et al.) and that require a global neurophysiological and psychological engagement. This can also be linked to motor-praxic efficiency, spatio-temporal organization and fluid movement in the appropriate direction, including cross patterns to change sentence and the speed of semantic and symbolic processes.

## CROSS PATTERNS

A functionally dynamic, neurophysiological system that is flexible, with effective hemispheric communication and coordination, supports many daily and automatic actions, as well as many higher functions that have been implicated in literacy and numeracy skills. In this respect, effective inter-hemispheric communication underpins the reading process, that is a kinetic process, linked to the control of motor planning through prompt activation of important early markers of executive function. These include readiness to start or initiate action (the 'incipit'), the planning of left/ right, high/low, perceptual pursuit, cognitive control, self-regulation, organization of space and time, inhibitory processes and vigilance in maintaining alertness.

In contrast, a dysfunctional, discontinuous and ineffective programming of these executive markers, in the context of a complex cognitive task, such as reading, leads to a disorganized performance far beyond the difficulties of the reading process that is recognized as dyslexia. In fact, increasingly, the phenomenon is associated with a disorder of executive functions linked to many aspects of behaviour.

In this article, we wish to raise issues relating to the central importance of intra- and inter-individual variability in executive functioning between dyslexic and non-dyslexic students in terms of executive consistency (fluidity), especially in reading performance, where the dyslexic tends to perform either too slowly or too rapidly. Difficulties in executive functions, with particular reference to neural circuits, whose functionality requires effective exchange between the hemispheres, forms the basis for our Cognitive Motor Training, utilizing cross-pattern exercises as part of a larger research programme. The Crispiani Method has undertaken a dynamic approach to training in promoting cognitive enhancement designed to enhance executive functions.

## **TREATMENT AND EVALUATION**

Cognitive Motor Training, as we define it, has developed as an intensive and ecologically valid practice that builds in sensitive instrumental recording and documentation of practice. The approach monitors fluidity and accuracy in designed to build a general improvement in motor- cognitive engagement and the rapidity of response. This leads more specifically to functional gains in performance in literacy and numeracy skills.

## **CROSS PATTERNS AND THEIR CORRELATION WITH EXECUTIVE FUNCTIONS IN READING PROCESSES.**

The ability to perform a series of exercises is based on the ability to create a mental representation of the sequence required, in response to the therapist's request. So, a cross pattern of the upper limbs (for example, touching the left ear with the right hand and the right ear with the left hand) or the lower limbs (touching the left knee with the right hand) with the left hand the right knee) is dependent on both the necessary motor and ideomotor planning (the syntax of the movement-action based on involuntary movements driven by thought), and the orderly execution and organization in space and time.

This sequence of actions acts as a mental representation and intentional neurophysiological automatisisation. In order to understand this, an analogy can be drawn to many actions in everyday life, such as climbing or going downstairs, walking, cycling, or even more complex performances such as reading and writing. The brain areas assigned to the execution of a crossed pattern with upper and lower limbs are in the parietal lobe of the left hemisphere which is specialized to carry out this movement, which involves the right side of our brain (Chiarenza, 2008).

Cross neuromotor patterns involve crossing the midline based on ideas and spatial input, which generate a practical executive output. This output is activated and controlled by the primary prefrontal and premotor cortex. When there is an efficient cross system, reading and writing are praxic-motor processes, as are working with

numbers or deciphering the clock: they are processed in the brain through a cross-modal process.

In dyspraxia, cross patterns are in general slow and poorly coordinated, even in terms of slowness of thought, orientation and perception leading to slowness in terms of cross pattern processes. Inaccuracy in the opposite side of the body, leads to an altered kinesthetic sense involving disorder and lack of fluency.

Reading and writing are, seen as highly automatic ideomotor praxes, or practical ideas or thoughts which cannot be seen. They are based on cross pattern processes, which activate complex simultaneous functions (Crispiani & Palmieri 2015).

The conceptual input and its prompt reception is also important, since a slow neuro-activation (incipit) makes transfer to the frontal lobes disorganized

It has been observed that children in kindergarten sometimes have an early ideomotor representation of words, in line with their verbal skills. This means that even if they cannot read yet, they can intuitively write or read words as a global gestalt. This corresponds to the logographic stage identified by Frith, (1985) in early reading, where the word is recognized as a whole rather than in terms of the component letters. This means that young children may recognize familiar logos, despite the fact they cannot yet read.

This suggests that from the early years, children read through a gestalt approach (a global, intuitive approach) and they continue as in automatic reading, as an internal motor process, with a representation of the text, scrolling from left to right, applying a pattern crossing the midline.

Fluid reading is consistent reading, without interruptions or stumbling, a kinesthetic process which involves, as an ideomotor praxis, both the lower parietal occipital association areas and the visuo-kinesthetic representations in the left hemisphere.\*

In the dyspraxic / dyslexic profile, (Crispiani, 2013) this ideomotor function demands a greater organizational and self-regulating input, due to their disordered and dysfluent processing. This makes the child awkward and clumsy in execution, with activation which is slower and not always accurate compared with the control group (Crispiani & Palmieri 2017)

In our observations, the control group spontaneously crossed the midline, with both arms and both legs. They were able to perform this task without interruptions or hesitations maintaining both speed and accuracy. In comparison, the dyslexic group is slow and their performance is less accurate

\* Chiarenza, e Njiokiktjien. (2008). *Le disprassie dello sviluppo e i disturbi motori associati*, Suyi, Amsterdam.

Therefore, an efficient cross system based on prompt and adequate neuro-activation which we call the *incipit or initiation of action* (Crispiani 2016), without interruptions or pauses, may ensure fluid and consistent reading.

In the research example examined there was an absence of visual deficits. This means the cognitive representation of the crossed patterns depends on correlated executive functions. These become the first indicators of the reading processes: the *incipit*, ideomotor planning, inhibition, and self-regulation.

## EXECUTIVE FUNCTIONS AND FUNCTIONAL GAINS

What is the basis of an efficient executive system, that allows both projection and execution of actions (Chiarenza & Njiokiktjien 2008)? A kinesthetic mental representation has an important function in providing activation on request in the pre-frontal areas of the brain. This aspect is central to the execution of ideomotor praxis, putting thought into motion.

The dyslexic group examined in the research sample (Crispiani & Palmieri, 2017) manifested different levels of disorders in ideomotor representations including:

- ◆ Poor fluidity and synchronization of the spatial and temporal elements implicated in the cross (inter-hemispheric) systems.
- ◆ A tendency to clumsiness and inaccuracies in the dynamic coordination of skills required to complete tasks efficiently.
- ◆ Inability to reproduce the initial phase of targeted patterns, substituting actions or using other body parts.

In this case, the body requires crucial spatial parameters during the fluid execution of cross pattern sequences.

This requires:

- ◆ Adequate crossing of the medial axis or mid line
- ◆ Coordination and laterality
- ◆ Rhythm and control of the body
- ◆ Timing clearly emerged from our research as a significant concept for the dyslexic group. They showed delays from initiating to executing actions, based on slow neuro-activation including:
  - ◆ Lack of coordination in motor sequences
  - ◆ Irregular timing and rhythm, with difficulties in sequential proceduralization of the target pattern
  - ◆ Alterations in the spatial input required for efficient actions



This means that the dyslexic group never developed automatic processing of the sequence they were asked to perform, so that the exercise routine remained effortful, stressful, uncoordinated and slow.

Performing a fluid cross pattern sequence is part of an internal representation that requires electric potentials in preparation for motor planning (Vidal, Bonnet, Macar, 1995) before action. The slowness that the dyslexic demonstrates in the *incipit* or initiating phase implicates the role of tempo, in particular in relation to reading. This is an internal process where the dyslexic manifests slowness in cross pattern executions.

From this perspective, some authors point out the importance of training executive functions to promote learning through motor training programmes. These should employ a series of dynamic progressiveness and incremental procedural patterns (Bergman-Nutley, Söderqvist, Bryde, Thorell, Humphreys, & Klingberg, (2011). Children with difficulties in motor coordination and reduced self-regulation skills may achieve great benefits from this training (Diamond & Lee 2011) with those with the greatest difficulties showing the greatest improvement.

Linked to this, the Special Training, Champion LIRM (Crispiani & Palmieri 2017), as applied in our research, is a professional and clinical practice based on the *Maturation Process* to achieve automaticity. The Special Training applied uses an incremental pattern of exercises through increasing the number of sequences and the speed of execution.

What this produces is a neurophysiological acceleration that trains slow and disorganized functions, normally highly dysfunctional in dyslexics, This is a disharmonic condition, in the initial or preparation phase that we define as the '*incipit*'.

In the dyslexic group the execution of cross patterns was slower than the control group in the initiation and planning phases, where the control group required less time. This slow initial activation provides evidence of the difficulty of the dyslexic in readiness to start, with an underlying slowness in neuronal circuits.

This lack of promptness in the dyslexic is related to self-regulation processes and linked to kinesthetic feedback. In many cases, motor perseverance is revealed in the dyslexic group, in terms of repetitions of the same wrong patterns (for example the dyslexic group may not cross arms at the shoulders whilst walking on the spot, or they continue to walk on the spot, without crossing for some seconds.

It is acknowledged that a lack of skill in inhibiting ongoing behaviour is related to the orbitofrontal cortex based on a disorder of executive functions.

Following the Special Training Champion LIRM (15 hours in 3 days), the improvement of

speed activation of the dyslexic group was 56% (Crispiani & Palmieri 2017 and b). Our empirical research was applied to a small sample and limited to a dyslexic context, nevertheless it showed a normalization of speed in our dyslexic group, moving towards the level identified in the control group. Its purpose is to show that there is a possible link between cross (interhemispheric) systems, executive functions and the reading process.

## CONCLUSION

It is proposed that EFs can be improved. Moreover, the level of their initial activation is centrally important in determining dyslexic's efficiency. This is especially true in tasks occurring within the same time frame, where the dyslexic - dyspraxic tends to be even more slow. This is due to a difficulty in central neurophysiological processes, particularly interhemispheric exchange and executive functions. Cognitive-Motor-Training enhances the consistent and persistent coordination of cross systems in the lower and upper limbs, in general praxic performance, stressing their readiness or rapid activation. The promptness, the efficiency, the consistency and self-regulation of the activation of these aspects, constitute the active principles underlying the practices of our Practical-Theoretical Cognitive Motor Training (Crispiani, 2016a). Despite the very significant improvements the dyslexic participants have made in all their skills, further research is needed using this approach in order to further validate these promising findings that can reinforce traditional intervention.

