

# Write2Spell2Read

A Multisensory Literacy Program

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A report detailing the neuroscience research supporting the innovative design of the Write2Spell2Read Program and the evidence proving its effectiveness as a whole school literacy program for primary students of all ability levels.

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# Introduction

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Write2Spell2Read, is a new evidence based literacy program which offers an innovative, highly successful approach to foundational literacy. Developed by Paediatric Occupational Therapist and certified Neurodevelopmental Therapist, Samantha Woods in 2007, it has undergone a successful five-year development and trial period across Central Queensland.

Write2Spell2Read utilises unique, multi-sensory processes to deliver measurable improvements in a child's ability to write, spell and read by linking at the same time, visual, auditory and kinaesthetic learning. Write2spell2Read was developed using the most current neuroscience research, which suggests, "self-generated action, in the form of handwriting, is a crucial component in setting up brain systems for reading acquisition" (Harman James, 2012). Consequently, Write2Spell2Read embeds handwriting practice into each element of literacy acquisition, making it a formidably superior program to other conventional systems and computer programs. What differentiates Write2Spell2Read from other literacy programs is that its design innovatively integrates the three critical areas of the brain used in literacy acquisition – the motor, visual and auditory areas. Write2Spell2Read uniquely combines handwriting, with explicit and developmentally sequential phonics instruction, as well as visual processing skills, to strengthen working memory and create improved literacy outcomes.

The Write2Spell2Read program has been developed in association with medical professionals, educators, carers and parents. This affordable and practical program provides a coordinated, consistent and developmental approach to literacy education for students aged 3 years to 12 years. This whole school program is fun and motivating for primary school students and assists with self-esteem. Write2Spell2Read provides explicit, direct instruction using the simple Write2Spell2Read Teaching and Learning Method.

In 2013, the Queensland Government announced an initiative known as the *Great Results Guarantee*. This initiative was introduced in response to studies, such as the Gonski Report, suggesting performance of Australian students has, at all levels, declined over the last ten years. The Great Results Guarantee is that each Queensland state school will either; achieve the National Minimum Standard for literacy and numeracy for their respective year level; or have an evidence-based plan, in place to address its specific learning needs.

The Write2Spell2Read program is a proven learning method, combining multi-sensory processes in a world that has technology creating shortfalls in the way children learn. It has been developed using the latest neuroscience research and therefore ensures measureable improvements in literacy outcomes. Where Write2Spell2Read has been introduced, National Minimum Standards for literacy have been met or exceeded. This creates a unique opportunity for schools to meet or exceed the Great Results Guarantee requirements. Write2Spell2Read is making a real difference to learning literacy, closing the gap and effectively improving the literacy outcomes for all students, from those with dyslexia, learning difficulties and Autism Spectrum Disorder to extension students, ESL students and students from indigenous backgrounds.

## Purpose of this Report

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The purpose of this report is to explain the scientific basis upon which Write2Spell2Read was developed and how it has created a more effective and efficient program design for teaching literacy. Write2Spell2Read will differentiate itself from other literacy programs by explaining why the consistent integration of handwriting, with explicit and developmentally sequential phonics instruction and visual processing skills, is essential for long-term literacy success.

Many problems can occur when students do not adequately develop handwriting skills and the negative implications can be lifelong. “Without consistent exposure to handwriting, research indicates that students can experience difficulty in certain processes required for success in reading and writing, including” (Conti, 2012):

- Retrieving letters from memory (Berninger, Case-Smith, 2012)
- Reproducing letters on paper (Berninger, Case-Smith, 2012)
- Spelling accurately (Berninger, 2012)
- Extracting meaning from text or lecture (Peeverly, 2012)
- Interpreting the context of words and phrases (Case-Smith, 2012)

This report will demonstrate how Write2Spell2Read has been developed with reference to the very latest neuroscience research into how children acquire literacy. The report will particularly focus on how the Write2Spell2Read program connects and activates simultaneously three very important areas of the brain for learning literacy, where other programs do not. Write2Spell2Read’s program design innovatively integrates the three critical areas of the brain used in literacy acquisition – the motor, visual and auditory areas. Write2Spell2Read uniquely combines handwriting, with explicit and developmentally sequential phonics instruction, as well as visual processing skills, to strengthen working memory and create improved literacy outcomes. Supporting evidence of the program will be presented on an empirical, quantitative and qualitative basis.

