



CASE STUDIES



Useful Strategies and Technological Solutions to Overcome Language-based Learning Differences when Studying at Tertiary Level

Samunn Abdul Cafoor

Senior Educational Therapist

Dyslexia Association of Singapore

INTRODUCTION AND BACKGROUND

In order to construct meaning from the printed language (reading) and to use the printed language to convey a message (writing), students must be able to recognise in print the language they use orally (Manson and Herman, 1991). This ability is referred to as word identification, though some writers use the term decoding (Anderson, Hiebert, Scott, & Wilkinson, 1985; Williams, 1985). However, there is much more to reading than this – in order to comprehend the work you are reading you need to be a fluent reader with a good memory to hold in place the language while you make sense of it.

Text understanding is the literacy skill that adult students need to use frequently in their studies when they access text books and other study materials. This essay focuses on strategies and technological solutions that are useful for adult learners with language-based learning differences when studying at post secondary level.

“Text understanding is the literacy skill that adult students need to use frequently in their studies.”

THE CASE OF UMA

Uma, a young adult of 19, was introduced to me by her aunt. On the surface she did not suffer from low self-esteem as a result of her language-based learning difference. Despite her challenges in academic skills, she has sailed through primary and secondary school with below-average grades. As she progressed, the curriculum demands kept on increasing year-by-year and her parents and some close relatives identified that Uma has some kind of learning difference. Her close associates knew that she cannot comprehend written and verbal responses quickly compared to her peers of the same age group. Uma was not able to get good grades in her secondary school qualifying examinations. As a result, she was not eligible to enter any of the state-owned tertiary institutions except for the Institute of Technical Education (ITE).

The Singapore education system identifies children with Specific Learning Differences (SpLD) when they are in lower primary grades and they are recommended for remediation through the 'Learning Support Programme' (LSP) within the school framework. Moreover, they are referred to external agencies like the Dyslexia Association of Singapore (DAS) for further intervention. Children with language-based learning differences are offered a separate curriculum named 'Foundation Stream'. On completion of their secondary education they are entitled to enter Institute of Technical Education (ITE) where they are taught life skills. It is unfortunate that the system in place at that point in time failed to identify Uma's language difficulties.

There is a general perception in Singapore that children who are selected to follow courses at ITE are considered as those who cannot perform academically well. The students who attend ITE colleges are called 'stupid' by their able peers who attend other tertiary institutions. Uma did not want to attend an ITE college for this reason. Furthermore, her parents supported her idea as they did not want their child to be labelled. Therefore, they decided to send her to a private institution to help her pursue a diploma in management studies. In fact, it was Uma's choice that she selected this discipline. She had to do a bridging course for nine months in order to prepare herself to follow the diploma programme in management studies. Currently, she is a first year student of the 15-month course and she looks forward to completing the programme of study in the next year.

Uma could not recollect much about her past learning experiences with the primary curriculum. However, she shared with me her learning incidents when she was in secondary school. Reading was a challenging task for her because she could not recognise words. This in turn resulted in poor comprehension skills and significantly impeded her writing. Furthermore, she was not able to perform well in time-bound

reading and writing tests and she was always behind schedule to submit most of her homework assignments.

She expressed her recent concerns to me that she experiences difficulty with her way of compensating for academic skills.

INITIAL SCREENING

Uma's parents have never subjected her to a psychological assessment and she had never been identified as having SpLD till I met her in December 2012. A package of two screening tests – The Dyslexia Adult Screening Test - DAST (Fawcett and Nicolson, 1998) and Lucid Adult Dyslexia Screening Test – LADS (Singleton, 2004) - was offered to Uma to identify whether she is in need of further support. These were the only screening tests that she has been subjected to so far.

The DAST screening test was administered by me and the profile indicated severe difficulties with Nonsense Passage reading. In addition, problems were identified with Reading, Spelling, and Phonemic Segmentation. All these difficulties are consistent with problems in Phonological Processing.

By looking at her profile, I assumed Uma could be dyslexic. I am an educational therapist and I have limited knowledge in psychological testing. Therefore, I sought help from a senior psychologist at Dyslexia Association of Singapore to conduct a LADS screening test for Uma for predicting dyslexia. The psychologist gave us constructive feedback and advice after the screening test. LADS suggested that there is a low probability of Uma being dyslexic. But there were other issues that needed attention.

Verbal reasoning ability was a significant weakness for Uma. Due to her low verbal reasoning skills, there may be a possibility that she fails to recognise enough words for her age. She may also fail to understand the material she can read. Therefore, reading is a challenge for her. And for this reason, she finds it difficult to refer and extract relevant information from text-books and given study materials to answer semi-open and open-ended writing assignments.

RECOMMENDATIONS

- ◆ Uma could learn the majority of the words as sight words.
- ◆ She can seek help from someone who understands her difficulty and get help from that person to run through the given study materials with her and engage in meaningful discussions.

- ◆ She could use assistive technology tools such as text-to-speech and/or voice recognition software.
- ◆ She could create mind maps from her own notes to summarise the extracted information from the study materials to have a holistic view. In addition, these mind maps could be used as revision material during examinations.
- ◆ Uma attends a private institution. Hence her parents can approach the school management to seek special examination arrangements for her.
- ◆ Uma should expose herself to good quality English Language (audio and video). This will help her to listen to good language and will support her to communicate her thoughts well.
- ◆ As an adult, she should develop self awareness of her strengths and weaknesses. This would help her find ways around to address her language-based difficulties.

LITERATURE REVIEW – LEARNING THEORIES

Facilitated Learning (Malcolm Knowles 1970)

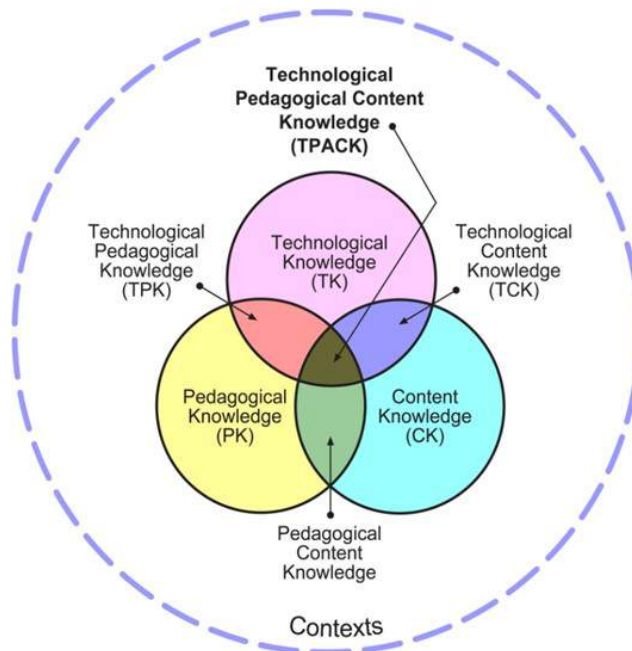
Most adult learning theories have been based on the work of Malcolm Knowles. He described adult learning as a process of self-directed inquiry. Adult learning theory (Andragogical or facilitated learning) refers to the practice of teaching and educating adults (Knowles, Holton, &Swanson, 2005). As the facilitator for Uma, I made myself familiar with Knowles’ research as a foundation to develop and deliver lessons effectively in a manner that is best-suited to my learner. The lessons were relevant to the experience of the learner and they were presented through an active learning process where the learner could retain and apply knowledge more effectively. The instructional approaches were learner-centered and they made the learner actively engage in the process of discovering and exploring rather than being the recipient of information (Knowles, et al., 1970).

Discovery Learning (Jerome Bruner 1970)

Discovery Learning is an inquiry-based, constructivist learning theory that takes place in problem solving situations where the learner make connections between his own past experience and existing knowledge to construct new concepts, facts, and relationships on his own. Under the preview of this theoretical construct, my study adopts the guided discovery learning model that provides a tailored learning experience to the learner which encourages active engagement and promotes motivation and independence when the learner engages herself with the given tasks.

Operational Framework

The Technological Pedagogical Content Knowledge (TPACK) (Mishra & Koehler, 2006; Koehler & Mishra, 2008)



*Figure 1: The TPACK framework and its knowledge components
(reproduced by permission of the publisher, © 2012 by tpack.org).*

In this model (see Figure 1), there are three main components of teachers' knowledge: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). The interactions between and among these bodies of knowledge are equally important and represented as PCK (pedagogical content knowledge), TCK (technological content knowledge), TPK (technological pedagogical knowledge) and TPACK (The Technological Pedagogical Content Knowledge). The TPACK framework suggests that content, pedagogy, technology and teaching and learning contexts have roles to play individually and together.

I intend to discuss only TPACK and its implication to integrating technology into teaching. As TPACK brings a unique combination of three different bodies of knowledge and it helps teachers not to treat technology as an 'add on' component but to treat technology as an integral part of the teaching and learning process.

Constructing the dynamic equilibrium among all three elements will aid me to teach

successfully with technology to my student with SpLD who in turn will use this assistive technology device (the iPad) and skills to function effectively and enjoy greater freedom and independence in the society.

HOW I INTEND TO USE ADULT LEARNING PRINCIPALS TO FACILITATE STUDENT LEARNING

Adult students experience a need to learn new knowledge or skill in order to cope more satisfyingly with real-life tasks or problems (Knowles, 1980). As a facilitator, my role in this practicum is to provide meaningful learning experiences to Uma that are clearly related to her personal and academic goals. Secondly, Adult learners resist learning when they feel others are imposing information, ideas, or actions on them (Fidishun 2000). Therefore, I have made an attempt in this practicum to recognise and evaluate new information and skills on the basis of my learner's particular needs so that she can present what is learned in a way that makes clear its relevance to her. Thirdly, I am aware of Uma's level of motivation for learning and what is driving her motivation. I have identified some of the barriers she has against participating in learning. And I have discovered few pointers that are keeping her from learning.

As a motivational strategy I have tried to decrease these barriers by establishing a very good rapport with her to prepare her for this learning journey. Finally, I got Uma to actively engage in the designing process of her learning. I got her involved in the planning of lessons to some extent. This helped me to agree on the mid-term objectives with her and I was able to explain to her how the instructional approach and content will enable us to achieve the objectives.

METHODOLOGY

In this teaching practicum I have attempted to find ways of working to help Uma to meet the demands of the academic environment. Students with SpLD need instruction that helps them develop metacognition, or awareness of their own thinking processes (Borkowski & Muthukrishna, 1992). Vygotsky's (1978) concept of scaffolding and interactive dialogue between the teacher and the learner becomes the foundation for the model of instruction in this teaching practicum. From a word identification perspective, Uma has not developed a conscious understanding of how, when, and why to use different word identification strategies.