## REFERENCES

- Bergman-Nutley, S., Söderqvist, S., Bryde, S., Thorell, L. B., Humphreys, K., & Klingberg, T. (2011). Gains in fluid intelligence after training non-verbal reasoning in 4-year-old children: A controlled, randomized study. *Developmental Science* 14(3):591-601
- Chiarenza, G. A., Di Pietro, S., & Casarotto, S. (2014). The psychophysiology of reading. *International journal of psychophysiology*, 94, 111-119.
- Chiarenza, e Njiokiktjen. (2008). *Le disprassie dello sviluppo e i disturbi motori associati*, Suyi, Amsterdam.
- Chiarenza, G. A., & Stagi P. (1998). Is timing control a central deficit underlying developmental dyslexia? *International Journal of Psychophysiology*, 30, 1-2,72-73.
- Chiarenza, G. A., Olgiati, P., Trevisan, C., De Marchi, I., & Casarotto, S. (2013). Reading aloud: A psychophysiological investigation in children. *Neuropsychologia*, 51, 425-436.
- Chiarenza, G. A., Di Pietro, S. F., & Casarotto, S. (2014). The psychophysiology of reading. *Proceedings of the 17th world congress of Psychophysiology (IOP2014)*, of the International Organization of Psychophysiology (IOP) Hiroshima, Japan September 23- 27, 2012, Guest Editors: Hiroshi Nittono, Keiichi Onoda, Hideki Ohira
- Crispiani, P. (2011). *Dislessia come disprassia sequenziale*, Junior-Spaggiari, Bergamo-Parma.
- Crispiani, P., & Palmieri, E. (2012). *Champion LIRM*, Institute Itard, Centro Italiano Dislessia and Disprassia

- Crispiani, P. (2015). *Hermes 2016. Glossario scientifico professionale*, Junior- Spaggiari, Parma.
- Crispiani, P. (2016a). *Il Metodo Crispiani 2016. Clinica della dislessia e disgrassia*, Ed. Junior- Spaggiari, Parma.
- Crispiani, P., & Pavone, M. (2016b). Pedagogia speciale e condizione dislessica, in P. Crispiani (a cura), *Storia della pedagogia speciale*, ETS, Pisa, pp. 722-744.
- Crispiani, P., & Palmieri, E. (2017a). *Champion Pressing, pratiche intensive speciali di Cognitive Motor Training*, by istituto Itard, Collana Les Sauvages, Chiaravalle (AN)
- Crispiani, P., & Palmieri, E. (2017b). Dyslexia and Champion L.I.R.M: Outcomes of a research study based on treatment of cross Patterns. *Asia Pacific Journal of Developmental Differences* 4, 2, 195–211 DOI: 10.3850/S2345734117000113
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science*, 333(6045):959-64. doi: 10.1126/science.1204529.
- Diamond, A. (2013). Executive Functions. *Annual Review of Psychology*, 64, 135–168. <http://doi.org/10.1146/annurev-psych-113011-143750>
- Fawcett, A. J., Nicolson, R. I., & Dean, P. (1996). Impaired performance of children with dyslexia on a range of cerebellar tasks. *Annals of Dyslexia*, 46, 259-283.
- Frith, U. (1985). Beneath the surface of developmental dyslexia. In K. Patterson, J. Marshall, & M. Coltheart (Eds.), *Surface dyslexia: Neurological and cognitive studies of phonological reading* (pp. 301- 330). Hillsdale, NJ: Lawrence Erlbaum. <https://sites.google.com/site/utafirth/publications-1/reading-spelling-and-dyslexia>
- Frostig, M. (1970). *Movement education: Theory and practice*. Chicago: Follet Educational Corporation
- Galaburda, A., & Livingstone, M. (1993). Evidence for a Magnocellular Defect in Developmental Dyslexia. *Annals of the New York Academy of Sciences*, 682, 70-82.
- Grissmer, D., Grimm, K., Aiyer, S., Murrah, W., & Steele, J. (2010). Fine motor skills and early comprehension of the world: Two new school readiness indicators. *Developmental Psychology*, 46, 1008-1017.
- Hauf, P., & Libertus, K. (2017). Editorial: Motor skills and their foundational role for their foundational role in perceptual, social and cognitive development. *Frontiers in Psychology*, 8, 301.
- Koziol, L., Ely Budding, D., & Chidekel, D. (2011). From movement to thought: Executive function, embodied cognition and the cerebellum. *Cerebellum*: DOI 10.1007/s12311-011-0321-y
- Kuhn, T. (1962/70). *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press (1970, 2nd edition, with postscript
- Leisman G., Moustafa A. A., & Shafir, T. (2016). Thinking, Walking, Talking : Integratory Motor and Cognitive Brain Function, in *Frontiers in public health*, 25 may. <https://doi.org/10.3389/fpubh.2016.00094>
- McClelland, E., Pitt, A., and Stein, J. (2015). Enhanced academic performance using a novel classroom physical activity intervention to increase awareness, attention and self-control: Putting embodied cognition into action. *Improving Schools 2015, Vol 18*(1) 83-100)
- Nicolson, R. I., & Fawcett, A. J. (2007). Procedural learning difficulties: reuniting the developmental disorders? *Trends in Neurosciences*, 30 (4), 135- 141.
- Nicolson R. I., Fawcett, A. J., & Dean, P. (2001). Developmental Dyslexia: the cerebellar deficit hypothesis, *Trends in Neurosciences*, 24 (9), pp. 508-511.
- Nicolson, R. I., & Fawcett, A. J. (2010). *Dyslexia, Learning and the Brain*. MIT: Massachusetts.
- Orton, S. T. (1929). Word-Blindness in school children, *Arch. Neur Psychiatric*, 21.
- Orton, S. T. (1937). *Reading Writing and speech problems in children*, Freeman, San Francisco.

- Palmieri, E., & Crispiani, P. (2015). Improving the fluidity of whole word reading with a dynamic coordinated movement approach *Asia Pacific Journal of Developmental Differences* 2, pp 158 - 183 DOI: 10.3850/S2345734115000277
- Stein, J., & Walsh, V. (1997). To see but not to read; the magnocellular theory of dyslexia *Trends in Neuroscience*, 20 (1997), pp. 147-152 591 -601
- Vidal, F., Bonnet, M., Macar, F. (1995). Programming the duration of a motor sequence: Role of the primary and supplementary motor area in man, *Exp Brain Res* 106:339-50



# *An evaluation of the effectiveness of using drama as a tool to build social-emotional development of children with dyslexia in Singapore.*

Muzdalifah Hamzah<sup>1\*</sup>

1      Dyslexia Association of Singapore

---

## Abstract

Literacy is not the only struggle that children with dyslexia face every day. For many years, researchers have reported that children with dyslexia have poorer levels of social-emotional development, due to personal experiences with failures, perceptions of their literacy abilities and failing to receive appropriate emotional support from adults around them. This study explores the efficacy of a speech and drama programme in developing the social-emotional literacy of children with dyslexia. The participants were students aged 7-11 years old, enrolled in the speech and drama programme in Dyslexia Association of Singapore for the whole year of 2016. The Southampton Emotional Literacy Scales (SELS) for the appropriate age group was used for this study. Pre and Post programme questionnaires were collected from students, parents and drama teachers. Semi-structured interviews with parents were conducted in order to provide in-depth insight into the research. The results are discussed and suggestions provided with recommendations for future research.

Through this study and the data presented, it is hoped to encourage teachers, educators, education policy makers and parents to see that there is more at stake in dyslexia than just acquiring literacy (reading, spelling and writing) skills and achieving good grades. There is also a need to develop our children's social-emotional literacy so that they can adapt and be ready to meet the current demands of society.

**Keywords:** Drama, dyslexia, social-emotional literacy

---

\* Correspondence to:

Muzdalifah Hamzah, Senior Educational Therapist & Drama Teacher, Dyslexia Association of Singapore E: [muzdalifah@das.org.sg](mailto:muzdalifah@das.org.sg)

## INTRODUCTION

Social-emotional development is the knowledge, disposition and skills to be able to understand and manage our own emotions, to be able to decode and respond appropriately to the emotions of other people, to be able to establish positive relationships with others, to be able to make informed decision and to handle conflicts effectively (Faupel, 2003; Joronen, Hakamies and Astedt-Kurki, 2011).

The realm of social-emotional development of children with learning difficulties, especially those diagnosed with dyslexia, has received attention for many decades and is still an area that intrigues researchers. Many researchers have attempted to identify and evaluate the relationship of success to the social-emotional competencies of these children through numerous studies, outlined below. Most documented findings urge schools, educators and even the government to step in and promote social-emotional learning as part of the school curriculum (Humphrey, 2002; Faupel, 2003; Thom, 2010; Joronen, Hakamies and Astedt-Kurki, 2011; Adams, 2013; Casserly, 2013; Antonelli et.al, 2014).

According to Faupel (2003), developing social and emotional competencies in schools or classrooms involves a 3-stage intervention, based on a modification of the ABC model of behaviour; i) changing the environment - this is not limited to changing the physical environment of the classroom itself, how it is organised, the teacher's character and classroom management but also includes revision of the curriculum with more directed and purposeful skills for the pupils to learn; ii) consequences - the importance of rewarding acceptable behaviours to encourage co-operation; and iii) getting the children to practice - most schools stop at consequences when it comes to social and emotional behaviour; teachers have to ensure that the students know what to do, how to do it and to have numerous tries using the skills they have been taught to handle their emotions and behaviour.

The importance of social-emotional development competencies of a child is well-established by some researchers as the predictor of academic success. (Joronen et.al, 2011; Ashdown and Bernard, 2012; Casserly 2013), helping to increase the self-esteem and confidence level as the child develops a strong sense of self (Faupel,2003), peer relations (Humphrey 2002) and protecting the child in his later years from violence and crime, teenage pregnancy and drugs and alcohol abuse (Joronen et. al, 2011).  
Paradigm shift in the education landscape

As researchers have established the importance of social-emotional literacy and its effects on academic success, self-esteem, personal and professional development (Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnik, & Elias,2003), the Singapore government initiated a collective paradigm shift in the education landscape in 2016 – moving towards a holistic education. A more holistic education would mean schools in Singapore would have a robust curriculum with a combination of academic and non-

academic subjects. Between 2017 and 2018, the Ministry of Education has been implementing a revised secondary school curriculum which includes more hands-on subjects like Electronics, Computing, Exercise & Sports Science, Drama, Smart Electrical Technology, Mobile Robotics and Retail Operations which are offered for N-level and O-level tracks (Teng, 2016). In the Ministry Of Education (MOE) FY 2016 Committee of Supply Debate speech, Mr Ng Chee Meng, Acting Minister of Education (Schools) proposed the need to review and refine the Direct School Admission (DSA) quota and selection process so that students can be admitted into secondary schools that offer distinctive programmes (MOE, 2016).