## Samantha Woods

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Samantha Woods, Bachelor of Occupational Therapy (University of Queensland, 1990) and certified Neurodevelopmental Therapist, has more than 23 years therapeutic experience and works in her own private paediatric practice 'Therapy Works for Kids', in Rockhampton, Central Queensland, Australia. Here Samantha assesses and treats children with a variety of diagnoses from birth to Year 7. The majority of Samantha's clients have difficulties with literacy skills (writing, spelling and reading). This has become her particular interest and of the many difficulties these children have, working memory is her special interest.

During her career Samantha has worked alongside Speech and Language Pathologists and other specialist medical professionals, spending a significant amount of time with patients having acquired brain injury (ABI). Observing first hand, an ever-increasing waiting list of children with literacy difficulties for whom other supports and programs had failed, Samantha felt the need for a new, more complete approach to treatment, rather than the 'traditional' sensory motor approach. She wanted to develop a program that linked and complimented skills traditionally taught separately, either by Occupational Therapy intervention (e.g. handwriting and motor skill development, visual perception, working memory), or by Speech and Language Pathology intervention (e.g. phonological awareness). She saw that a deficit in any one of these skills impacted on progress in spelling, expressive writing and reading.

The Write2Spell2Read program was developed in order to provide a practical and effective tool to help children with literacy difficulties. Samantha developed her program to; be simple to use, visually and phonologically organised, address working memory and be a true multisensory program. Samantha's aim, as the mother of three primary school aged sons, was to ensure her program was fun and engaging for children and simple for teachers and parents to implement.

As Write2Spell2Read became widely used, Samantha observed significant literacy improvements with children having a wide range of difficulties, such as dyslexia and autism spectrum disorder (ASD), as well as gifted students. She realised her program is effective for all school children, not only those with learning difficulties. If begun early, Write2Spell2Read could prevent a number of problems she was finding and treating and close the gap for many students facing a lifetime of literacy difficulties.

Write2Spell2Read has become a consistent whole school approach for the teaching of writing, spelling and reading to primary school students from Kindy through to Year 7 students.

## The Problem

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Over the last decade, large amounts of data have been reported suggesting Australia is facing a 'literacy crisis'. This is highlighted throughout numerous reports including the Rowe Report (2004), the Dyslexia Working Party Report (2009) and the Gonski Report (2011). There are many staggering facts about the current state of Australian education such as;

- Amongst English speaking participants in the International Association for the Evaluation of Educational Achievements, Australian Year 4 students ranked last. Almost 25% of Australian Year 4 children failed to meet the standard in reading for their age. (PIRLS, 2011)
- In a study of 3,000 Australian students, 30% of 9-year olds still hadn't mastered letter sounds, arguably the most basic phonic skill. A similar proportion of children entering high school continue to display confusion between names and sounds. Over 72% of children entering high school were unable to read, phonetically, regular three and four-syllabic words. (Harrison, 2002)
- 46% of adult Australians cannot confidently read newspapers, understand instructions, put labels on products or follow a timetable. (The Gonski Report, 2011)
- Literacy standards in Australia noted that 27% of Year 3 and 29% of Year 5 students did not meet the required standards in reading, while the corresponding figures for writing were 28% and 33%. (Marks, 1997)
- A significant number of children labelled learning disabled or dyslexic could have become successful readers had they received systematic and explicit instruction and intervention far earlier in their educational careers. (Hempenstall, 2005)

## The Solution

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The solution to Australia's literacy crisis is to teach children using the most effective methods possible. The question then becomes, what are the most effective methods? Thankfully, there has been a large amount of scientific study on the topic. The most esteemed results are as follows;

Researchers have found that handwriting is a critical building block for learning literacy skills and supports reading, writing, language and critical thinking. Dr Karin Harman James in 2012 found that "self-generated action, in the form of handwriting, is a crucial component in setting up brain systems for reading acquisition. Furthermore, handwriting contributes to reading fluency by activating visual perception of letters and improving children's accuracy and speed for recognizing letters" (Harman James, 2012). In a study conducted by Dr Virginia Berninger in 2012 "students in Grade 1 were taught to see letter forms in the 'mind's eye'. When asked to write these letters from memory, the students exhibited improvement in word reading (as well as improved handwriting and composing)" (Berninger, 2012)

In addition to an evolving body of research that demonstrates a link between handwriting and brain functioning, experts suggest, "handwriting lightens a student's cognitive load. With consistent handwriting practice, the processes involved become less demanding and more automatic, enabling students to devote a higher amount of neurological resources to critical thinking and thought organization. However, when students do not learn and practice handwriting, their struggle to achieve automaticity and fluency decreases their capacity to carry out higher-order skills" (Peverly, 2012).