This model of instruction provides a mediated learning experience (Feuerstein et. el. 1980) to Uma at her current level of performance. The facilitator takes control of the learning process and presents the learner with word identification tasks based on

the student's curriculum. Moreover, the facilitator models word identification techniques to the student so that she will use them strategically to a given activity. Uma is guided when she is given tasks for practice. Each task is followed by a short discussion where Uma is asked to explain why she selected particular strategy. This process will help her to develop a self-conscious understanding of her own knowledge, skills, and strategies. The student will gradually learn to use the knowledge and skills that she acquired in this short practicum and will start to perform independently.

Stanovich (1980) states: 'Higher-level processes can actually compensate for deficiencies in lower level processes. Thus a reader with poor word recognition skills may actually be prone to a greater reliance on contextual factors because these provide additional source of information.' Poor decoding skills can impact on comprehension. In the simple model of reading (Gough, Hoover & Peterson 1996; Hoover & Gough 1990) decoding and comprehension are the two key elements. And if the reader is unable to decode a word, the meaning of that word will not be available to the learner and this reduces understanding of a given text. But a non-decoded word could be inferred by processing the meaning of words around the word that is in question. To overcome Uma's poor word decoding skills, context-based strategies can also be introduced to support decoding and improve identification of meaning of individual words. I have sought technological solutions (e.g. the use of text-to-speech software) to compensate Uma's poor reading speed as to make my student more comfortable when she takes up reading assignments.

Assistive Technology (AT) will be embedded into this 10-hour teaching practicum. Raskind (1994) points out that AT should not be treated as a 'cure' for a learning disability but to help people work around their difficulties. I intend to use AT as a means of modifying the way(s) my student Uma receives or expresses information in a manner that highlights her strengths. I have identified and recommended Apple's iPad as the best assistive technology tool available to my student taking into consideration the 'dynamic interaction between the individual, technology, task, and context' to bypass the difficulty in specific academic skill areas (Raskind & Stanberry, 2006).

Uma has no knowledge of phonological awareness that phonetically regular words could be broken down into phonemes. Taking into consideration of the limited time available for intervention during this teaching practicum of 10 hours, I have tried other approaches than phonics to help her with word identification strategies. These clues include grammar and syntax, meaning (semantic) clues, word parts (prefixes, suffixes, base words), and the familiarity with similar words (analogy) (Adams, 1990; Anderson et al., 1985; Mason et al., 1991).

INDIVIDUALISED EDUCATION PLAN - IEP

The learner's needs, insights, and skills were taken into consideration when this IEP was planned. A possible match between the learner's best personal learning style and her specific learning requirements was well thought-out when the lessons were designed to present best possible educational experience to this adult learner.

Reason for developing this IEP - Part fulfilment of PG Diploma: SLAS Module

Student Profile

Uma is a 19 year-old girl who currently functions within the Below Average range of Verbal abilities. She functions best in a structured-environment and she should be told of any change of plans way ahead or it would upset her and lead her to confusion. Her parents and my observations conclude that Uma is a visual learner. She uses an iPad for her learning activities. Therefore, the lessons in this practicum are planned integrating Apple technology (iPad and a set of iOS applications - apps) to overcome her reading difficulties.

Formative assessment data

Assessment	Date	Outcome
DAST	19 Jan 2013	No difficulties shown in the Working Memory test
LADS	8 April 2013	Major difficulties shown in the Word Construction and Word Recognition tests

Student's areas of strength

Uma can work independently once she knows what to do. She is aware of the fact that she learns much more if lessons are presented to her with visual stimuli. She does a lot of self-talk very silently to internalise and consolidate the information that she receives before she embarks herself on writing.

Student's areas of need

Uma struggles in academic subjects that require a lot of reading. She has difficulty in decoding unfamiliar, multi-syllable words. Her fluency is not at the level of an adult.

Accommodations for learning

Instructional Accommodations	Environmental Accommodations	Assessment Accommodations (if any)
<p>Technology embedded teaching</p> <ul style="list-style-type: none"> -Mind-mapping -Word recognition -Reading -Scanning -Writing -Digital voice-recording -Note-taking 	<p>An informal learning environment.</p> <p>An iPad is connected to a 32' TV through Apple's airplay technology. The TV serves as an interactive white board (IWB) for instructional purposes with iPad app 'whiteboard'.</p>	<p>None</p>

The Individualised Learning Programme

Learning Expectations	Teaching Strategies	Assessment Methods
Text Structure (2 sessions)	Presentation of facts and the relationship among facts	
Word Identification Structural Analysis (3 sessions)	Identifying word parts and Syllable patterns	The student's progress was closely monitored
	Decoding words - DISSECT	
	Spelling patterns and rules	
	Syllabication division strategies	
Answering a question (3 sessions)	Developing an integrative workflow with technology	
Note-taking (2 sessions)	Smart note-taking with technology	

Long term plan (if any)

The outcomes of this teaching practicum will be shared with Uma and her parents at the end 10 sessions. An auxiliary plan (if necessary) will be discussed with Uma and her parents if they prefer providing continuous support to Uma until she completes her diploma in management studies.

Comments

The lesson outcomes will inform me of what kind of support the children with SpLD need once they leave secondary school.

Educational Therapist: _____ Date: _____

IPAD INTEGRATED IEP

Why iPad used in this teaching practicum







Though Apple technology – iPad and a selected list of iOS applications in this context - presents a set of new challenges to learners with technology, it awards the users the choice of multiple and alternative formats to perform a given reading or writing task. These are very different experiences altogether to my adult learner that encouraged, engaged, and compensated Uma to overcome her learning differences during the teaching practicum that increased her sense of self-worth. On the other hand, the pedagogical use of Apple platform offered me, the facilitator, a scope of instructional methods that encouraged me to introduce more technology-based tasks to my adult student.

Selection of suitable iOS applications apps

Draffan (2009) identifies seven major categories of technological aid (hardware and software) that students can use. They are planning, reading, writing, voice recognition, digital voice recorder, scanner, and personal digital assistant. The selection of iOS applications (apps) for this teaching practicum is made based on the categories specified above to provide one-to-one learning support. A catalogue of iOS applications (apps) was made available to the learner and she was given the chance to make the right choice of the apps that best suited her and a given learning situation in consultation with the facilitator. Sharing and integrative options within and between apps were also considered key elements when the selection was made to ensure best learning outcomes.

iOS applications (apps) used in this teaching practicum

Table 1 shows the iOS applications (apps) that were used in this teaching practicum. (For more details: QR codes can be scanned).

App Title	Description/Rationale	More Details
Inspiration	<p>Planning</p> <p>Students visualise ideas and information in a diagram or in an outline and flip between views with a tap</p>	
Sound Literacy	<p>Word Recognition</p> <p>Help the teacher to explain how the written word is structured: letter and letter combinations, prefixes, suffixes, and bases</p>	
AppWriter	<p>Reading & Scanning</p> <p>This app has three features: text-to-speech, word prediction, and OCR scanning with Dyslexie-typeface (popularly known as dyslexia font)</p>	
Pages	<p>Writing</p> <p>A well-suited full word processor for iPad</p>	
SuperNote	<p>Digital Voice Recorder</p> <p>Colour-coded note-taking app with a voice recorder. Take quick notes and make recordings simultaneously.</p>	
GoodNotes	<p>Note-taking</p> <p>Notations could be made on documents and save them or export them.</p>	

FINDINGS AND DISCUSSION

Text Structure

Students who are taught to identify the structure of expository and narrative text have been found to have better comprehension than students who have not received such instruction (Taylor, 1992). The facilitator modelled the text structures to the student and she was given exposure to various patterns of organisation of information - sequence, cause and effect, problem and solution, compare and contrast, description and directions - in non-fiction texts.

At first, Uma did not have a clue how facts are presented in non-fiction texts. But at the end of the two sessions designated for this topic she was able to understand the relationships among the facts that are presented in a text. Additionally, she was able to figure out some of the clue words that hold these relationships together. 'GoodNotes' app provides a unique experience by allowing its users to highlight and annotate. Uma highlighted the text using different colours. (For example: a cause and effect text structure could be highlighted in two different colours). We developed a checklist with the six text structures so that Uma could use this checklist when she comes across a new piece of non-fiction for reading. Furthermore, a short list of clue words was developed so that it could serve as a reference guide to help Uma to understand relationships among the facts presented in a text.

Word Recognition

The inability to sound out unfamiliar words is a major contributor to the poor comprehension skills (Foorman, et al., 1997). Syllabication was introduced to decode words by looking and recognising chunks of words. DISSECT method (Lenz and Hughes, 1990) was used in this teaching practicum to assist my struggling student to decode unfamiliar words by using a combination of context clues and word analysis strategies. Students will master structural analysis skills only when modelled by teachers (Gaskins et. al., 1996). The student was modelled all six syllable types and was provided with ample opportunities to practice her newly learned strategies. Student's work was checked instantly to make sure that she has completed the activities and corrective feedback was provided immediately.

'Sound Literacy' app is an excellent instructional tool to teach morphemic awareness to kids. It provides a platform for students to see, hear and analyse words and build words with meaningful word parts. I demonstrated concepts and skills as well as guided practice sessions with Uma using this app. This unique app encouraged Uma and me to work together in this intensive practicum. We used another app - 'Vocab Rootology' - for independent practice during our drill sessions to learn most

common prefixes, suffixes, and Latin and Greek roots used in English Language. I found Uma effectively applying structural analysis skills during these three practice sessions and she was able to identify the prefixes, suffixes, and the roots (base words) of a set of words that were selected from her textbooks. This gave her confidence to handle some words on her own and she expressed her success by telling me that words that made no sense to her previously make sense now when they are broken down into meaningful word parts.

Write an answer to an open-ended question using selected apps

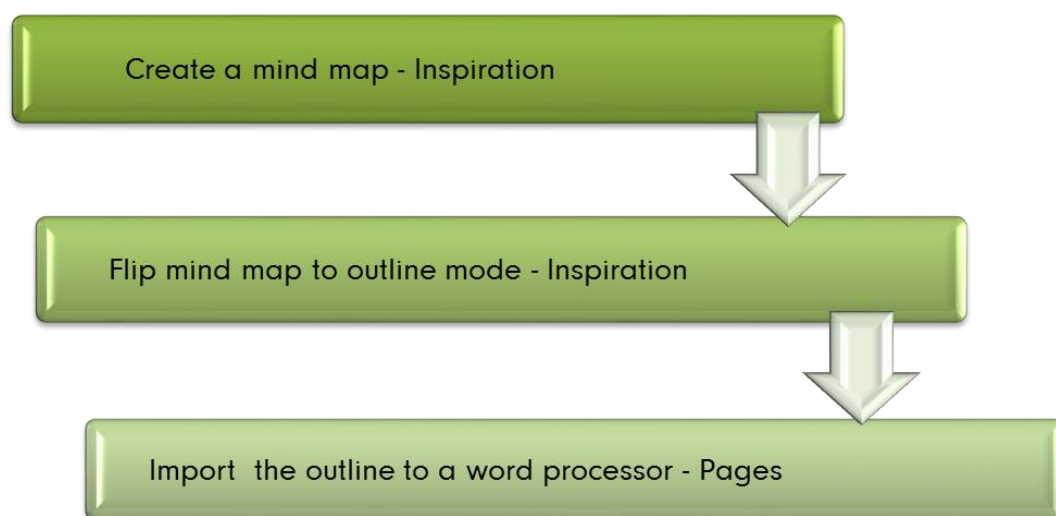


Figure 2 shows how two iOS applications (apps) use sharing and integrative options within and between the apps.