This importance of holistic education has also been extended to polytechnic students where Acting Minister for Education (Higher Education and Skills) Ong Ye Kung, highlighted in his speech the advantages of matching students to the courses of their interests; through Direct Polytechnic Admissions (DPA), an aptitude-based admission (Ministry of Education, 2016). In addition to the Polytechnics, the aptitude-based admissions expand opportunities for talented students in secondary school, Institute of Technical Education (ITE) and the Universities to pursue their interests. The Singapore government is putting in a great deal of effort to recognise and include 'talents' as achievements.

## **DYSLEXIA**

One of the main obstacles to academic achievement is dyslexia, a learning difficulty that affects reading, spelling and writing abilities (Everatt et al., 2008; Marzocchi et al., 2009; Thomson, 2009), and is often combined with other co-occurring difficulties such as attention deficit hyperactivity disorder (ADHD), dyspraxia, dyscalculia and social, emotional and behavioural disorder (SEBD) (Everatt et al., 2008 and Thomson, 2009). According to Frederickson and Cline (2009), dyslexia could affect gross and fine motor skills, working memory, literacy acquisition and the social-emotional function of a child, and these are in addition to phonological deficits (Everatt, Weeks and Brooks, 2008) and attention processes impairment (Marzocchi, Ornaghi, Barboglio, 2009) that children with dyslexia are already facing.

This struggle somehow manifests into negative perception of themselves, as they experience academic failures and challenges throughout their schooling years (Humphrey, 2002; Burden and Burdett, 2005; Casserly, 2013). For more than a decade researchers have documented that children with dyslexia have poorer levels of social-emotional development than their peers, due to personal experiences with failures, perceptions of their literacy abilities and failure to receive appropriate emotional support from parents, teachers and people around them (Bryan, Sullivan-Burtsein and Mathur, 1998; Humphrey, 2002; Burden and Burdett, 2005; Casserly, 2013; Antonelli, Bilocca, Borg, Borg, Boxall, Briff, Debono, Falzon, Farrugia, Gatt, Formosa, Mifsud, Mizzi, Scurfield, Scurfield & Vella, 2014).

Recognising the struggles of children with dyslexia with literacy and the need to develop their social and emotional competencies, the SDA programme was introduced in DAS in 2013 as a platform for DAS students to learn to express their inner feelings and emotions, to boost their confidence level, to demonstrate their talents and to discover their strengths in a fun and safe environment.

Thomson (2009) suggested that if children with dyslexia could overcome the "I am dyslexic and I can't do it" attitude, then it would increase their self-esteem and determination to succeed. For these children, having an improved perception of self could give them a better chance to succeed in school and life (Humphrey, 2002), hence, they need to feel supported (Eadon, 2005; Casserly, 2013).

With that, this paper aims to explore the effectiveness of using drama as a tool for building social-emotional development in primary school children in Singapore. My research questions for this study are:

1. Do children with dyslexia show improvement in Social-Emotional Literacy Scales (SELS) score after a year in the drama programme?
2. What are the social-emotional difficulties that may be present in children with dyslexia, who participated in this study, as identified by parents?
3. Can Drama be the tool to develop social-emotional literacy?

## LITERATURE REVIEW

Children with learning difficulties often refer to themselves in a very negative way due to the discouraging messages such as "you're too slow", and "you still can't read" from many sources such as parents, siblings, teachers and even peers on daily basis (Bryan, Sullivan-Burtsein and Mathur, 1998; Humphrey, 2002; Burden and Burdett, 2005; Eadon, 2005; Casserly, 2013; Antonelli, Bilocca, Borg, Borg, Boxall, Briff, Debono, Falzon, Farrugia, Gatt, Formosa, Mifsud, Mizzi, Scurfield, Scurfield & Vella, 2014). Burden (2005), pointed out that negative perceptions proliferated in dyslexic individuals, not limited to the perception of being incompetent academically, but extending to even intrapersonal and interpersonal growth.

Humphrey (2001 & 2003) noted that such maladaptive self-references for these children eventually leads to poor self-concepts and lowered self-esteem. He further explained that self-concept and self-esteem have implications for motivation, academic achievement and relationships with others. The findings of the study suggest, for example, that some of these children with poor self-concept and self-esteem may even exhibit greater emotional and behavioural difficulties when compared to children without reading problems.



## **DRAMA AND CHILDREN WITH DYSLEXIA**

Since children with dyslexia have low self-esteem and poor perceptions of themselves, Eadon (2005) and Winston (2012) claimed that drama can be a powerful tool to learn literacy and build self-confidence, which in turn can lead to a more positive self-concept for individuals.

Children with dyslexia can learn language through an interactive and participatory process offered by drama classes, which engage learners emotionally and playfully (Winston, 2012). According to Winston (2012), drama is a multimodal form of pedagogy that engages students' interest at different levels of entry. A multimodal form which combines visual, aural, verbal and kinaesthetic language allows students to retain a particular learning experience firmly in their minds (Chang, 2012). Also, the 'malleability' of the learning process enables teachers to swiftly respond and adapt to any student's comments, questions or ideas (Chang, 2012).

Chang (2012) suggested the playful nature of drama in classroom is advantageous in preparing students to express their thoughts and learn to take risks. Drama, being a multimodal pedagogy, uses props, body language, facial expressions, sounds and images along with words to convey meaning (Palechourou and Winston, 2012). Within the drama experience, these children are given the opportunities to draw on and construct meaning, not only from their spoken language, but also from the physical context combined with visual and aural cues.

Drama activities such as role-play give the students an opportunity to become physically and linguistically part of the story by assuming the roles of the characters and imagining they are facing the similar problems. At the same time, they can re-consider their thoughts, attitudes and feelings in the light of shared experience with their peers, learning to work together, to cooperate and contribute, and to listen to and accept the viewpoints and contributions of others (Palechorou and Winston, 2012).

## **METHOD**

### **Participants**

A total of 6 students, 6 parents and 2 DAS Speech and Drama teachers participated in this study. The pre-requisites for the participants were as follows.

### **Pre-requisites for student-participant:**

The following criteria must be met before seeking parental consent for the study: the student must be new to the DAS Speech and Drama programme in Term 1, 2016, the child has to be within the age group 7 years old – 11 years old, officially diagnosed with

dyslexia and have completed the programme for one year (from Term 1 – Term 4, 2016).

**Pre-requisites for parent-participant:**

The only criteria a parent needs to fulfil in order to be able to participate in this research is simply being the parent, legal guardian or care taker of a participating student. The main reason for this criterion was to gather data from people who live in close proximity with the student, have an established parent-relationship with the student who are able to observe changes in the student’s behaviour.

**Pre-requisites for teacher-participant:**

The teacher-participants must be an Educational Therapist (EdT) at DAS who provides literacy intervention to students with dyslexia. The teacher, must be based at the same centre as the new student-participants.

Informed consent was obtained from all participants prior to the participation in the questionnaires and the interview sessions.

**Instrument**

In order to explore the effectiveness of using drama as a tool for building social-emotional development in primary school children in Singapore, this paper will be using the Southampton Emotional Literacy Scales (SELS) for students, parents, teachers and interviews with parents. (See Table 1) The domains of SELS are divided into Personal Competence and Social Competence (Goleman,1996).

Table 1: Different type of SELS questionnaire for different group

SOUTHAMPTON EMOTIONAL LITERACY SURVEY		
PUPIL CHECKLIST	PARENT CHECKIST	TEACHER CHECKLIST
25 questions to be completed by the pupil  Will represent the child’s view of himself/herself	25 questions to be completed by parent or primary care taker at home  Will represent the parent's view of the child at home	20 questions to be completed by teacher in the school  Will represent the teacher's view of the child in school

Apart from the SELS questionnaires, a parent of each student participating was interviewed at the end of 2016 and early 2017. Using a script of 4 open-ended questions, their thoughts were gathered on the progress of the children in terms of their behaviour and social-emotional aspects.

### **Interview Questions:**

1. Why did you enrol your child into the SDA programme?
2. Can you tell me more about your child's level of confidence, social skill and maybe self-awareness or self-regulation, that is how is he/she managing his/her own emotions, before joining the programme?
3. Can you tell me more about your child's level of confidence, social skill and maybe self-awareness or self-regulation, that is how is he/she managing his/her own emotions, after joining the programme?
4. In your opinion, do you think it is important to develop the social-emotional aspects? Why?

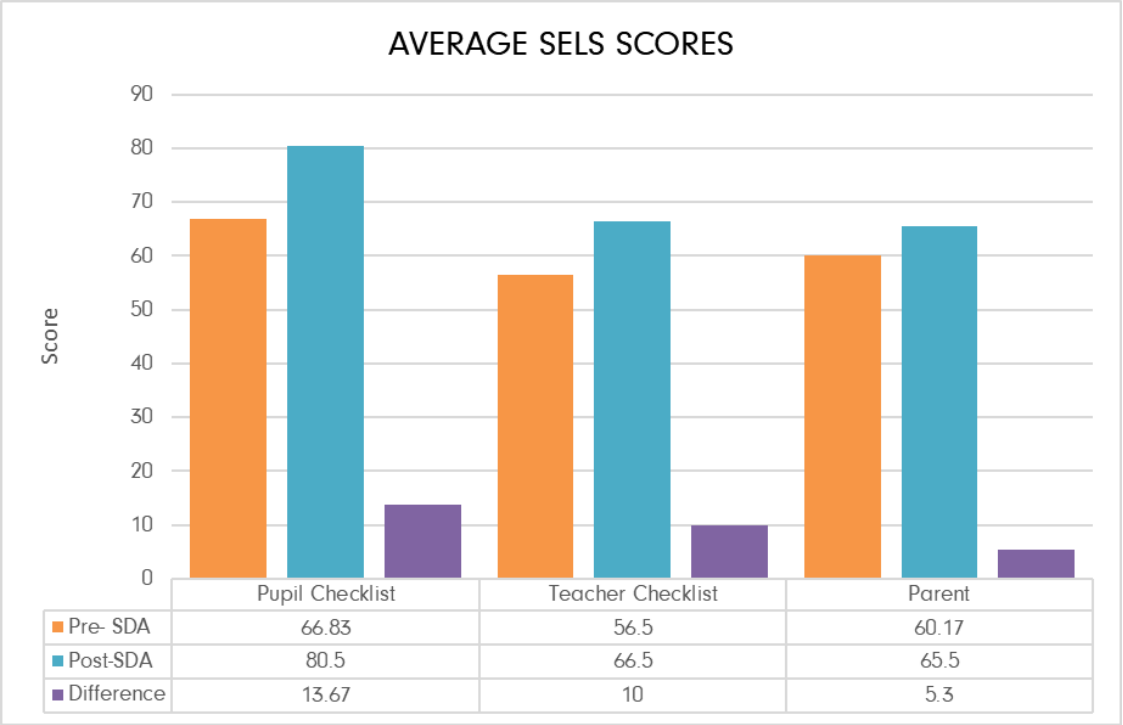
## **RESULTS AND FINDINGS**

Before presenting the outcomes of each individual checklist, here is a comparison of pre-SDA and post-SDA SELS scores from Pupil Checklist, Teacher Checklist and Parent Checklist.