As well as the importance of handwriting, research demonstrates that children must be explicitly taught to write, spell, read and understand words using their individual sounds rather than a word visual recognition method. Hemenstal's 2005 study found that;

"In the largest, most comprehensive evidenced-based review ever conducted of research on how children learn reading, a [United States] Congressionally mandated independent panel has determined that effective reading instruction includes teaching children to break apart and manipulate the sounds in words (phonemic awareness), teaching them that these sounds are represented by letters of the alphabet which can then be blended together to form words (phonics). The panel found that research conducted to date strongly supports the concept that explicitly and systematically teaching children to manipulate phonemes (sounds) significantly improves children's reading and spelling abilities... The panel also concluded that the research literature provides solid evidence that phonics instruction produces significant benefits for children from kindergarten through sixth grade and for all children having difficulties learning to read." (Hemenstal, 2005)

Professor Ken Rowe, in the National Inquiry into the Teaching of Literacy in Australia in 2004 supported the above evidence, stating that the most effective way to teach literacy is with explicit phonics instruction linking the letters in our alphabet to the sounds they make. (Rowe Report, 2004)

Samantha Woods, recognizing the need for a new, more complete approach to literacy education, researched the curriculum and literacy programs being taught to students, but failed to find a program that addressed all the complex motor, visual and auditory skills required for the development of literacy. The issue of most concern from a neuroscience perspective was that recent literacy teaching systems and programs had been based on the assumption that learning to read was like learning to speak - the result of hearing and repeating sounds. Whilst it is now widely recognized that mastering letter-sound combinations and blending those sounds is a more effective method of acquiring literacy, a pure “phonics” approach does not assist learners to develop automatic handwriting, visual perception skills, nor effective working memory skills required for complex, higher level learning tasks.

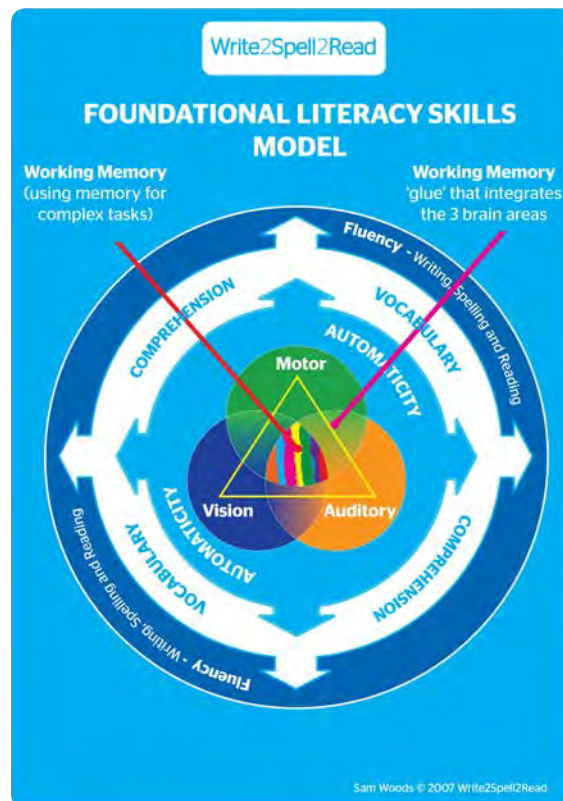
Write2Spell2Read’s program design innovatively integrates the 3 critical areas of the brain used in literacy acquisition – the motor, visual and auditory areas. Write2Spell2Read uniquely combines handwriting, with explicit and developmentally sequential phonics instruction, as well as visual processing skills and working memory activities, to create improved literacy outcomes.