Uma used text-to-speech software to read a piece of text in her laptop. She summarised the text and generated notes and put them on a mind map using the 'Inspiration' app in the iPad so that she can view the information holistically. Then she read the question using text-to-speech software in her laptop. She switched the visual view of the information in the mind map to a linear note view. In other words, the 'Inspiration' app allows flipping of the information from mind map view to an outline view. According to the question, she deleted some content and added more information to the notes. Subsequently, she exported the contents from the 'Inspiration' app to 'Pages' - a word processing app to edit and format the answer to the question and submit it online to her tutor.

This writing process with technology was really an eye-opener for Uma and she liked it the best out of all the sessions in the teaching practicum. Because most of her take-home assignments are open-ended questions and she has to answer them after a short group discussion. This process really helped her because she could read the text and create a mind map. Then she attends the group discussion. She adds in more details to the mind map during the discussion. When she wants to answer the question individually she flips the mind map to the outline mode and exports it to the word processing app, formats the answer, edits it, and posts it online to the virtual learning platform (VLE) of the college. This technology integration to the learning process reduces her anxiety on reading and it shows an easy way around to work on her assignments at home.

Two additional apps were introduced to Uma as they will be of immense assistance to her in note-taking activities. *'AppWriter'* is a text editor with reading, writing, word prediction, and text-to-speech features. This app allows converting any printed document into a digital text document through its scanning feature with optical character recognition (OCR) technology and gets the document read using text-to-speech function. *'SuperNote'* is the other app which helps to colour-code notes and this feature helps to locate the notes instantly. Recording feature is built into the notes where one can make notes while listening to the lecture and recording it simultaneously. We did not have much time during the last two sessions to explore all the characteristics of these two apps but Uma was confident that these two apps will be very helpful to solve the day-to-day academic demands she faces.

Ever since she learnt to sight read, she has not learnt to decode most commonly used words. The strategies that we focused on decoding and word recognition skills should have helped Uma to better comprehend the texts that were presented to her.

CONCLUSION

Transfer of learning for adults is not automatic and must be facilitated. Coaching and other kinds of follow up support are needed to help adult learners transfer learning into daily practice so that it is sustained (Speck, 1996). Through appropriate practice, self-acquired strategies over time, and the use of assistive technology can support Uma to develop comprehension as a skill. In this teaching practicum, the results of informal assessments indicates that the strategies that produced positive results were the use of mind mapping techniques and writing of summary notes. These two skills helped Uma to think about the text during the actual process of reading.

My take in this short study is that continuous support in the area of literacy is vital to

adult learners with language-based learning differences. They should be facilitated outside the traditional classrooms. A blended learning approach or a flipped classroom model would certainly be of advantage to adult learners as these approaches and models offer numerous ways to learners to receive additional learning support outside the classroom.

The opportunity has arisen to follow up the progress of Uma, since our initial sessions. I plan to interview Uma to ask the following questions that tap study skills and technological support, as well as more general questions targeting self esteem.

INTERVIEW QUESTIONS

1. Do you get your tutor / someone to run through study materials which will help you to understand them better?
2. Do you engage in meaningful discussions with your tutor(s) or someone?
3. Do you create mind maps (with or without tech help) from your notes to summarise or extract information from the study materials?
4. How do you stay organised with or without technology?
5. What is the role of technology in your present class?
6. In what ways do you use technology to support your learning?
7. Does the use of technology have enhanced your learning? Explain.
8. What device(s) do you use in your learning (in class and at home)?
9. Do you think the device(s) available to you right now aid your learning? Yes / No. Explain.
10. If you do not have the right device(s), which one(s) you would prefer and would like to obtain or use? Why?
11. Does the use of technology has improved your writing? How?
12. Do you currently enjoy any exam accommodations? Explain.
13. As an adult, are you aware of your strengths and weaknesses? What strategies you use to work around the issues you face? Explain.
14. Are these computer based?

General questions

15. How the sessions with me affected her confidence and self esteem.

It should then be possible to tap Uma's meta-cognitive awareness of her own difficulties and how this has been affected by my input. Illustrating the final article with quotes from the interview should provide an example of good practice for further research.

REFERENCES

- Aaron, P. G., Joshi, R. M., & Quatroche, D. (2008). *Becoming a Professional Reading Teacher* Paul H. Brookes, Maryland, USA.
- Anderson, R. C., Hiebert, E. H., Scott, J. A., & Wilkinson, I. A. G. (1985). *Becoming a Nation of Readers: The Report of the Commission on Reading*. Washington, DC: National Institute of Education.
- Borkowski, J. G., & Muthukrishna, N. (1992). Moving metacognition into the classroom: 'Working models' and effective strategy teaching. In M. Pressley, K. R. Harris, & J. T. Guthrie (Eds.), *Promoting academic competence and literacy in school*. San Diego, CA: Academic Press.
- Bruner, J. (1970). *Toward a theory of instruction*. Cambridge, MA: Harvard University Press.
- Draffan, E. A. (2009). New technology to support adults with dyslexia. *BDA Dyslexia Handbook 2008/9*, British Dyslexia Association, Bracknell.
- Fawcett, A., & Nicolson, R. (1998) *The Dyslexia adult Screening Test*. The Psychological Corporation, London.
- Fidishun, D. (2000), *Andragogy and technology: Integrating adult learning theory as we teach with technology*. [Conference Paper]: 5th Annual Instructional Technology Conference. Retrieved 2007, from Middle Tennessee State University, 2007. <http://www.mtsu.edu/~itconf/proceed00/fidishun.htm>.
- Feuerstein, R., Rand, Y., Hoffman, M., & Miller, R. (1980). 'Instrumental Enrichment.' Baltimore, MD: University Park Press.
- Foorman, B. R., Francis, D. J., Winikates, D., Mehta, P., Schatschneider, C., & Fletcher, J. M. (1997). 'Early interventions for children with reading disabilities.' *Scientific Studies of Reading*, 1, 255-276.
- Gaskins, I. W., Ehri L. C., Cress, C., O' Hara, C., Donnelly, K. (1996). Procedures for word learning: Making discoveries about words. *Reading Teacher* (Dec 1996-Jan 1997) International Reading Association Inc.
- Gregg, N., & Banerjee, M. (2009). *Reading comprehension solutions for college students with dyslexia in an era of technology*. The Routledge Companion to Dyslexia, Routledge, Abingdon.
- Hoover, W. A. & Gough, P. B. (1990). The Simple view of Reading. *Reading and Writing*. 2, 127-160.
- Kirby, J. R., Silvestri, R., Allingham, B. H. et al., (2008). Learning strategies and study approaches of post secondary students with dyslexia. *Journal of Learning Disabilities*, 41, 85-96.
- Knowles, M. S. (1970). *The Modern Practice of Adult Education. Andragogy versus pedagogy*. Englewood Cliffs: Prentice Hall, Cambridge.
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. Englewood Cliffs: Prentice Hall, Cambridge.
- Knowles, M. S., Swanson, R. A., & Holton, E. F. III (2005). *The adult learner: The definitive classic in adult education and human resource development (6th ed.)*. California: Elsevier Science and Technology Books.
- Koehler, M. J., & Mishra, P. (2009). 'What is technological pedagogical content knowledge?' *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.
- Lenz, B. K., & Hughes, C. A. (1990). A word identification strategy for adolescents with

- learning disabilities. *Journal of Learning Disabilities*, 23(3), 149-158, 163.
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Raskind, M. (2009). Retrieved from: <http://www.ncld.org/at-school/general-topics/assistive-technology/choosing-an-assistive-technology>
- Singleton, C. (2004). *Lucid Adult Dyslexia Screening Test*. Lucid Research Ltd., Beverley.
- Speck, M. (1996). *Best Practice in Professional Development for Sustained Educational Change*. ERS Spectrum.
- Smythe, I. (2010). *Dyslexia in the digital age*. Continuum, London.
- Stanovich, K. E. (1980). Toward an Interactive-Compensatory Model of Individual Differences in the Development of Reading Fluency. *Reading Research Quarterly*, Vol. 16. No. 1 (1980). PP 32-71.
- Taylor, L. (1992). Developmental changes in the recognition and comprehension of facial expression: Implications for frontal lobe function. *Brain and cognition*, 1992 - Elsevier Inc.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Websites consulted

Indiana University Teaching Handbook (2004).
<http://citl.indiana.edu/resources/teaching-resources1/teaching-handbook.php>
 (last visited: April, 05, 2013)

International Dyslexia Association
<http://www.interdys.org/3DLiteracy.htm>
 (last visited: April, 16, 2013)

iTunes App Store
<https://itunes.apple.com/us/genre/ios/id36?mt=8>
 (last visited: April, 22, 2013)

ABOUT THE AUTHOR



SAMUNN ABDUL CAFOOR

Senior Educational Therapist

Mohamed Samunn is a Senior Educational Therapist who has been teaching in DAS since 2008. He holds a postgraduate diploma in Specific Learning differences (SpLD) from London Metropolitan University. Currently, he is a candidate for the degree of Master of Arts in Specific Learning differences (MA SpLD). He has a dual specialisation in Literacy and Math to provide intervention and remediation classes to children with dyslexia. He has 31 years of experience in teaching English as a Second Language. Before joining DAS he was attached to the MOE Maldives for 11 years as a English Language teacher (Secondary) preparing students for the Cambridge O/Levels and IGCSE Examinations. His research interests are supporting adult students with dyslexia in higher education, offer EdTech and e-learning solutions to children with SpLD.

BE **RECOGNISED** FOR YOUR **EXPERTISE** IN THE FIELD OF **SPECIAL EDUCATIONAL NEEDS**



Join RETA now!
Call 6336 2555 or email
info@reta.sg

Join the Register of Educational Therapist Asia (RETA)

Benefits of being a member:

- A \$100 welcome gift voucher for DAS Academy workshops and courses*
- 10% member discount on DAS Academy resources
- Access to DAS Academy library
- Opportunity to be listed on the RETA website for private consultation
- Access to RETA Chronicles, the members only bi-annual newsletter
- Peer Support - Network with other educators / practitioners
- Be considered for employment with DAS

**Terms and Conditions apply*

To find out more about being a RETA member, please call 6336 2555 or email info@reta.sg



Register of Educational Therapists (Asia)
73 Bukit Timah Road
#05-01 Rex House
Singapore 229832

Psychological Assessments in Singapore - Getting Personal?