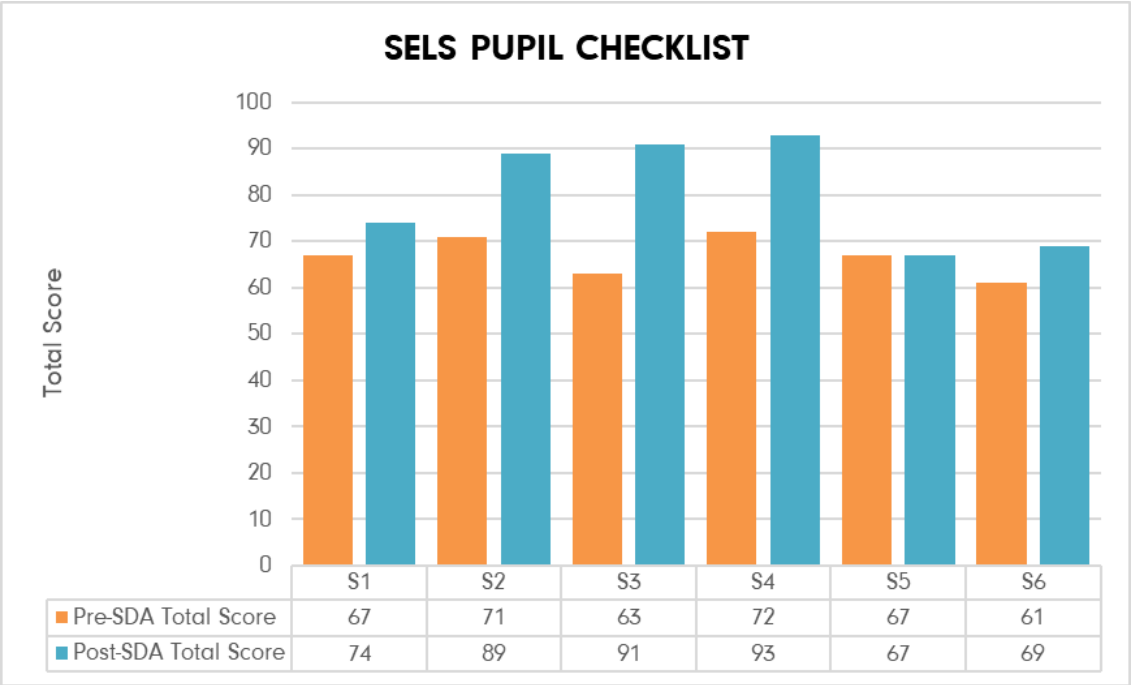
In Figure 1, students scored an average of 66.83 points for their pre-SDA Pupil Checklist questionnaire run in Term 1. This average score increased to 80.5 points in Term 4. The difference between these two average scores is 13.67 points and it is equated to a 20.45% leap in the Pupil Checklist. This leap reflected an improved average score Pupil Checklist for all the students who participated in this study. Therefore, this is an encouraging outcome that signified students are seeing themselves more positively, which means, their social-emotional aspects are improving.

The average pre-SDA score for the Teacher Checklist was 56.5 points in Term 1 and it went up to 76.19% in Term 4, which was a 20 points difference. This slight increase revealed that on average the teachers were able to report observable changes through the Teacher Checklist.

The average pre-SDA Parent Checklist score was 60.17 points in Term 1 and the average post-SDA score in Term 4 went up slightly to 65.5 points, that was only an 8.8% increase. There could be various factors that contributed to this slight increase, which will be discussed later in this paper.



*Figure 1: Comparison of pre-SDA and post-SDA of SELS scores.  
Average scores of 3 checklists were compared.*



*Figure 2: SELS Pupil Checklist Score*

The next set of data that we will be looking at will be the Pupil Checklist, as shown in Figure 2. It was tabulated to reveal the number of students that actually perceived themselves more positively after one year in SDA programme.

From the Pupil Checklist’s data, 5 out of 6 students gave an improved SELS score after attending SDA programme for one year. In terms of statistical significance, a t test was conducted showing a significant effect of drama,  $p=0.02$ , with an effect size of 1.67, indicating a strong effect of the support. What stands out in the chart is Student 3’s score at the beginning of 2016 when he first joined SDA and his scores at the end of Term 4, 2016. His score was 63 when he attempted the questionnaire in Term1. In term 4, his score was 91. There was an increase of 28 points, the highest among his peers. In contrast to that, Student 5 did not seem to have any improvement on his perception of himself. There was no change to both his pre-SDA and post-SDA scores. There could be many reasons that contributed to such outcomes, which will be unravelled from the parents’ interviews in the later part of this chapter. Hence, evaluating and revealing the scores of the Pupil Checklist can provide useful information about the general effectiveness of the drama programme in building social-emotional development, which was translated through the students’ perception of self.

Next, Figure 3 shows the results of the Teacher Checklist. This is where the drama teachers gave their perception with regards to the students’ social-emotional level at the beginning of Term 1 and towards the end of Term 4.

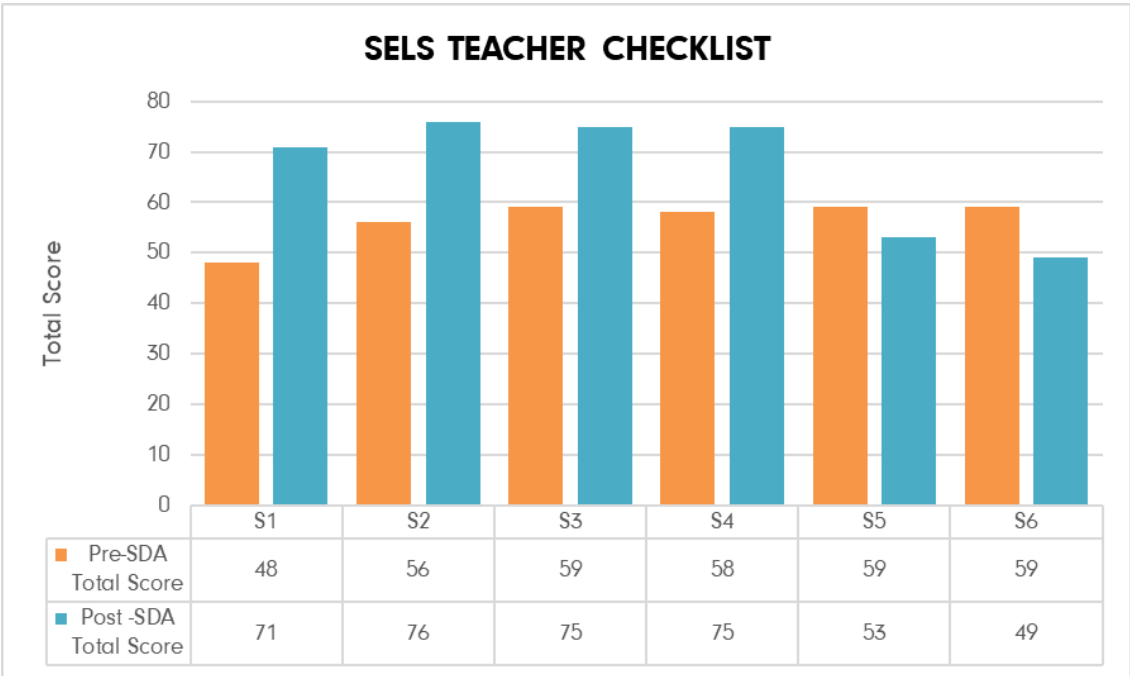


Figure 3: SELS Teacher Checklist Score

From the Teacher Checklist, only 4 students were perceived to have an improved SELS score, and two showed a deterioration. In terms of statistical significance, a t test was conducted showing no overall significance, but with an effect size of 1.67, indicating a strong effect of the support on teachers’ views of the participants. From this data, Student 1’s scores went up by 23 points, and that is the highest peak among his peers. This shows there was a tremendous perceived improvement by Student 1’s drama teacher. Unlike the scores of Student 1, the scores dipped for Student 5 and Student 6 in comparison to their Teacher Checklist scores collected in Term 1; with Student 6’s scores reduced drastically by 10 points.

Lastly, Figure 4 is the final set of quantitative data that we will be looking at. This data represents the perceptions of parents towards their children, who were at the same time the participants in this study. This the most interesting set of data among the 3 checklists. This data gave me a brief overview of how the child is perceived at home by his/her parent and could be supporting assumptions of children behaving differently at home and in the classroom if the data is being used to compare with the Teacher Checklist.

In terms of statistical significance, a t test was conducted showing no significance for parental ratings of the effect of drama, with an effect size of 0.6, however, indicating a medium effect of the support. In this Parent Checklist, Student 1, Student 5 and Student 6 scored 10 more points in Term 4. This was closely followed by Student 3 with an increase of 8 points. And there was a reduction of 1 point and 5 points for Student 2 and Student 4, respectively.

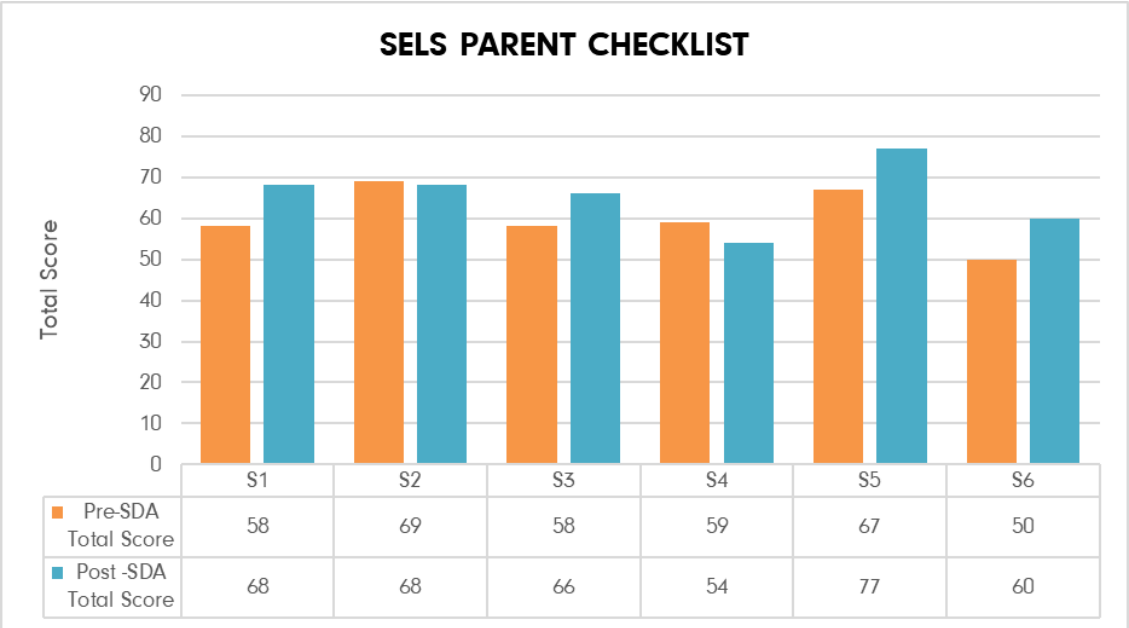


Figure 4: SELS Parent Checklist

Apart from the SELS checklists, interviews with parents were conducted to unravel their intentions in registering their children onto the speech and drama programme, how the child’s behaviour rated before and after joining the programme and the parent’s opinion on the importance of social-emotional development. Each interview was transcribed verbatim and analysed for coding purpose. The responses were coded into categories and later grouped into a bigger theme.