Dr Tim Bunn

*Consulting Educational Psychologist
Dyslexia Association of Singapore*

Around the world, there are always currents of opinion swirling, creating eddies and turbulence, about how the psychological assessment of children should be done. In the United Kingdom, my home territory, in their evidence to the Education Select Committee towards the end of the last Labour Government's term, some parents questioned the impartiality and indeed the value of Local Authority Psychological Assessments. Longer ago, the reconstructing movement (Gillham 1971) questioned the need for individual psychological assessment of children - the institutions in which they were educated seemed a better place to apply change. When I first trained as a psychologist, I remember psychologists being surprised that we still used those "outdated tests", such as WISC (1st edition).

But here we are in 2015 in Singapore, itching to get our fingers on the gleaming buttons of WISC-V. The normative tests have survived and prospered. Indeed, they now so dominate the assessment process that other sources of information about children seem to be discarded or forgotten. No-one has heard of dynamic assessment, and curriculum based assessment is not something psychologists do. How did it come to this?

Psychological assessment came relatively late to Singapore. The Ministry of Education employs a team of educational psychologists and assistant psychologists, who provide assessment services to

"When I first trained as a psychologist, I remember psychologists being surprised that we still used those "outdated tests", such as WISC (1st edition). But here we are in 2015 in Singapore, itching to get our fingers on the gleaming buttons of WISC-V."

the Singaporean population, and contribute to decisions about children entering Sped schools (special schools). They also see mainstream pupils and make recommendations for additional interventions within them and to outside support agencies (eg Child Guidance, Dyslexia Association of Singapore). There are other psychologists, mainly professionally trained abroad (in for example Australia, the US and the UK), working within the private sector and within the International Schools. Few Singaporeans attend International schools, so their clients are mainly expatriates. Some of the psychologists working in this area are expatriates themselves.

Although the situation may be changing, places in International Schools are not easy to obtain, and it is common for schools to refuse a place because a child has more significant special needs than the school feels able to support. There is therefore considerable worry among expatriate parents that if their children's special needs are identified, or identified as severe, the schools will not accept them. A few schools specialise in the SEN end of the market but they often have waiting lists.

I came to Singapore in mid-2011 to work within the Dyslexia Association of Singapore (DAS), in a new unit providing general support services to the International Schools, including assessment and tuition. I came from a spell working for a specialist mainstream school in England, and a long career in Local Authority psychology and SEN services. I was surprised after three years in the private sector how different Local Authority and private educational psychology work was in the UK, and wrote about this in a paper for SEN Magazine (Bunn 2011), arguing that both sectors had value but they pursued different priorities.

With a few exceptions, psychological assessment in Singapore is clinic based, and draws conclusions mainly from normative test results. Most parents are not familiar with psychological assessment in other countries, and so have to rely on the prevailing models here. I recently suggested in public talks that assessment is too narrow.

I suggested to the participants, a mix of Singaporean parents and teachers and expatriates (mainly teachers), some of the concerns I have heard during my career, from parents, teachers and other psychologists:

- ◆ You are only told what the psychologist wants you to hear – our child said they did all sorts of funny things and the psychologist seemed a very odd person. We aren't sure what to think.
- ◆ It's all based on a single short session with lots of very quick tests. How can you be sure that you really see all the child can do, and that this shows his best?

- ◆ It's all based on tests – why can't they watch how the child gets on in class or in homework too?
- ◆ The tests are all made in the US and UK, not Singapore, so how can we be sure they work properly for kids here?
- ◆ In the UK and US many psychologist's assessments are part of a legal assessment process, and States, school districts or Local Authorities employ the psychs, so how can we trust them to be honest?
- ◆ Privately employed psychs need to work so they have to say what you want – but it costs!
- ◆ Psychologists tend to use very technical language that is very hard for ordinary people to understand. Why don't they write in ordinary language?
- ◆ The psych assessment gives very broad recommendations, and many of them are unrealistic or have already been tried. They aren't teachers so how do they know what teachers can and can't do?
- ◆ They don't usually seem to know that we have tried this and it hasn't worked, that's where we need more help.
- ◆ They seem to think every child is dyslexic. But they don't take any notice of other conditions like dyspraxia or ADHD.
- ◆ How can they give a "diagnosis" of dyslexia when it isn't a medical condition?

During the early part of both sessions I asked the participants to rate these concerns, using

- 4 = a big, serious concern
- 3 = some concern
- 2 = a bit of concern but not too serious
- 1 = not a concern,
- leave blank = I don't know.

I combined the two payment bias comments into one, but otherwise the 10 items were intended to reflect the statements bulleted above.

STATEMENT ON PSYCHOLOGICAL ASSESSMENTS	Group 1 n=25	Rank 1	Group 2 n=14	Rank 2	All n=39	Rank All
Mysterious activities parents don't see	2.79	7	2.36	8=	2.66	7
Information from one testing session determines everything the child can do	3.42	1	3.29	2	3.37	1
Testing not supported by class observation	2.92	5	3.43	1	3.10	5
Tests used not based on Singaporean kids	2.58	8	2.45	7	2.54	8
Who pays the psychologists - bias inevitable	2.46	9	2.5	5	2.47	9
Language of reports too technical	2.88	6	2.36	8=	2.69	6
Unrealistic or too obvious recommendations	3.04	3	2.64	4	2.89	3
They don't know what has been tried before	2.4	10	2.46	6	2.42	10
Conclusions can be limited and can miss vital problems	3.24	2	3.09	3	3.19	2
Diagnosis - medical model not educational	2.96	4	2.33	10	2.74	4

The results of these mini surveys were:

The differences between the two groups suggest some differences between groups (parents vs teachers, Singaporean vs expatriates). But there was considerable common ground, too. The greatest concern overall was the shortness and one-off nature of the assessment session:

- ◆ A longer assessment, over two sessions or more, is wanted.
- ◆ Assessments that look at the whole child, rather than assessing to see

whether a child does or does not have a particular difficulty, also seem to be wanted.

- ◆ The recommendations need to be useful and practicable.
- ◆ There was divergence over whether a "medical model" outcome was desirable. Many in the second group did not feel this was much of a concern. But the first (more Singaporean group) were more concerned.
- ◆ There was also divergence about whether classroom observation was needed. The second group felt it was a top priority, but the other group were less concerned.
- ◆ Perhaps surprisingly, the language of reports did not figure as strongly in either group's priorities as I expected.
- ◆ Tests not based on Singaporean norms were also less of a concern than I anticipated.

I then gave a very short history of the psychological assessment of children, and explained why normative testing seems to have dominated assessment, in spite of the value of dynamic and curriculum based assessment. I then illustrated what psychological tests are like by giving the audience some questions and activities which are quite like some leading tests. I used this to emphasise the differences between dynamic and normative assessment, and suggested that some dynamic and curriculum based testing would extend and complement existing normative techniques.

Finally I suggested a very brief model of the processes a psychologist follows in conducting an assessment:

- ◆ Problem clarification, nearly always something is not going as well as the parents or the teachers would wish; we need to clarify the problem as much as possible, by asking more questions.
- ◆ Evidence is gathered: background (health, early development, educational history, previous assessments etc), views and feelings, test results, error analysis, observations of processes, sometimes follow-up results;
- ◆ We try and answer the question or problem – sometimes we doubt there is a problem, sometimes we think there is a more important problem,

different to the one given. Usually we have a "theory" of what causes the problem (which may arise at any stage);

- ◆ We put forward the theory as an answer to the problem and present whatever evidence there is for it (and sometimes against it too);
- ◆ We consider what the implications of the proposed answer might be - what resources, programmes, changes in view etc might be needed to bring about change. What answer is "best" is often an ethical as well as an evidential reasoning and pragmatic matter.

I put forward 12 statements about the development of psychological assessment which I believe would improve the quality of what psychologists do. Finally, the participants were asked to rate the statements, using a similar scale:

Which of the changes suggested to improve psychological assessment are most important to you (4,3,2,1,-)?

The audience responses are detailed in the table on the following page.:

Some of my personal "hobby-horses" clearly left the participants unimpressed. They didn't think that recasting assessment as part of "personal-science", which tells a "narrative", after looking for a "theory" of the child's problem was very important. Perhaps more surprisingly, doing assessments at a pace and in a place which may be "more informative" (perhaps with parents watching, I meant) also did not much interest them, even though testing too quickly, in a single session, was the top worry from the first survey.

They did continue to respond strongly to the suggestion that psychologists should be using dimensional, not categorical conclusions. They clearly agreed with my suggestion that most educational difficulties are not all or nothing and are really matters of degree.

They responded quite strongly (ranking it fourth) to my suggestion that part of the psychologist's job should be to "clarify the question" - in other words, they seemed to agree with the first part of my process model. They want psychologists to help them work out what are really the issues and difficulties for the child.

They did in the end feel that the language of reports should be clearer. I did not spend any time on this issue in my talk but it was rated first in the final questionnaire. One other issue also jumped up the ratings: the participants wanted psychologists to provide improvement goals. I mentioned this only briefly and said that almost all

STATEMENTS ON PSYCHOLOGICAL ASSESSMENT	Group 1, n=20	Rank 1	Group 2, n=17	Rank 2	All, n=37	Rank All
Clarify the question	3.65	2=	3.25	4	3.47	4
Open up possibilities (questions)	3.40	9	3.31	3	3.36	7
Review the story so far	3.44	8	2.87	10	3.18	9
Choose more widely from available tests & activities, invent new if necessary	3.45	7	3.06	8	3.27	8
Work in a place & at a pace which is most informative	3.30	10	3.00	9	3.16	10
Survey the abilities & skills most relevant to the question	3.60	4=	3.19	6	3.42	5
Find a "theory" to help explain the problem	3.05	12	2.56	12	2.83	12
Provide dimensional not categorical answers	3.65	2=	3.35	2	3.51	2
Research the recommendations & actions	3.60	4=	3.13	7	3.39	6
Provide measurable improvement goals	3.70	1	3.24	5	3.49	3
Provide understandable records (reports)	3.60	4=	3.53	1	3.57	1
Accept that the story is personal-science, each psych tells it his or her way	3.20	11	2.71	11	2.92	11

psychologist's reports in England include improvement goals - lists of objectives the psychologists suggests should be worked on to help the child. I explained that many of them are rather "wishy-washy" (eg "John will read more fluently"), but I suggested that such goals can easily be written more sharply. The audiences at these talks agreed, and placed improvement goals as their third priority, after readable reports and dimensional answers.

My aim, as I explained at the start of the talks, was to offer suggestions of what good psychological assessment could be, so that consumers can ask for what they consider to be important when their children (as parents or teachers) are assessed by psychologists. I don't expect my talks to provide more than small ripples in the pond. But I hope that opening up psychological assessment to debate with parents and teachers will begin to enlarge the possibilities for the future. Singapore is a country which focuses efforts very precisely. It may not yet be ready to develop its own ways of doing psychological assessment, but one day I shall not be surprised to see a Singapore model of psychological assessment making waves around the world.

REFERENCES:

Bunn, T (2011), "State or Independence", *SEN Magazine*, 54, p68-70 (www.senmagazine.co.uk)
Gillham, B., (ed) (1978) *Reconstructing Educational Psychology*, London: Croom Helm

ABOUT THE AUTHOR



DR TIM BUNN

Consulting Educational Psychologist

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

Lexical-Based Intervention for Students with Dyslexia: An Exploratory Case Study

Teo Yizhen Sue-Lynn¹, Dr Tim Bunn² and Tan Swee Ching Amanda¹

1. *Senior Educational Therapist*

2. *Consulting Educational Psychologist*

Dyslexia Association of Singapore

SUMMARY

The Dyslexia Association of Singapore (DAS) teaches over 2,500 children in twice weekly sessions within small classes of no more than four students. All the students have been diagnosed as dyslexic. DAS uses a modified form of the Orton-Gillingham teaching methodology, now called the Essential Literacy Approach (ELA). It is a predominantly phonics based approach, and works well for the great majority of students. This study explored the effectiveness of a lexical intervention with six students who did not seem to be responding well to ELA. The students were chosen as representative of children who did not respond to ELA.

A lexically based intervention was delivered over 40 weeks (2 hours per week), focusing on teaching word families, whole words and multi-syllabic words whose "root" words were themselves real words. Standardised tests were used to clarify the students strengths and difficulties before intervention, and TOWRE2 was used both before and after intervention to measure progress. However, the main measure of progress was the students' scores on a set of 90 spelling words from the larger body of words taught during the intervention, which they spelled before and after the intervention. All students showed some progress on this measure, with the majority showing good progress.

The study suggests that an alternative lexically based intervention can benefit some students who do not appear to respond to the usual phonics based interventions. Issues of identification and training are discussed.

LITERATURE REVIEW: EXPLORING LEXICALLY BASED INTERVENTIONS FOR STUDENTS WITH DYSLEXIA.

There is widespread agreement that some students do not respond well to interventions for dyslexia (Blachman 1994, 1997; Brown & Felton 1990, Mathers, Howard, Allen & Fuchs 1998, Shanahan & Barr 1995). Al Otaiba and Fuchs (2002) found in an very large scale meta-analysis of early phonics-based literacy interventions that between 8% and 80% of students exhibited little or no improvement, depending on the outcome measures. Students who do not improve in literacy as a result of intervention were called "non-responders" or "treatment resisters" by Torgesen (2000).

How should we identify "treatment-resistors" within the DAS? Annual reading and spelling tests on all students up to 2013 were carried out. A plausible measure is lack of progress year on year, in effect a negative "gain score" when comparing reading or spelling over two successive years. Analysis of gain scores suggested that a similar picture emerged whether 3 or 8 bands were used, so using 3 bands reading and spelling gains were:

Reading gains separated into 3 bands, where 1=lowest gain (below -6), 2= medium gain (-6 to +6) and 3= highest gain, (above +6) for 2012-13 using the British Ability Scales, 3rd Edition (BAS III) Word Reading test:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	75	5.7	5.8	5.8
	2	1050	80.3	80.8	86.6
	3	174	13.3	13.4	100.0
	Total	1299	99.3	100.0	
Missing	System	9	.7		
Total		1308	100.0		

Similarly for spelling:

Spelling gains separated into three bands, where 1=lowest gain (below -6), 2= medium gain (-6 to +6) and 3= highest gain, (above +6) for 2012-13 using the BAS III Spelling test:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	72	5.5	5.5	5.5
	2	1112	85.0	85.7	91.2
	3	114	8.7	8.8	100.0
	Total	1298	99.2	100.0	
Missing	System	10	.8		
Total		1308	100.0		

There were therefore 75 children showing very poor progress in reading and 72 showing very poor progress in spelling. There might, however, be only 75 children involved (where all the poor readers were also poor spellers, or 147, where there was no overlap. Surprisingly, when the composition of the two groups of children showing the lowest progress were examined, there were 135 children involved, with only 12 having very low gains in both reading and spelling. When a combined distribution of low composite reading and spelling gain was computed, there were 11 children with very low composite gains (below -16); and a further 81 children with composite gains between -16 and -9. These 92 children, constituting 7.1% of the 1308 children tested on both years, probably provides the best estimate of the number of "treatment resisters" in the DAS at that time.

It is likely that one of the reasons for not responding to intervention is a lack of phonological awareness (PA) and difficulty in gaining PA in spite of intensive training over a prolonged time (Bruck 1992, Brady 1997, Lovett, Bordon, Lacerenza, Benson & Blackstone as cited in Torgesen 2006). Phonological Awareness involves awareness of the sound structure of the language and it is expected to lead to difficulty in learning letter-sound correspondences, blending and non-word decoding.

PA deficits can persist into late adolescence (Fawcett & Nicolson, 1995). Thus, interventions for children over 8 years who do not appear to be responding well to PA based interventions might be based on other (non-phonics) approaches.

Alternative analysis of the National Reading Panel data (Hammill & Swanson, 2006) suggested

- a. Beginning readers who are taught phonics do better in decoding than children taught by other approaches, but phonics and non-phonics instruction are about equal in their ability to teach other reading skills such as comprehension or oral text reading
- b. Older students (aged 8 to 11) who are taught phonics read about as well as students who are taught by other reading methods that do not emphasise phonics. No appreciable superiority favouring phonics was noted.
- c. Poor readers and disabled readers respond similarly to both phonics and non-phonics approaches. Kindergarten and first grade at-risk children show greater reading growth when phonics instruction is used, but this growth appears to be limited to decoding skills and may not hold up over time.
- d. The NRP appropriately concluded that "phonics instruction is never a total reading program" and when used "should be integrated with other reading instruction to create a balanced reading program" (p. 2-136).

Taken together, this research suggests that non-phonics based approaches can be considered for non-responders. The aim of this exploratory case study was to explore the effectiveness of such an intervention at the DAS.

The Dual-Route model of reading provides a clear contrast between sub-lexical (phonics) and lexical (whole word) learning pathways (Coltheart, 2005). As seen in Figure 1, in the sub-lexical route, the reader looks at the written word and uses the sub-lexical phonological route by breaking the word down into its individual graphemes (letters) and converting each into a phoneme (sound). Then, the reader blends the individual phonemes together, finds associated meaning and then says the word out (Coltheart, 2005).

In contrast, for the more direct lexical route, the reader sees the written word as a whole, directly connects the whole word to a meaning, then says the whole word out.

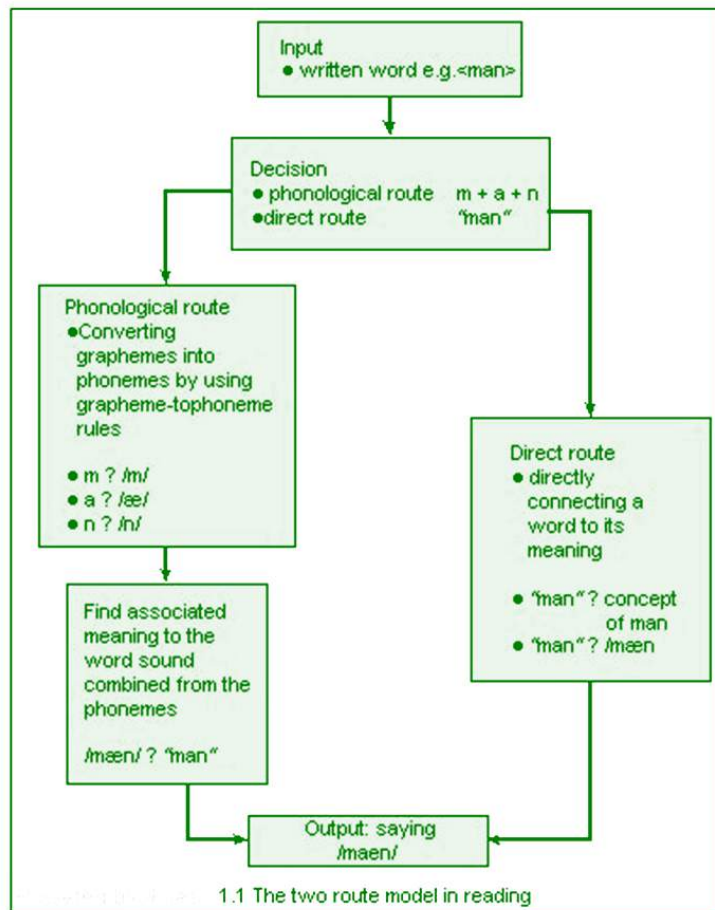


Figure 1. The dual route model of reading: sub-lexical and lexical route (Colheart, 2005)

Our aim was to devise a strengths-based approach for a small group of older children, who seemed to be struggling badly when taught using an approach that aimed to remediate their deficits in phonological awareness. It seemed possible that they would retain whole words taught through an association with word meanings better than through an association with sub-lexical units associated with phonemes.

PARTICIPANTS

Our participants included children about whom we had considerable additional test data and another group about which we only knew through teaching. The first group were the 'main focus' of this study but the second group could not be ignored and suggested some important lessons to us (see below).

Taken together, the children were all 10 or older, at least 2 years behind in reading and spelling (using BAS Word Reading and Spelling test results), and had not achieved reading and spelling ages above 10 years. They had been on the DAS ELA programme for at least a year and had not shown progress in reading and spelling scores in the previous year. Three of them had English as a second language, and the other three had co-morbid difficulties (Specific Language Impairment, ADHD, colour blindness, visual-perceptual issues). They had all been diagnosed as dyslexic, and from observation over time seemed to be stronger at reading than spelling, and to have strengths in visual-memory and weaknesses in phonological awareness and auditory sequential memory.

In particular, we noticed that the children seemed to be able to segment words at a syllable level but not at a phonemic level, and they found the concept of a "silent letter" very hard to understand. When reading text, they seemed to rely mainly on context to work out unfamiliar words (i.e. very limited decoding using letter-sound correspondences). When learning to spell, they seemed to be most affected by the length of the word rather than its sound structure. They could learn 3 letter words and 4 letter words after substantial practice. Sight word knowledge seemed to depend mainly on practice and word frequency.

AIMS AND RATIONALE

We considered that it would be very difficult to overcome these older students' established reading habits. They tended to use context and meaning cues to guess words in text, and seemed resistant to other approaches. So we felt we should tackle the 'harder' problem of spelling, because context cues are not available to support spelling. We hypothesised that if they could begin to remember words using meaning cues for spelling, this would automatically support their reading skills. We felt that the Dual-Route model provided a fresh and potentially fruitful novel way of looking at the learning of these students, whom might benefit from an approach based on their stronger lexical routes

METHODS

We also wanted to explore whether further diagnostic tests would help us better understand the needs of the students and why or how they made progress. We tested the 'main focus' group using the Test of Word Reading Efficiency, 2nd Edition (TOWRE-2; Torgensen et al., 2012) and Comprehensive Test of Phonological Processing, 2nd Edition (CTOPP-2; Wagner et al., 2011) tests. We considered other tests which were intended to focus more on visually mediated learning (for example

Berninger's "Receptive Coding" test from the Process Assessment of the Learner) but found the norms referred only to primary age children. We were unable to identify suitable tests of "visual memory" even though this was one of our key explanatory concepts.