In Table 3 below, the apparent reason for a parent to enrol his/her child into SDA was the perceived ‘benefits of drama classes’ that a child could reap from the programme, for example, builds confidence, helps in expression and encourages social interaction, as reflected in the coded categories.

Table 3: Responses to ‘Why did you enrol your child into the SDA programme?’

Qn 1: Why did you enrol your child into the SDA programme?		
EXEMPLAR QUOTES	CODED CATEGORIES	THEMES
"... I wanted the social communication with other children to improve his social skills." – P1	Encourages social interaction	Benefits of drama class
"... helps in confidence level." – P1 "... always feel speech and drama would give someone confidence you see." – P2	Builds confidence	Benefits of drama class
"...lacks vocabulary to express himself."- P3 "...I think speech and drama will help her to express herself better."-P4	Helps in expression	Benefits of drama class
"...she is very shy and never speak up." – P2 "...a bit shy type of girl." – P4	social skills	Social-emotional difficulties

In Table 4, most students who participated in this study have some level of social-emotional difficulties. These difficulties are identified as the following; behavioural issues, being emotional, lack of confidence and lack of social skills. These were present before the students join the SDA programme.

Table 4: Coded responses to 'Can you tell me more about your child's level of confidence, social skill and maybe self-awareness or self-regulation, that is how is he/she managing his/her own emotions, before joining the programme?'

Qn 2: Can you tell me more about your child's level of confidence, social skill and maybe self-awareness or self-regulation, that is how is he/she managing his/her own emotions, <i>before</i> joining the programme?		
EXEMPLAR QUOTES	CODED CATEGORIES	THEMES
"...some tantrums in school." -P1 "...he will be very frustrated and keeps to himself."-P3 "...he is very hot tempered...throw tantrums..."-P6	Display of behavioural issues	Social-emotional aspect
"...she is very emotional, a bit and she'll start to tears." -P2 "...she will keep everything to herself." - P4	Emotional	Social-emotional aspect
"...she's quite bad you know, she'll bend down her head and will talk so soft(ly) that you could not hear."-P2 "...lacks confidence when it comes to academics."-P3	Confidence	Social-emotional aspect
"...she will not approach friends..... during recess times, sometimes she will sit alone." - P4 "...he has problems communicating with people." -P5	Social skills	Social-emotional aspect

Table 5 below provides an insight into the students' social-emotional capacity after joining the programme for one year, through the parents' interviews. Improvements in confidence level, expression, social skills and development in social-emotional aspects were the changes observed by parents.

Qn 3: Can you tell me more about your child's level of confidence, social skill and maybe self-awareness or self-regulation, that is how is he/she managing his/her own emotions, <i>after</i> joining the programme?		
EXEMPLAR QUOTES	CODED CATEGORIES	THEMES
"...helped in confidence level."-P1 "...she will look at you and then answer you when you post a question at her."-P2 "...it's getting better."-P3 "...improvement in confidence level...she can open up a bit."-P4	Builds confidence	Benefits of drama class
"...able to express himself better."-P1 "...more or less expresses himself better."-P3 "...he has more expressions....talks more."-P5 "...more proper expression."-P6	Helps in Expression	Benefits of drama class
"...improvement in .....as well as communications."-P1 "...there's slight improvement ."-P4	Social skills	Social-emotional aspects
"...improvement in managing emotions."-P4	Emotion	Social-emotional aspects



Table 6: Coded responses to ‘In your opinion, do you think it is important to develop the social-emotional aspects? Why?’

Qn 4:In your opinion, do you think it is important to develop the social-emotional aspects? Why?		
EXEMPLAR QUOTES	CODED CATEGORIES	THEMES
"...yes...(if) otherwise how are they going to live in a community."-P1 "...definitely (important). ...we grow in the world where we need to interact with everyone."-P3"...it is very, very important. ...in future when she grows up, interacting with her friends or maybe at work."-P4	Future interaction with members of the society	Preparation to adulthood
"...of course! If you don't understand people, then it would be bad."-P2 "...of course! ...even as an adult, you (wouldn't like) if you get shoed away when you are talking."-P5 "...yes... most of the times he couldn't control his temper...if I can teach him all these, it will help a lot... (always) ended up with lots of argument with people."-P6	Social skills	Social-emotional aspects

In Table 6, the parents were interviewed to give their opinions on the importance of social-emotional development, and the responses collated indicated their concern with preparing the students for adulthood, for example how would he/she interact with other members of society.

DISCUSSION

Although the data collected indicates improvement, the SELS checklists are insufficient to provide an explanation for the outcome of the scores. We know that some students did show a trajectory of improvement while some may stay the same or even show a decline. However, the reasons were not there to fully explain this pattern of results. Therefore, we will explore the possibilities that may have contributed to those quantitative outcomes through analysing them with the qualitative data collected.

Since this study is evaluating the effectiveness of using drama as a tool to build social-emotional development of children with dyslexia in Singapore, we have to consider how the students score on SELS Pupil Checklist. At the same time, taking into account what their parents have to say about their children – their behaviour, their social-emotional state before and after the programme. From this study, I would like to elaborate on the findings focusing on the identified students’ progress in the SDA programme, supplemented by the findings from the parent interviews and the Teacher Checklist data. Also, the responses from the Parent Checklist will be scrutinised as interesting findings were made when supplemented by the parent interviews.

It was encouraging to observe the increase in the SELS scores across all 3 checklists. It is an indication that children with dyslexia showed improvement in SELS scores after attending SDA programme for one year. In order to give a good insight, the scores are linked to observable changes seen by parents. There are 3 students from the group that stood out in one of the instruments used in this study and they will be highlighted in the next section in the form of a short case study.

### **Students' Progress in Pupil Checklist**

The scores from the Pupil Checklist will provide a quick overview of how the students are coping in social-emotional aspects.

Firstly, we will look at Student 3. Referring back to the Pupil Checklist data in Figure 2, Student 3 scored the highest in the Pupil Checklist. It is very encouraging to see 23 points jump in his SELS score by the end of Term 4. This indicates that the programme has in some way or another affected his social-emotional growth. To supplement this finding, the interview with his parent revealed that Student 3 was initially a boy who lacks confidence, especially when it comes to academic work. Student 3 was 8 years old and attended Primary 2 in a mainstream school when he participated in the study. He struggled with reading, could not express himself well and his frequent replies when asked about school were, "I don't know" and "I'm stupid." According to Casserly (2013), children who fell into the 'swamp of negative experiences' (p.81) would have lower motivation and therefore greater difficulty in achieving proficient reading. Student 3 felt negatively about himself when he was in Primary 1 and Primary 2. Children like Student 3 can deem themselves as failures in any learning environment as they are aware they cannot do something, for example, reading, as well as other children can (Terras, Thompson, Minnis, 2009; Thomson, 2009; Casserly, 2013). Student 3's Pupil Checklist score went from 63 points to 91 points by the end of Term 4, which is truly encouraging. It was assumed that he was more positive and more confident towards the end of Term 4. Referring to the interview conducted, his mother revealed that he was more interested in reading, expressed himself better and was more able to cope with school work after being in the programme for 1 year. She also shared how supportive his teachers were, who would continuously encourage him.

Next, we will take a look at Student 5's Pupil Checklist scores. Both pre-test and post SDA scores remained the same. He was 8 years old and attending Primary 1 in a mainstream school when he participated in this study. Mother shared the background of Student 5 in the interview. Student 5 was born premature and received medical attention from various specialists in the early years. Mother could not recall which other specialists that Student 5 met except for a psychologist. Mother enrolled him in the SDA programme because of a doctor's recommendation. According to Mother, Student 5 has a pleasant personality but due to lack of vocabulary, he had problems communicating with people. He would use the 'power of pointing' as his means of communication. And after a year in the

programme, he was seen as more expressive and no longer points to communicate. From the Parent Checklist, there was an increase of 10 points in Term 4 when compared to Term 1. This could be a reflection of his mother's satisfaction with the programme through her observations of her child's improvement.

### **Student 1's progress in Teacher Checklist:**

In the Teacher Checklist, Student 1 scored 48 points in Term 1 and leapt in Term 4 up to 71 points. This trajectory was an indication of good improvement from his teacher's observations in both terms. Student 1 is 7 years old and attending Primary 1 in a mainstream school. His mother shared how he used to throw tantrums when he was in childcare. It was assumed by his parent that this could be due to his weak language ability. As the researcher is Student 1's drama teacher, it was observable how Student 1 had improved in many areas towards the end of Term 4. From a teacher's point of view, Student 1 stood out because when he first started out, he was all over in class, not able to wait for his turn to speak, not able to stay on task, would withdraw from the group if the task was daunting and would always be bickering in class during group work. As the terms passed, he learned to raise his hand when he needs to speak, he was able to stay in role during presentations, showing initiative, able to memorise the scripts and movement taught, and able to respond to his peers appropriately. These observations were supported by his mother's observation that he had made improvement in the area of communication and confidence level.

### **The outcome of the Parent Checklist & Parent Interviews.**

From Figure 4, Parent 4 gave conflicting responses when the Parent Checklist and the interview were being analysed. In Term 1, Parent 4 gave Student 4 59 points and at the end of the programme, the score dipped to 54 points. There was a reduction of 5 points. This is an indication that this parent did not see any progress from the child hence had responded accordingly to the questions in the Parent Checklist. Interestingly, the parent interview with Parent 4 reflected the opposite. From the interview, Parent 4 mentioned the child was 'more cheerful and independent' but the next few responses could be the reflection of the Parent Checklist getting lower scores, "...there's slight improvement but I would prefer her to improve more", and on confidence and managing her emotions, "...also improvement on that... sometimes she will speak up and sometimes she will keep to herself". If parent of Student 4 saw her as not showing much improvement, the Pupil Checklist score of Student 4 showed otherwise. In Term 1, her pre-SDA score was 72 points and later at the end of Term 4, her post-SA score went up to 93 points. That was the next highest post-SDA score of the Pupil Checklist. This data may suggest that Student 4 feels more motivated, has more friends and is able to regulate her emotions better through her post-SDA responses in the questionnaire. It may well be that her parent is more aware of her difficulties since focussing on them for questionnaires and interviews and has become more critical of the fact that her

progress, although improved, could be better.

Other than the students' progress in the SELS checklists, the interview evidence suggests that children with dyslexia do go through some level of social-emotional difficulties. According to Terras et al., (2009), many well documented studies suggest there is a connection between dyslexia and disruptive behaviour disorder (Humphrey 2002; Burden 2008). Such disruptive behaviour is aggressive in nature, for example, throwing tantrums, bullying, vandalism, class truanancies (Chen and Tan, 2006; Cooper, 2012; Woo et al., 2007; Gu et al., 2011). Interestingly, there are also behaviours that could go unnoticed by adults like parents and educators, such as depression and withdrawal (Chen and Tan, 2006; Woo, Ng, Fung, Chan, Lee, Koh, Cai, 2007).

From the interviews conducted, most parents mentioned 'tantrums', 'frustrations', 'hot-tempered', 'start to tear up', 'keeps everything to herself', 'problem communication with people' when asked to share about their child's behaviour before joining the programme. These responses suggest that children with dyslexia do not have the knowledge, the disposition and the skills to cope with emotions, are weak at recognising non-verbal cues to even respond appropriately to other people's emotions, are not able to make and keep friends, not able to make decisions and inefficient at handling conflicts. (Faupel, 2003; Joronen, Hakamies and Astedt-Kurki, 2011). This answered my second research question, 'What are the social-emotional difficulties that may be present in children with dyslexia, who participated in this study?'

If we look at the Parent Checklist, this is the only checklist that appeared to be conservative data, unlike data found in the Pupil Checklist and the Teacher Checklist. Being Asian parents where harsh parenting was hypothesised (Chang et al., 2004), it could mean that the parents have higher expectations of his/her child when giving the scores in the Parent Checklist. Ironically, the interview revealed that all parents are satisfied with the programme and somehow could see some level of improvement in their child's social-emotional aspect. See the extracts below.

### **Extracts of Parent's Responses on Child's Improvement:**

- Parent 1: *"But I think over the course of last year, when in P1, he has made quite a bit of improvement both in terms of literacy as well as communication."*
- Parent 2: *"Yes, yes, she will look at you then she'll answer you when you post a question at her. She is still soft you see, but there is improvement."*
- Parent 3: *"Ok probably after the speech and drama, he is more or less expresses himself better. And in terms of reading wise, it helps him quite a fair bit."*

Parent 4: *“Nowadays she is opening up a bit ,but improving.”*

Parent 5: *Ever since he joined Speech and Drama, I find that he has more expressions, more words and I don't know whether it's because he is growing up. He talks more (laughs).*

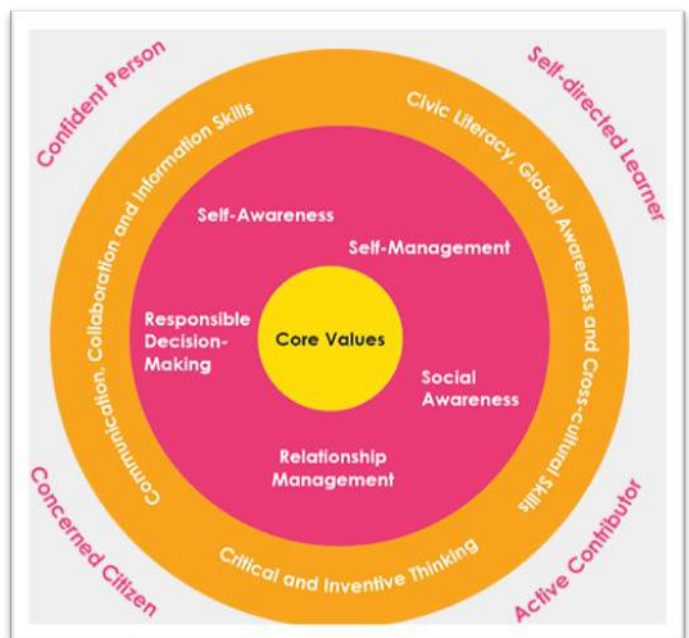
Parent 6: *After he joined, I realised he could remember his script without reading at home for the performance. Previously if I asked him to read or do self-spelling, there'll be difficulties. But then when he joined already, I realised without teaching him or telling him to study right, he will actually memorise it.*

Those extracts suggest that the changes observed by parents are positive and it is a good indication that drama can be a tool to develop social-emotional literacy; and that answered my third research question.

## CONCLUSIONS

Across the globe, social-emotional learning has begun to become mainstream and orthodox in the education industry: with the US government revising their education policy to include extensive budgets for social-emotional literacy training and professional development for teachers (Biggert, Kildee and Ryan, 2011).

Since social-emotional learning is such a phenomenon, it had made its way into Singapore much earlier with the emphasis on ‘holistic education’ as mentioned in the introduction. Moving on the holistic education trail, the MOE would not want schools in Singapore to settle with just the Desired Outcomes of Education (DOE); a confident person, a self-directed learner, an active contributor and a concerned citizen. Making a paradigm shift is an arduous task hence the introduction of the 21 Centuries Competencies (21CC) framework which has now become the pillars of any school curriculum and activities.



MOE's 21 Century Competencies

Source: <https://www.moe.gov.sg/education/education-system/21st-century-competencies>

With that, the aims of this study were to provide insights into the social-emotional level of children with dyslexia and how drama can be a tool to enhance that level in the Singapore context as the education field here begins to embrace children with learning difficulties such as dyslexia in the mainstream schools. These children require more support in order to be successful in school and in life. Through this study and the data presented, hopefully teachers, educators, education policy makers and parents are able to see there is more than just acquiring literacy (reading, spelling and writing) skills and achieving good grades but also there is a need to develop our children's social-emotional literacy level.

From the data, it can be seen that children with dyslexia who had attended one year of drama programme show improvement in their SELS scores. The most interesting finding was from the data collected from the Parent's Checklist. There could be numerous factors accounting for why parents' scores were very 'modest'. One of them would be parent's expectations. Hence, supplementing this portion with an interview gave a deeper insight.

These findings are also intended to reduce the misperception of drama as unimportant in comparison with Mathematics or other academic subjects, and to open doors to more such research in the Singapore context.

## **LIMITATIONS & FURTHER RESEARCH**

Firstly, this research was conducted with a small group of students, parents and teachers. The findings of this research may not be transferrable to other settings as its variability is not known. The standard deviation of the population was not provided in the data analysis. Also, a small sample size such as this may lead to an involuntary response bias. The participants were students, parents and teachers of SDA programme. Therefore, the data collected were reflections from these participants who have exposure to the drama programme and also the potential benefits that drama can provide to improve the social-emotional development of children with dyslexia. This research did not include the responses of a control group of children with dyslexia who did not attend SDA programme to substantiate the current findings.

Secondly, the ambiguity and confusion of the concept and the term 'social-emotional development'. According to Hoffman (2009), this term was commonly used in prevention programmes that involved mental health, character and moral education.

In addition to that, Humphrey (2013) highlighted the lack of clear interpretations especially in relation to 'cultural transferability' (pp.136). Humphrey (2013) stated that social-emotional literacy takes different forms in different countries and cultures.

Thirdly, there was a limitation on the tools used for this research. Although the data from the questionnaires has been quantified and used to evaluate change, there were some disadvantages. For this case, the SELS questionnaires have too many questions for students, parents and teachers to complete. There are 25 statements in the Pupil Checklist that a facilitator, in this case, the drama teacher, had to explain to the students. This explanation may vary from teacher to teacher as it is dependent on the teachers' interpretation of the statements in the Pupil Checklist. Similar to the Teacher Checklist and the Parent Checklist, the interpretations of the statements are very much dependent on the individual. In addition to the SELS questionnaire, an interview method was used as qualitative data. Despite its significance, the interview method has its weaknesses too. For example, there was no attempt to brief parents on the term 'social-emotional' again prior to the interview, apart from the consent form that was disseminated one year ago. Hence, the interpretation of the term 'social-emotional' may have varied from parent to parent. It is also time consuming as it involved the scheduling of interview session for each parent, the collection, analysis and interpretation of data that are not straightforwardly numerical. Nevertheless, the methodology adopted here lends itself well to investigating the role of drama in personal development.

With drama being a potential tool to build social-emotional development of children with dyslexia, further research should take into consideration the following recommendations:

1. involving larger sample size so that more data can be evaluated and later be compared to the population size
2. participants involved in such interviews should be provided with the definition of terms and the interview questions 2 or 3 days before the interview
3. The choice of research tools can be further explored

While social-emotional development in children with dyslexia promises a better chance to succeed in school and life (Humphrey, 2002; Hoffman, 2009; Greenberg et al., 2003), until the education system, education policies and educators acknowledge and celebrate 'achievement' in wider areas not limited to just academic success, these children need to be supported (Eadon, 2005; Casserly, 2013).

In a Singapore context, as much as we are moving towards a holistic education and preparing our students to be 21st century ready and acknowledging that social-emotional development is essential for lifelong success in this fast-changing world, families, schools and community and youth organisations need to be 21st century ready as well (Casel.org, n.d.). For a start, the education system here needs to ensure that the new and existing teachers are 21st century teachers as well. They are the ones who can be the agent of change or the catalyst of this paradigm shift.