We constructed a curriculum based measure using 90 words randomly chosen from the 450 words we covered during the intervention programme. The children were asked to spell these words one at a time, with a meaning prompt; so the children listened to a word, were given a cue and then the word was repeated (e.g. Spell "flag"; "flag" as in the flag every country has to represent them; spell "flag"). If the participants did not understand the meaning, a visual cue was shown once; participants could request as many repeats as they needed. Teaching took place during classes of two hours per week, over 20 weeks. The total intervention time was thus 40 hours.

In each weekly lesson, word families were taught. We found that the participants differed widely in their receptiveness and tolerance. We considered receptiveness to be best shown by whether they could understand and employ the concept taught, and measured this by whether they were at least 80% accurate in spelling the words at the end of the lesson. We considered tolerance to be their ability to cope with more than one new concept in each 2 hour lesson. In fact, the children seemed to split into 2 groups, with 3 participants able to manage only one concept per lesson and the other 3 able to manage more than one; the second group were taught four word family concepts per lesson.

MATERIALS

Single syllable word family cards were constructed including CVC, CCVC and CCCVC words, and words which can be formed with and without a final (magic) e. We used words with the vowels "a" and "i" only.

We colour-coded onsets and rimes within the words; the onsets were always black, while the rime was either purple (for magic-e words) or red (for non-magic-e words). We felt it was more likely that the students would remember the words with these additional colour cues.

On the back of each card there was a picture showing its meaning. We aimed to show the meaning first then the word, so that meaning was "primed". We also colour coded the borders of the cards according to the part of speech the word most commonly fell into, with a difference between present and past tense verbs:

Border colour	Parts of speech	Simplified definition
Green	Noun	Things, people or animals
Yellow	Verb (Present tense)	Action words (still happening)
Orange	Verb (Past tense)	Action words (happened already)
Red	Adjective	Words that describe things, people or animals
Black	Abstract* (e.g. can, an)	-

*Abstract = no simple representation in reality.

From experience teaching some of the more complex spelling rules, we doubted whether these students would be able to benefit from trying to learn spelling rules. In ELA, for example, two important rules presented schematically are:

Doubling Rule: base word + suffix
 clap ing = clap ping
 VC V VC__CV

Drop-e rule: base word + suffix
 tape ing = tap -ing
 VCE V V__CV

We wanted to reduce jargon and avoid rules in word form, so we used a predominantly visual approach when presenting cards and sequences of cards. Suffixes -ing and -ed were further sorted into ing/ed and __ing/ __ed (blank for inserting a letter).

An example of doubling/drop-e rule cards is seen in Figure 2a and 2b.

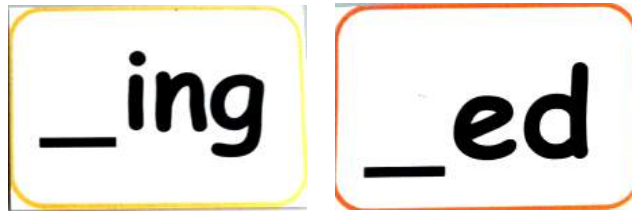


Figure 2a: Examples of doubling cards

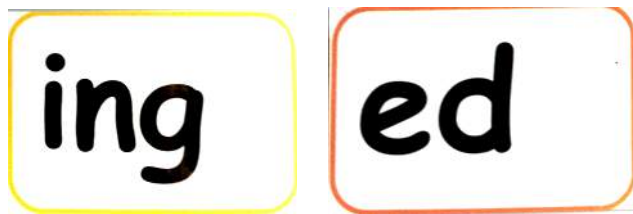


Figure 2b: Examples of drop-e cards

A previously taught set of a-e and non a-e words (e.g. -ap and -ape) was arranged and grouped according to border colour (indicating specific part of speech). Then, participants were told that only present tense verbs (yellow border) followed the doubling and drop-rule, so all other words were taken away.

Teaching doubling rule: Participants were instructed to place the ___ing or ___ed cards behind the non magic-e words (red-coloured words). To minimise jargon use and increase understanding, they were instructed “When you add i-n-g to red-coloured words, double the last letter of the base word [point visually] into the blank [point visually].” If participants were receptive (i.e. they could understand and apply it), they were taught the doubling rule for all red-coloured words.

If participants had poor auditory memory, researchers reduced instruction length using these short phrases: (a) red coloured words (b) add i-n-g (c) double last letter (point last letter of the base word and write it on blank of ‘___ing’). The same instructions applied for suffix ‘-ed’.

Teaching Drop-e rule: For magic-e words (purple coloured words), the drop-rule applied. Participants were instructed to apply drop-e rule by covering the -ing and -ed suffix cards to cover the last letter ‘e’ of the purple coloured words. If participants were receptive (i.e. can understand and apply), they were taught the

drop-e rule for all purple coloured words. If participants had poor auditory memory, researchers reduced instruction length using these three short phrases: (a) purple coloured words (b) add i-n-g (3) cover last letter e (cover last letter 'e' with an -ing card). The same instructions applied for suffix '-ed'. For a visual demonstration of doubling and drop-e instruction, see Figure 3a and 3b below.

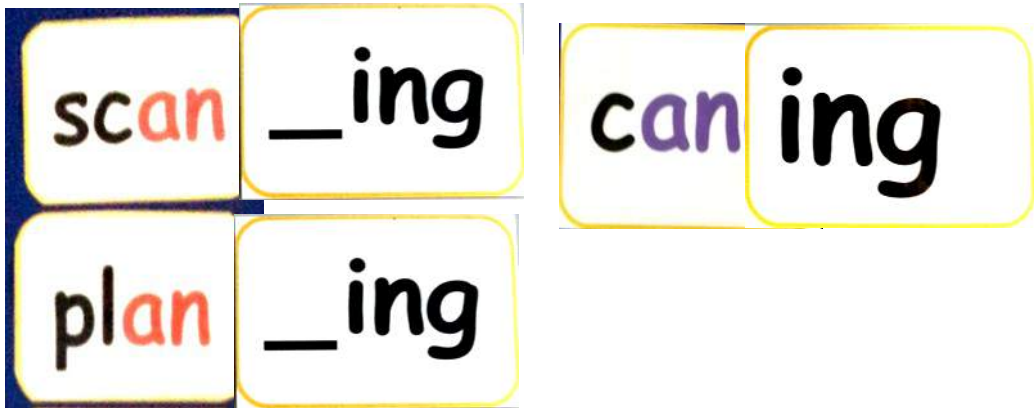


Figure 3a: Visual teaching of doubling and drop-e rule (suffix: -ing)

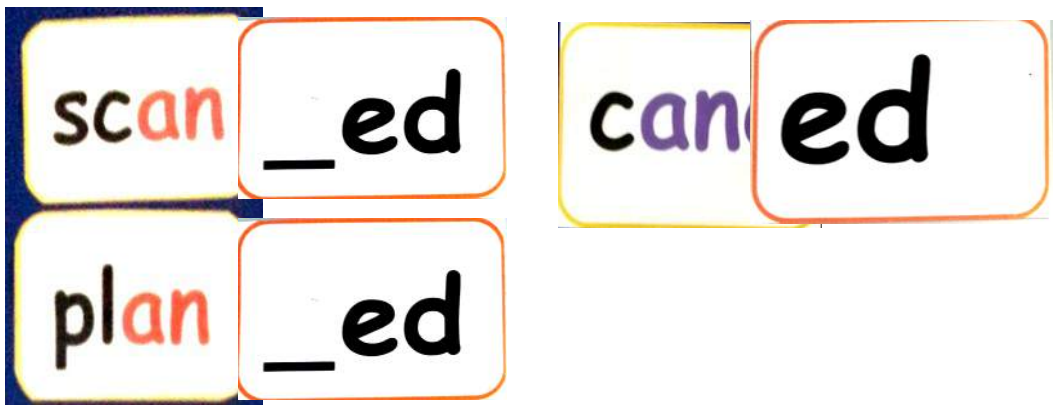


Figure 3b: Visual teaching of doubling and drop-e rule (suffix: -ed)

In summary, the aims of our procedures and materials were:

- 1) To increase spelling accuracy and improve word retention;
- 2) To provide a direct way of learning the parts of speech of the words taught;
- 3) To simplify and visualise the concepts of consonant doubling and the drop-e rule.

Our materials were intended to support these aims using visual and whole word meaning rather than phoneme associations.

Test results on the main group:

We used the CTOPP-2 (Wagner et al., 2011) with this group of children before intervention, to clarify their strengths and difficulties in phonological processing. The results were:

PARTICIPANT	A	B	C	D	E	F
Phonological Awareness Percentile rank	13th	3rd	5th	16th	27th	3rd
Phonological Awareness Composite Score	79	73	76	84	91	73
Phonological Memory Percentile Rank	53rd	50th	50th	82nd	42nd	42nd
Phonological Memory Composite Score	103	100	100	82	97	97
Rapid Naming Percentile Rank	35th	27th	88th	98th	3rd	19th
Rapid Naming Composite Score	94	91	88	130	73	76

The table above shows that all participants except E had below average Phonological Awareness scores (average 79.3) while all except D had average phonological memory (average 96.5). There was a wider range of scores on Rapid Naming, with one participant (D) well above average in his recall speed and one (E) very slow indeed (average 92.0). This was consistent with our expectation that they would have severe phonological difficulties, except for one participant, E. However, their memory for sequences of digits and nonsense syllables seemed satisfactory except for D, whose below average score suggested that his main difficulty was in short-term memory rather than phonological awareness. Their rapid naming varied widely, with D showing very fast recall speed, and E showing very slow.

We used the TOWRE-2 (Torgensen et al., 2012) both before and after intervention as a measure of progress in word reading fluency and phonemic decoding fluency. The results were:

	Pre-Intervention 2013			Post-Intervention 2014			Changes in Scores		
	SWE	PDE	SWE-PDE Discrepancy	SWE	PDE	SWE-PDE Discrepancy	SWE	PDE	SWE-PDE Discrepancy
A	83 (8.3)	67 (6.6)	16	87 (9.0)	77 (7.6)	10	+4	+10	-6
B	80 (8.6)	63 (6.3)	17	86 (9.3)	61 (6.3)	15	+6	-2	-2
C	76 (8.0)	63 (6.3)	13				-	-	
D	88 (9.9)	89 (9.3)	-1	83 (9.0)	88 (9.6)	-5	-5	-1	-4
E	79 (8.6)	63 (6.6)	16	78 (8.6)	65 (6.9)	13	-1	+2	-3
F	77 (8.3)	62 (6.3)	15	78 (8.6)	63 (6.6)	15	+1	+1	0

SWE = Sight word efficiency

PDE = Phonemic decoding efficiency

The table shows that before intervention all the participants except D had below average sight word efficiency scores, and all (except D) had even lower phonemic decoding scores. They all had large discrepancies between SWE and PDE, except D. So both sight word reading fluency and phonemic decoding fluency were very low for all the participants, except D.