## REFERENCE

- Adams, D. (2013). The Application of social-emotional learning principles to a special education environment. *KEDI Journal of Educational Policy*, pp.103-118.
- Ashdown, D. M., and Bernard, M. E. (2012). Can Explicit Instruction in Social and Emotional Learning Skills Benefit the Social-Emotional Development, Well-being, and Academic Achievement of Young Children?', *Early Childhood Education Journal*, 39, pp 397-405.
- Antonelli, L., Bilocca, S., Borg, D., Borg, S., Boxall, M., Briffa, L., Debono, C., Falzon, R., Farrugia, V., Gatt, L., Formosa, M., Mifsud, D., Mizzi, Scurfield, L., Scurfield, M., & Vella, G.L. (2014). 'Drama, Performance Ethnography, and Self-esteem: Listening to Youngsters with Dyslexia and Their Parents'. *Sage Open*. 4, 2, 2158244014534696.
- Baldwin, P., and Fleming, K. (2003). *Teaching Literacy through Drama: Creative Approaches*. Oxfordshire: Routledge Falmer
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman.
- Barbour, R. (2013). *Introducing qualitative research*. Los Angeles: Sage Publications.
- Barnes, J., (2014). *Drama to Promote Social and Personal Well-Being in Six and Seven-year-olds with Communication Difficulties: the Speech Bubbles Project*. *Perspectives in Public Health*, 134(2), pp. 101-109. Sage Publications [Online]. Available at: <http://rsh.sagepub.com> (Accessed:5 September 2015).
- Biggert, J., Kildee, D., & Ryan, T., (2011). *H.R. 2347 Academic, Social and Emotional Learning Act of 2011*. Washington, DC: United States Congress.
- Brackett, M. A., Lvcevic-Pringle, Z., Moeller, J., White, A., & Stern, R. S. (2015). Emotions matter: High school students' emotions and their relation to school experiences. Manuscript submitted for publication.
- Brackett, M. A., & Patti, J. (2016, April). Creating emotionally intelligent schools: Training in social and emotional skills begins with educators. *School Administrator*, 19-22.
- Brackett, M. A., & Rivers, S. E. (2013). Transforming students' lives with social and emotional learning. In R. Pekrun & L. Linnenbrink-Garcia (Eds.), *International handbook of emotions in education* (pp. 368-388). New York, NY: Taylor & Francis.
- Brackett, M. A., Rivers, S. E., Reyes, M. R., & Salovey, P. (2012). Enhancing academic performance and social and emotional competence with the RULER feeling words curriculum. *Learning and Individual Differences*, 22, 218-224.
- Bryan, T., Sullivan-Burtsein, K. and Mathur, S. (1998) The Influence of Affect on Social-Information Processing. *Journal of Learning Disabilities*. 1(5), pp. 418-426
- Burden, R., & Burdett, J. (2005). Factors Associated with Successful Learning In Pupils With Dyslexia: A Motivational Analysis. *British Journal of Special Education*, 32, pp.100-104.
- Burden, R., & Burdett, J. (2007). What's in a name? Students with dyslexia: Their use of metaphor in making sense of their disability. *British Journal of Special Education*, 34, 75-79.
- Burton, S. (2004). Self-esteem Groups for Secondary Pupils with Dyslexia.' *Educational Psychology in Practice*, 20(1), pp. 55-73.
- Busato, V. V., Prins, F. J., Elshout, J. J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education. *Personality and Individual Differences*.29, pp.1057-1068
- Casel.org. (n.d.). *The Collaborative for Academic, Social, and Emotional Learning*. [online] Available at: <https://casel.org/> [Accessed 1 Sep. 2017].
- Casserly, A. M. (2013). The Socio-Emotional Needs of Children with Dyslexia in Different Educational Settings in Ireland. *Journal of Research in Special Educational Needs*. 13 (1),



- pp. 79-91.
- Chang, L. S. (2012) Dramatic' Language Learning in the Classroom, in Winston. J. (ed.) *Second Language Learning Through Drama: Practical Techniques and Applications*. Oxfordshire: Routledge, pp. 6-14.
- Chang, L., Lansford, J., Schwartz, D., & Farver, J. (2004). Marital quality, maternal depressed affect, harsh parenting, and child externalising in Hong Kong Chinese families. *International Journal of Behavioral Development*, 28(4), pp.311-318.
- Chen, K., & Tan, C. S. (2006). Education and Services for Children and Youths with Emotional and Behavioural Disorders in Singapore. *Preventing School Failure*, 50 (2), pp. 37-42.
- Creswell, J. W. (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Boston, MA: Pearson Education Inc.
- Dinapoli, R., (2009). Using Dramatic Role-Play to Develop Emotional Aptitude. *International Journal of English Studies*, 9(2), pp. 97-110.
- Dymnicki, A., Kendziora, K., & Osher, D. (2012). Adolescent development for students with learning disabilities and behavioral disorders: The promise of social emotional learning. In B. G. Cook, M. Tankersley, & T. J. Landrum (Eds.), *Classroom behavior, contexts, and interventions: Vol. 25. Advances in learning and behavioral disabilities* (pp. 131-166). Bingley, England: Emerald
- Eadon, H. (2005). *Dyslexia and Drama*. London: David Fulton Publishers Limited
- Everatt, J., Weeks, S., Brooks, P. (2008) Profiles of strengths and weaknesses in Dyslexia and Other Learning Difficulties. *Dyslexia*. 14, pp. 16-41.
- Faupel, A. (ed.) (2003). *Emotional Literacy Assessment and Intervention: Ages 7 to 11: User's Guide*. London:GL Assessment Limited
- Frith, U. (1999). Paradoxes in the definition of dyslexia. *Dyslexia*. 5, pp.192-214.
- Firth, N., Greaves, D., & Frydenberg, E. (2010). Coping styles and strategies: A comparison of adolescent students with and without learning disabilities. *Journal of Learning Disabilities*. 43 (1), pp.77-85.
- Frederickson, N., & Cline, T. (2009). *Special educational needs, inclusion and diversity*. 2nd ed. Maidenhead: Open University Press.
- Goleman, D. (n.d.). *Emotional Intelligence*. 1st ed. Bantam Books: 1995.
- Greenberg, M. T., Weissberg, R. P., O'Brien, M. U., Zins, J. E., Fredericks, L., Resnik, H., & Elias, M. J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*, 58, pp. 466-474.
- Gregory, I. (2003). *Ethics in Research*. London: Continuum
- Gurney, P. W. (1988). *Self Esteem in Children with Special Educational Needs*. London: Routledge
- Humphrey, N. (2001). *Self-concept and Self-Esteem in Developmental Dyslexia: implication for teaching and learning*. Liverpool John Moores University
- Humphrey, N. (2002). 'Teacher and Pupil Ratings of Self-esteem in Developmental Dyslexia', *British Journal of Special Education*, 29, pp. 29-36.
- Humphrey, N. (2003). Facilitating a positive sense of self in pupils with dyslexia: The role of teachers and peers. *Support for Learning*. 18, pp.130-136.
- Humphrey, N. (2013). *Social and emotional learning: A critical appraisal*. London, UK: Sage Publications.
- Jindal-Snape, D., & Vettraino, E. (2007). Drama techniques for the enhancement of social-emotional development in people with special needs: review of research. *International Journal of Special Education*, 22(1), pp.107-117.

- Jindal-Snape, D., Vettraino, E., Lowson, A., & McDuff, W. (2011). Using Creative Drama to Facilitate Primary-Secondary Transition, *International Journal of Primary, Elementary and Early Years Education*, 39(4), pp.383-394.
- Joronen, K, Hakamies, A., & Astedt-Kuki, P. (2011). Children's Experiences of a Drama Programme in a Social and Emotional Learning. *Scandinavian Journal of Caring Sciences*, 25, pp.671-678.
- Maag, J. W., & Behrens, J. T. (1989). Epidemiologic Data on Seriously Emotionally Disturbed and Learning Disabled Adolescents: Reporting Extreme Depressive Symptomatology. *Behavioral Disorders*. 15 (1), pp. 21-27.
- Marzocchi, G.M., Ornaghi, S., & Barboglio, S.( 2009). What are the causes of the attention deficits observed in children with dyslexia? *Child Neuropsychology*. 15. pp. 567-581.
- McNamee, M. (2002). *The Guilt of Whistling-blowing: Conflicts in Action Research and Educational Ethnography, The Ethics of Educational Research*. Oxford: Blackwell Publishing, pp. 129-150
- Moe.gov.sg. (n.d.). *21st Century Competencies*. [online] Available at: <https://www.moe.gov.sg/education/education-system/21st-century-competencies> [Accessed 1 Sep. 2017].
- Ministry of Education (2017). *MOE FY 2017 Committee of Supply Debate speech by the Minister for Education* (Schools) Ng Chee Meng. [online] Available at: <https://www.moe.gov.sg/news/speeches/moe-fy-2017-committee-of-supply-debate-speech-by-minister-of-education-schools-ng-chee-meng> [Accessed 18 Jul 2017].
- Ministry Of Education (2016). *MOE FY 2016 Committee of Supply Debate speech by the Acting Minister for Education* (Higher Education and Skills) Ong Ye Kung. [online] Available at: <https://www.moe.gov.sg/news/speeches/moe-fy-2016-committee-of-supply-debate-speech-by-acting-minister-for-education-higher-education-and-skills-ong-ye-kung> [Accessed 28 Oct. 2016].
- Osher, D., Kidron, Y., Brackett, M., Dymnicki, A., Jones, S. M., & Weissberg, R. (2016). Advancing the science and practice of social-emotional learning: Looking back and moving forward. *Review of Educational Research*, 40, 644-681
- Palechorou, E., & Winston, J. (2012). Theatre, Language Learning and Identity (2): Empowering Additional Language Learners through Classroom Drama Projects, in Winston. J. (ed.) *Second Language Learning Through Drama: Practical Techniques and Applications*. Oxfordshire: Routledge, pp. 42-53.
- Poulou, M., (2014). The effects on students' emotional and behavioural difficulties of teacher-student interactions, students' social skills and classroom context, *British Educational Research Journal*, 40(6), pp. 986 - 1004.
- Scheff, T. J., (2011) 'Social-Emotional World: Mapping a Continent', *Current Sociology*, 59 (3), pp. 347-361. Sage Publications [Online]. Available at: <http://csi.sagepub.com> (Accessed:5 September 2015).
- Teng, A. (2016). *Schools to offer 7 new hands-on subjects*. The Straits Times. [online] Available at: <http://www.straitstimes.com/singapore/education/schools-to-offer-7-new-hands-on-subjects> [Accessed 7 Oct. 2016].
- Terras, M. M., Thompson, L. C., & Minnis, H. (2009). Dyslexia and Psycho-social Functioning: An Exploratory Study of the Role of Self-Esteem and Understanding, *Dyslexia*, 15, pp. 304-327.
- Thom, L. (2010). From Simple Line to Expressive Movement: The Use of Creative Movement to Enhance Socio-Emotional Development in the Preschool Curriculum, *American Dance Therapy Association*, 32, pp.100-112.
- Thomson, M. (2009) *The Psychology of Dyslexia. A Handbook for Teachers*. 2nd Ed. London: Wiley.
- Thomson, M. (2007). *Supporting Dyslexic Pupils in the Secondary Curriculum: Dyslexia and Drama*,

Great Britain: M & A Thomson Litho Ltd.

- Wong, A. S. K., Li-Tsang, C. W. P., & Siu, A. M. H., (2014). Effect of a Social Emotional Learning Programme for Primary School Student. *Hong Kong Journal of Occupational Therapy*, 24, pp. 56 - 63.
- Winston, J. (2012). *Second Language Learning Through Drama: Practical Techniques and Applications*. New York: Routledge
- Wigelsworth, M., Humphrey, N., & Lendrum, A. (2012). A national evaluation of the impact of the secondary social and emotional aspects of learning (SEAL) programme. *Educational Psychology*, 32(2), pp.213-238.
- Wright, P. R., (2006). Drama Education and Development of Self: Myth or Reality, *Social Psychology of Education*, 9, pp. 43-65.
- Wright, C., Diener, M. I., & Kemp, J. L., (2013). Storytelling Dramas as a Community Building Activity in an Early Childhood Classroom. *Early Childhood Educational Journal*, 41, pp. 197-210.



# WHAT WE DO

240

**PROFESSIONAL  
STAFF:**  
INCLUDING SPECIALIST  
PSYCHOLOGISTS AND  
EDUCATIONAL THERAPISTS

**3500++  
STUDENTS**  
FROM PRESCHOOL TO  
SECONDARY SCHOOL

**14** CENTRES



## SPLD ASSESSMENT



DAS carries out psycho-educational assessments in the area of Specific Learning Differences (SpLD) for learners from pre-primary to adulthood!

**ARRANGE  
FOR AN ASSESSMENT  
TODAY!**



## OUTREACH & AWARENESS

At DAS, we conduct free Awareness Talks about learning differences for educators, parents, medical practitioners and the general public.



## RESEARCH & ADVOCACY

DAS conducts research to validate its programmes as well as further our understanding of learning differences.

Research is published in the Asia Pacific Journal of Developmental Differences and covers theory into practice.







# HOW WE HELP

## ENGLISH LANGUAGE & LITERACY

The **ENGLISH LANGUAGE & LITERACY** division integrates key essential learning components that are crucial in remediating students with learning difficulties.

- Phonemic Awareness and Phonics
- Reading Fluency
- Reading Comprehension
- Vocabulary
- Writing

### ELL PROGRAMMES:

#### Main Literacy Programme

iReaCH

iStudySmart

### OTHER PROGRAMMES:

- Speech and Drama Arts
- Speech and Language Therapy
- Specialist Tutoring
- English Exam Skills
- Post-secondary
- Preschool
- Chinese
- Maths



## Educational Technology

is used in our classes as a complementary teaching tool to enhance students' academic success and independence too!

## FINANCIAL ASSISTANCE



DAS believes that no child should be left behind because he or she cannot afford the cost of DAS education. DAS Families can take advantage of the financial schemes available for SpLD Assessments, our Education Programmes and many more!



DYSLEXIA ASSOCIATION  
OF SINGAPORE  
HELPING DYSLIXIC PEOPLE ACHIEVE

6444 5700  
www.das.org.sg  
info@das.org.sg



LIKE US ON FACEBOOK!  
facebook.com/dysSG



# UNITE SPLD 2019

**UNITING IDEAS IN TEACHING EXCELLENCE**

PRE-CONFERENCE - WEDNESDAY, 26 JUNE 2019  
CONFERENCE - THURSDAY & FRIDAY, 27 & 28 JUNE 2019

## 2019 CONFERENCE THEMES

DIFFERENTIATION AND ADAPTATION  
TEACHER AND SUPPORT STAFF RELATIONSHIPS  
ASSESSMENT FOR LEARNING (NOT OF LEARNING)  
SCHOOL LEADERSHIP AND POLICIES  
ADVOCACY  
EDU-TECH



[WWW.DAS.ORG.SG/NEWS-EVENTS/DAS-CONFERENCE/UNITE-SPLD-2019.HTML](http://WWW.DAS.ORG.SG/NEWS-EVENTS/DAS-CONFERENCE/UNITE-SPLD-2019.HTML)



# SUPPORTING THE DIVERSE LEARNING NEEDS OF PRESCHOOLERS



## SAVE THE DATE

### JOIN US AT OUR 7TH DAS PRESCHOOL SEMINAR



Date: 20 March 2018 (Wednesday)  
Time: 9:00 am - 2:00 pm  
Fee: \$58 (excl. \$1.50 online booking fee)  
Venue: Lifelong Learning Institute  
11 Eunos Road 8, Singapore 408601

Organised by:



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

# *Asia Pacific Journal of Developmental Differences*

## *Guidelines for Contributors*

### **Overview**

The Asia Pacific Journal of Developmental Differences (APJDD) will be unique in addressing a range of special educational needs including dyslexia, autism, dyspraxia, dyscalculia, ADHD in the Asian context. The journal will cover theory into practice and will provide a showcase for research in the Asian context as well as highlighting research areas which have implications for further research within Asia and beyond.

### **Frequency of Journal**

The Journal will be published twice a year in January and July.

### **Contributions Considered for the Journal**

Primary consideration for publications will be given to manuscripts that are focused on developmental differences within the Asia Pacific region. Manuscripts will be peer reviewed and included in the journal on the following criteria:

- ◆ They contribute to the further understanding of developmental differences as well as the applications and implications in the educational, social and cultural environments.
- ◆ They include sound research methods, interpretation and validity of results
- ◆ They contain organised and clarity of writing
- ◆ They contribute to the local Asian context
- ◆ They should be original papers that have not been submitted to other journals or publications.

### **Editorial Policy—Retractions**

The APJDD takes the issue of retractions very seriously. In line with requirements of major academic journals the APJDD will continue to monitor publications for retractions. No future citation will be permitted for articles that have been retracted and a correction will be issued if any such article is published in error. In the case of citations prior to retraction no such correction will be issued, in line with the policy for other journals of this type. Please contact the editor in the first instance if there are any concerns. COPE guidelines have been accessed in preparing this guidance.

Articles published in the APJDD should be original work that has not been published in this form elsewhere. In rare instances where previous publication has been made, this will be fully acknowledged.



### ***Scientific Review Committee***

In common with a number of other academic journals, we are now setting up a scientific committee of reviewers to assist the editor and editorial board in the review process. In forthcoming issues, a list of members recruited internationally will be presented, with a short bio for selected members published in each issue.

### ***Submission of Manuscripts***

All manuscripts are to be sent in electronic copy (MS WORD) as well as a PDF copy of the final edited document. PDF copy is required to verify the word copy and for publishing purposes. There is no need to submit hard copies of manuscripts.

Images, charts and diagrams should be sent separately where possible to ensure high quality reproductions.

Submissions are to be emailed to the editor at both email addresses below:

Angela Fawcett  
DAS Academic Director  
Dyslexia Association of Singapore,  
Emeritus Professor, Swansea University,  
angela@das.org.sg

Deborah Hewes  
Managing Editor  
Dyslexia Association of Singapore  
[www.das.org.sg/publications/journal](http://www.das.org.sg/publications/journal)  
deborah.hewes@das.org.sg

### ***Preparation of Manuscripts***

It is expected that all manuscripts be submitted using the American Psychological Association (APA) standard of referencing and publication. APA style is detailed in the Publication Manual of the American Psychological Association (6th ed), which offers sound guidance for writing with clarity, conciseness and simplicity. Authors should follow the APA style in preparation of their manuscripts.



## **DYSLEXIA ASSOCIATION OF SINGAPORE (DAS)**

**Our Mission:** Helping Dyslexic People Achieve

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

### **Our Aims:**

- ◆ To put quality first in delivering a comprehensive and effective professional service for dyslexic people and those with specific learning differences on a not-for profit basis.
- ◆ To provide an assessment service for individuals at risk of having dyslexia and/or specific learning differences.
- ◆ To provide educational programmes and other support services for individuals with dyslexia and/or specific learning differences.
- ◆ To raise public and professional awareness of the nature and incidence of dyslexia and specific learning differences.
- ◆ To enable others (teachers, parents and professionals) to help dyslexic individuals and those with specific learning differences.
- ◆ To assist and elicit financial and other support for people with dyslexia, those with specific learning differences and their families.
- ◆ To promote and carry out local research into dyslexia, specific learning differences and to disseminate results.
- ◆ To network with other organisations in Singapore and internationally to bring best practices to the DAS and Singapore.

### **DAS as a Social Enterprise**

- ◆ We provide high-quality, professional, innovative and client-focused solutions to create and sustain services for the dyslexic community in Singapore and the region.
- ◆ We operate as a financially viable and cost-effective business which at the same time ensures that no dyslexic person is unable to access our services because they cannot afford it.
- ◆ We generate social returns on our investments through the development of a dynamic, motivated team of highly qualified and experienced professionals.
- ◆ We have a heightened sense of accountability to stakeholders through our professional management team.

Registered in 1991, the Dyslexia Association of Singapore (DAS) is today a vibrant voluntary welfare organisation with over 250 full-time staff who provide a wide array of services for dyslexics not only in Singapore but in the region. DAS Specialist Psychologists conduct assessment and diagnosis for preschool students to adults. DAS Educational Therapists, Speech and Language Therapists and Specialist Teachers provide support for over 3,000 preschool, primary and secondary school students in 13 venues all over Singapore. Increasingly, DAS provides support for dyslexics who also suffer from other Specific Learning Differences such as ADHD, Dyspraxia, Dyscalculia and Non-verbal Learning Differences.

The DAS Academy is a Private Education Institution (PEI) registered with the Council for Private Education (CPE). It is a wholly-owned subsidiary of the Dyslexia Association of Singapore (DAS). Like DAS, the Academy is also a registered charity with the Commissioner of Charities. DAS Academy delivers a wide range of workshops and courses including a Master of Arts in Special Educational Needs. DAS Academy provides the bridge that links professionals, caregivers and people with special needs.



# Asia Pacific Journal of Developmental Differences

Volume 6 ♦ Number 1 ♦ January 2019

## Contents

- 1 Editorial Comment  
*Angela J. Fawcett*
- 5 Orthographic Advantage Theory: National advantage and disadvantage due to orthographic differences  
*Bruce Allen Knight, Susan A. Galletly, Pamela S Gargett*
- 33 Preventing teacher burnout and promoting job satisfaction and retention: work values in teachers of learners with dyslexia in relation to organisational initiatives.  
*Geetha Shantha Ram and Ashraf Samsudin*
- 49 Children with learning difficulties and the move to Innovative Learning Environments  
*John Everatt and Jo Fletcher*
- 75 Barriers undermining the implementation of the students' mental health promotion process in schools: teachers' perceptions.  
*Dalal Alradaan, Suad Albeshar and Abdullah Alosaimi*
- 93 The construction and evaluation of an English Exam Skills test for primary school students with dyslexia  
*Edmen Leong and Hu Guangwei*
- 115 Early Markers of Executive Functions and Their Relation to Dyslexia: Cross Patterns and the Level of Initial Activation  
*Piero Crispiani, Mary Mountstephen, Eleonora Palmieri*
- 127 An evaluation of the effectiveness of using drama as a tool to build social-emotional development of children with dyslexia in Singapore.  
*Muzdalifah Hamzah*