The changes we found on post-intervention testing were small with slight gains in both sight word efficiency and phonemic decoding for a majority of the students in the group.

Unfortunately we were not able to retest C at this stage. Average scores were:

SWE Pre	PDE Pre	Discrepancy Pre	SWE Post	PDE Post	Discrepancy Post
80.5	67.8	12.7	82.4	70.8	9.6

These figures suggest that the participants made progress in their reading fluency and in the phonemic decoding on average, but it is also clear that there were differences between the students, with 3 making positive gains in SWE and 3 in PDE. D was the only student who made no gains; his SWE and PDE both decreased slightly. A made the greatest progress on both measures, especially in phonemic decoding.

Our main measure, however, was the curriculum-based spelling accuracy measure. The results here showed a very different picture:

Participant	Pre Scores	Post Scores	(Post-Pre) scores % change	Level of Improvement
A	25/90	68/90	+ 47.8%	Very substantial
B	26/90	67/90	+ 45.6%	Very substantial
C	38/90	50/90	+ 13.3%	Fair
D	48/90	78/90	+ 33.3%	Substantial
E	48/90	74/90	+ 28.9 %	Substantial
F	19/90	52/90	+ 36.6 %	Substantial

Five of the six participants made large gains, with 2 of the 3 students who had a low base making the greatest progress (A and B). D and E started from a higher base (over 50% correct on initial test) but they also made substantial progress. C's start was from a medium base and his progress was fair but not substantial. 4 of the 6 students achieved percentage scores in the range of between 74% to 87% on this measure, indicating substantial retention of the spelling patterns we had taught them.

DISCUSSION:

There was a large difference between the results from pre and post testing using the

TOWRE-2 and the curriculum-based measure of spelling. Our participants did not seem to make much progress on the two TOWRE-2 measures, sight word efficiency and phonemic decoding. We did not expect progress on phonemic decoding because we had not taught the students using phonemes, although we had taught them alternative ways to learn syllable units of words. Their progress was about the same, on average, between reading real and non-words on TOWRE-2. However, the averages disguise a range of patterns of progress. , A and F made positive progress on both TOWRE-2 measures and made good progress on the curriculum based measure, while B and E made good progress on the curriculum measure but had mixed results on TOWRE-2. D did not make progress on TOWRE-2 but did on the curriculum based measure. Thus, there seems a lack of consistency here, which suggests that the changes in TOWRE scores were not measuring the same kinds of things as our curriculum measure. Our hypothesis that progress in spelling would feed into progress in reading did not seem to be supported, from these results over the 20 week timescale.

Our understanding of the students' strengths and weaknesses did not seem to be aided by the normative testing we used, from TOWRE-2 or CTOPP-2. There seemed no consistent relationships emerging between strengths and weaknesses on these tests and the students' progress in learning the spelling of the words.

Normative testing had covered only 6 students but a further 9 were also involved in the teaching programme. We therefore asked whether any patterns were suggested from our working knowledge of these 15 students. The pattern we felt most helpful in understanding the students arranged them into 4 "types" of learner, who seemed to respond differently to the materials we had developed.

The table below shows which groups the students seemed to fall into, using this classification:

	Group A (1)	Group A (2)	Group B	Group X	Group Y
Formally observed	3 (B,D,F)	2 (A,E)	-	-	1 (C)
Informally observed	-	1	2	3	3
Total	3	3	2	3	4

Receptive and Retentive	Selective Receptivity and Retention	Partial Receptivity with No Retention	No Receptivity and No Retention
A	B	X	Y
<p>Pattern 1 Able to utilise phonics to ensure high spelling accuracy till the CCVC word level</p> <p>Use their strong visual memory to remember words beyond CCVC</p> <p>Pattern 2 Solely rely on their visual memory to achieves high of spelling accuracy</p>	<p>Exhibit high spelling accuracy and word retention with words that contain real-word rimes</p> <p>Demonstrate poor receptivity in recalling words with non-word rimes</p> <p>Unable to observe the trend among words in the same word family</p> <p>Example of real-word rimes: fl <u>at</u>, sl <u>am</u>, pl <u>an</u>, gr <u>in</u></p> <p>Example of non-word rimes: fl <u>ap</u>, st <u>ab</u>, gr <u>ip</u>, sl <u>um</u></p>	<p>Do not seem to display strong lexical connection (meaning making in connection to prior knowledge) with the word taught via the proposed method</p>	<p>Heterogeneous group of individuals with distinct learning needs and difficulties.</p> <p>Show signs of co-morbidities that have a direct impact on their receptivity towards literacy acquisition</p>

Our observations suggested there were some important differences between the 6 'main focus' students, which had not emerged from testing. We noted that the three students in Group A (Pattern 1) were able to use phonic skills up to and including CVC and CCVC words. But for longer words they seemed to rely predominantly on their memory for the whole word (visual memory). This gave the 3 students a slight advantage over the other students: most CVC and CCVC words could be spelled

accurately, and errors were spotted more easily. For example, when asked to write "plane", B first wrote "plan" but then corrected his word by adding an "e". However he was not consistent in this; when asked to write "twin" he wrote "twine" and did not realise he had not given the correct word. Perhaps his self-correction relied more on visual memory, which is influenced by word frequency, rather than phonological skill.

We felt that the Group A (Pattern 2) students hardly used phonological skills at all, relying mainly on visual memory. This meant that Groups A and E were able to make progress on our spelling measure but they did not seem to generalise: for example, Group A could read "clap" and "trap" but did not then see that "flap" was very similar; he could not read "flap". We did not see examples of these students in Group A (Pattern 2) self-correcting at all. Our hunch was that they all were using predominantly visual-memory based learning, and the Group A (Pattern 1) students were more able to see similarities in the words they were learning, and hence could sometimes correct their errors.

We noticed an important difference between the 5 students in Group A (Pattern 2) of the other students, whom we suggest need to be considered as a separate group (Group B in the table above). These students also only relied on their visual memory but did not seem to learn rimes which were not sight words or in their sight vocabulary. Indeed, they could only learn rimes which were short real words. For example, they could read and spell words in the "-at", "-an" and "-am" families but not words in the "-ap", "-ab" and "-ag" families (which are not themselves real words) or words in the "-ate" and "-ape" families (even though these rimes are real words).

A further group seemed to be suggested by the way in which other students responded. They showed satisfactory retention at the end of the lessons, but then showed in subsequent lessons that they had forgotten what was learned. This group (which we called Group X) also seemed to be using their visual memory rather than replying on phonics. However they may need more frequent or more intensive help and effort to make connections between words, word parts and meanings.

Finally, there were 4 students (including C from the main group) whose progress seemed impeded both by very limited phonological awareness and visual memory. One female student said she was able to remember 2 letter words by sight easily, and seemed to use phonic knowledge to spell 3 letter words, but she seemed to have great difficulty hearing differences between CCVC words, and needed context or conversation cues to identify the word intended. She was a very hard working student, who used mnemonics and repeated practice to try to memorise words. The second and third students in this group seemed to experience much greater difficulties with abstract words (eg "has, by") and with past tense words rather than

with nouns and verbs that can be easily pictured. One of them could read "arrow" but could not read "at, by" reliably. They also tended to respond to words with strong semantic associations to the target word (eg "tiger. work" read as "lion, build"). It seemed that semantic associations remained although visual and phonological ones were extremely hard to retain. However, we noted that both these students had a diagnosis of Specific Language Impairment.

Participant C also seemed to fall into this group. He spelled very inconsistently within a lesson and from lesson to lesson. He struggled badly with homonyms. But he seemed he do better when words were spelled by reciting the letter names. He commented earlier that his hand "seems to have a life of its own" when he was trying to write spellings. The reasons for his difficulties seemed very complex, possibly including sensory integration issues. We felt that his final curriculum-based result was not reliable; he progressed from 38 to 50/90 words, thus gaining 13.3 %, but we felt this did not mean he would get the same result next day.

Thus, our research shows that it is possible to construct materials to meet the needs of some children who do not seem to be responding successfully to conventional phonics based programmes, and that some show very encouraging progress in learning spelling. However, it also shows that there are other children who remain hard to help, even though they also appear not to be responding well to phonics based programmes. Standardised tests do not seem to aid much in understanding their needs, nor in predicting which students will and will not make progress. Weekly sessions may not provide sufficient intensity and frequency of practice. Our research suggests that we may not have sufficient understanding of more complex cases and thus it remains unclear how further help can be rendered to such children.

CONCLUSIONS

1. Phonics based instruction is widely regarded as the main teaching method for dyslexics. This study selected students who did not seem to be responding well to a well-established and well delivered phonics-based approach over a prolonged period (at least a year). A method of teaching two key spelling rules; which involved visual and semantic cues instead of the usual phonological awareness training, was developed. The students were taught for 40 hours in 20 x 2 hour lessons, as part of their normal attendance at DAS classes.
2. Our research showed that the students were able to make good progress in learning spellings using these methods. All students made progress.

3. Measures of word reading fluency and non-word reading fluency showed that progress did not generalise to reading fluency, to any significant extent. Slight progress was seen on both measures by some students but not all.
4. Standardised tests of phonological processing did not seem to aid in our understanding of the strengths and difficulties of this group of students. They seem to be neither explanatory nor predictive of their success.
5. The research was conducted as part of our normal teaching duties at the DAS. We felt our methods and materials may be taught to other teachers without undue strain. We consider that this approach deserves further development (see below) because there are significant numbers of dyslexic students, albeit only a minority, who seem to have great difficulty with phonics-based teaching methods.
6. Our research was intended to be qualitative, although a quantitative curriculum based measure of progress was our key indicator. Our observations on how students learn and how well they retain their learning suggested that they fall into four main groups (one with 2 patterns). These suggestions, broadly based on Dual Route theory, give rise to possible further developments in observation of students as they learn, and perhaps to the further development of alternative theories of their strengths and difficulties.

AREAS FOR FURTHER RESEARCH:

1. Further development of the teaching approach is needed. The concepts and wordlist developed for this research does not follow the sequence of the ELA scope and sequence that are taught to students who are receptive to phonics. This questions the practicality of implementation in a DAS class which may consist of both gGroup A students and students who are receptive to phonics.
2. Further refinement and development of the teaching materials is needed. In particular, we should consider how practical it is to implement and train other teachers in this method. Also, we should consider whether the motivation and commitment to teach using this method can be communicated effectively. We clearly began with a strong motivation to try to help students whom we felt were making very little progress. We need to ensure that other teachers share or can come to share this motivation.
3. We need to explore new approaches for the students in groups X and Y. They showed receptivity to neither phonics nor the approach employed in this research.

4. We need to explore why there seemed to be little impact on reading in this study, as measured by the TOWRE2. We wanted to focus on spelling at the outset because it seemed most likely that this was an area where we could show the students that they could learn. Now we need to bring reading into the picture and explore how to teach both skills using alternative materials and methods.
5. We need to explore more widely other measures of children's strengths and difficulties, and especially measures which are intended to deal with visually mediated learning of words. One possibility may be to systematise what we found the most helpful; the observation of children's specific and general daily responses to teaching. Progress checking measures in the forms of applications on tablet computers would be useful to track these observations.
6. We would like through this study to draw attention to the needs of those dyslexic students who seem to have the greatest difficulty in learning, whatever the teaching methods and materials used (i.e. the "treatment resisters" in Torgesen's words). We observed some students whose progress was painfully slow in spite of exceptional effort on their part. Thus, we would like to ask teachers and researchers to join our efforts to better understand their needs and come up with strategies and ways to help them more effectively.

REFERENCES

- Alexander, K. L., Entwistle, D. R., & Dauber, S. L. (1993). First-grade classroom behavior: It's short- and long-term consequences for school performance. *Child Development, 64*, 801-814.
- Al Otaiba, S., & Fuchs, D. (2002). Characteristics of children who are unresponsive to early literacy intervention: A review of the literature. *Remedial and Special Education, 23*, 300-316.
- Al Otaiba, S., & Fuchs, D. (2006). Who are the young children for whom best practices in reading are ineffective? An experimental and longitudinal study. *Journal of Learning Disabilities, 39*(5), 414-431.
- Blachman, B. A. (1994). What we have learned from longitudinal studies of phonological processing and reading, and some unanswered questions: A response to Torgesen, Wagner, and Rashotte. *Journal of Learning Disabilities, 27*, 287-291.
- Blachman, B. (1997). Early intervention and phonological awareness: A cautionary tale. In B. Blachman (Ed.), *Foundations of reading acquisition and dyslexia* (pp. 408-430). Mahwah, NJ: Erlbaum.
- Brady, S. A. (1997). Ability to Encode Phonological Representations: An Underlying Difficulty of Poor Readers. In B. Blackman (Ed.), *Foundations of reading acquisition and dyslexia: Implications for early intervention*. Lawrence Erlbaum Associates, Hillsdale,

- NJ. (pp. 2-28).
- Brooks, G. (2013). *What works for children and young people with literacy difficulties?: the effectiveness of intervention schemes*. Published by The Dyslexia-SpLD Trust
- Brown, I. S., & Felton, R. H. (1990). Effects of instruction on beginning reading skills in children at risk for reading disability. *Reading and Writing: An Interdisciplinary Journal*, 2, 223-241.
- Bruck, M. (1992). Persistence of dyslexics' phonological awareness deficits. *Developmental Psychology*, 28(5), 874 - 886.
- Coltheart, M. (2005). Modeling Reading: The Dual-Route Approach. In M. J. Snowling and C. Hulme (Eds.) *The science of reading: A handbook*. Blackwell handbooks of developmental psychology, (pp. 6-23). Malden: Blackwell Publishing, xiv, 661 pp. doi:10.1002/9780470757642.ch1
- Duff, F. J., Fieldsend, E., Bowyer-Crane, C., Hulme, C., Smith, G., Gibbs, S., & Snowling, M. J. (2008). Reading with vocabulary intervention: Evaluation of an instruction for children with poor response to reading intervention. *Journal of Research in Reading*, 31(3), 319-336.
- Dyslexia Association of Singapore. (2008). *Who benefits from remediation? Dyslexia in a multi-lingual society: Profile of dyslexic students in Singapore*. Poster presentation at BDA and IDA. Retrieved from <http://www.das.org.sg/research.html#2p> on 27th September 2013.
- Fawcett, A. J., & Nicolson, R. I. (1995). Persistence of phonological awareness deficits in older children with dyslexia. *Reading and Writing*, 7(4), 361-376.
- Hammill, D. D., & Swanson, H. L. (2006). The National Reading Panel's Meta-Analysis of Phonics Instruction: Another Point of View. *The Elementary School Journal*, 107(1), 17-26.
- Hatcher, P. J., Hulme, C., Miles, J. N., Carroll, J. M., Hatcher, J., Gibbs, S., & Snowling, M. J. (2006). Efficacy of small group reading intervention for beginning readers with reading-delay: a randomised controlled trial. *Journal of Child Psychology and Psychiatry*, 47(8), 820-827.
- Juel, C. (1994). At-risk university students tutoring at-risk elementary school children: What factors make it effective? In E. H. Hiebert, & B. M. Taylor, (Eds.), *Getting reading right from the start: Effective early interventions* (pp. 39-62). Boston: Allyn & Bacon
- Marrapodi, J. (2013). What Doesn't Work for the Lowest Level Literacy Learners and Why? *Journal of Applied Language Studies Vol. 7, 1*, p.7-23.
- Mathes, P. G., Howard, J. K., Allen, S. H., & Fuchs, D. (1998). Peer-assisted learning strategies for first grade readers: Responding to the needs of diverse learners. *Reading Research Quarterly*, 33, 62-94.
- National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. National Institute of Child Health and Human Development, National Institutes of Health.
- Shanahan, T., & Barr, R. (1995). Reading Recovery: An independent evaluation of the effects of an early intervention for at-risk learners. *Reading Research Quarterly*, 30, 958-996.
- Smith-Burke, M. T., & Jaggard, A. M. (1994). Implementing Reading Recovery in New York: Insights from the first two years. In E. H. Hiebert, & B. M. Taylor, (Eds.), *Getting reading right from the start: Effective early interventions* (pp. 63-84). Boston: Allyn & Bacon.
- Torgesen, J. (2000). Individual differences in response to early interventions in reading: The

lingering problem of treatment resisters. *Learning Disabilities Research & Practice*, 15, 55-64.

Torgesen, J. K. (2006). Recent Discoveries from Research on Remedial Interventions for Children with Dyslexia. In M. Snowling, and C. Hulme, (Eds.). *The Science of Reading: A Handbook*. Oxford: Blackwell Publisher.

ABOUT THE AUTHORS



TAN SWEE CHING AMANDA

Senior Educational Therapist

Amanda has a BA in Sociology from Nanyang Technological University, a PGC in Specific Learning Difficulties (SpLD) from the London Metropolitan University, and is in the midst of completing her MA SEN from the University of South Wales. She has been working at the Dyslexia Association of Singapore for 5 years and is currently serving as a Senior Educational Therapist. One of her areas of interest is the understanding of the interaction between various difficulties- in particular, learning difficulties, visual processing and language impairments- in shaping the learning needs of each student.



TEO YIZHEN SUE-LYNN

Senior Educational Therapist

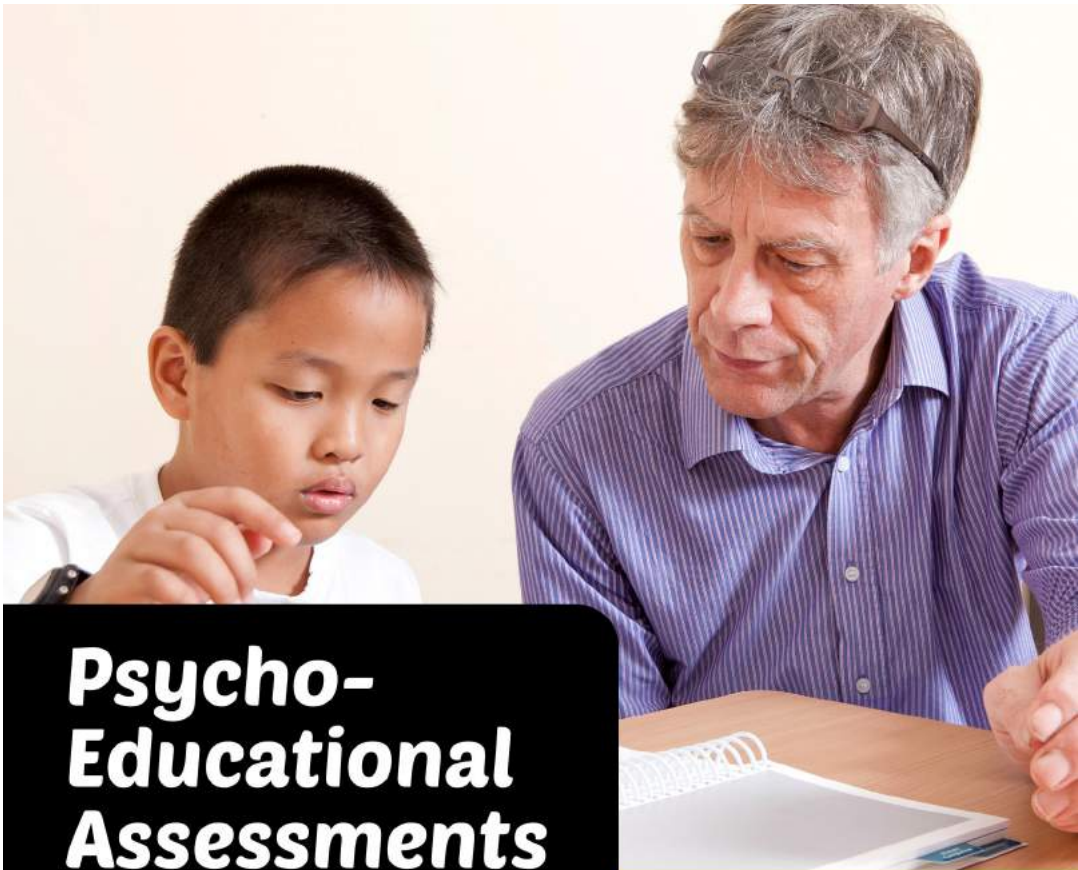
Sue-Lynn completed her Psychology degree (Honours) at the University of Western Australia and Postgraduate Certificate in Special Educational with the University of South Wales (UK). She worked as an Educational Therapist with the DAS for 3 years, developing a keen interest and passion in Early Intervention. Sue-Lynn is currently working as an Assistant Psychologist, conducting cognitive and learning assessments for children in a hospital setting. She will be pursuing her Masters in Educational Psychology in Australia in 2016 and hopes to continue contributing to the educational and child development field when she graduates.



DR TIM BUNN

Consulting Educational Psychologist

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



Psycho-Educational Assessments

Specialised Educational Services
UNLOCKING POTENTIAL

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

We understand that you know our child best and we will listen to your concerns. Our psychologists are professionals who have extensive experience assessing people with behavioural, developmental and psychological issues that lead to learning differences.

Psychological assessments identify individual strengths and weaknesses, and provide recommendations for intervention and support. Formal assessments occur after initial interviews with the family to identify areas of difficulties. A comprehensive assessment report will contain detailed practical recommendations for parents and educators involved in supporting the child's education. Early identification and early intervention of learning differences is vital for your child's well-being and educational progress.



DYSLEXIA ASSOCIATION OF SINGAPORE
HELPING DYSLEXIC PEOPLE ACHIEVE

☎ 6444 5700

✉ ses@das.org.sg

🌐 www.ses.org.sg

👍 facebook.com/dysSG