Write2Spell2Read was developed with the goal of ensuring that every child would be able to learn to write, spell and read to its full potential. Samantha designed her program based on the latest and most complete scientific research. Rather than the ‘traditional’ sensory motor approach, Samantha Woods has developed a program that links complimentary skills traditionally taught separately. Her program has been developed to help students as well as teachers who have been taught ‘what’ to teach, rather than ‘how’ to teach and may not have adequate knowledge of phonics instruction and the importance of activating at the same time - the motor, visual and auditory areas of the brain.



# Write2Spell2Read: Effectiveness and Differentiation

As shown in the model below, what makes Write2Spell2Read different from other literacy programs is that it connects, in a triangle, three important areas of the brain for learning literacy – the motor, visual and auditory areas. Using Write2Spell2Read students activate these three areas all at the same time, which is different from many other programs, particularly computer programs which focus on learning to read and spell using only the visual and auditory areas of the brain. Computer programs used to learn literacy do not activate motor areas through handwriting. By comparison, Write2Spell2Read uniquely combines handwriting, with explicit and developmentally sequential phonics instruction, as well as visual processing skills and working memory activities, to create improved literacy outcomes.



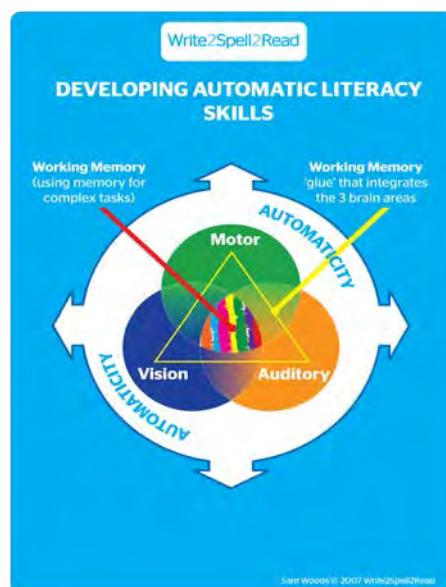
Researchers have found that handwriting is a critical building block for learning, as motor actions do reinforce memory and learning (Levine, 2002). As students increasingly use touch screens and keyboards for communication and learning, Write2Spell2Read addresses the importance of handwriting in learning and memory of literacy skills. A 2010 Indiana University study using functional MRI brain imaging, illustrated how writing by hand engages the brain in learning and increases neural activity in comparison to learning only through vision. In the group of pre-literate students who had practised writing by seeing and saying letters at the same time, the neural brain activity was far more enhanced and 'adult-like' than students who practised looking at and saying the letters only, without

writing them. The handwriting practice also improved letter recognition, which is the number one predictor of reading ability at age five (James, 2010).

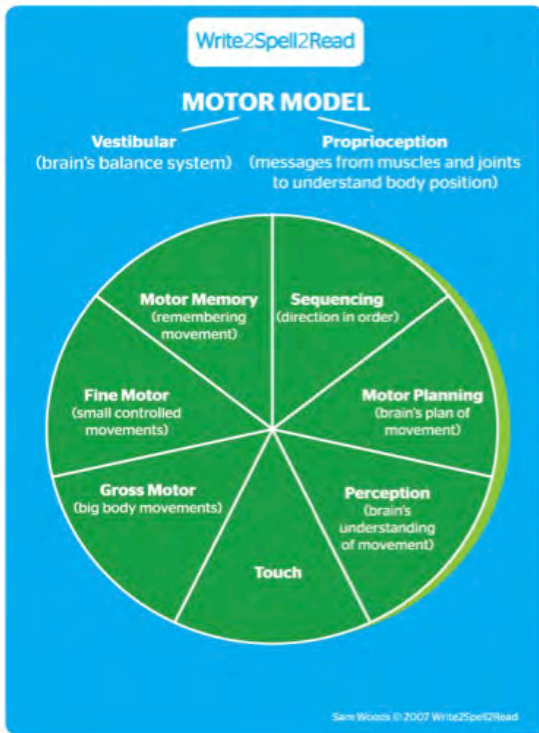
Write2Spell2Read agrees that the hand is truly an organ for engaging the mind and translating ideas into language. A study undertaken by Virginia Berninger in 2009 found that students in grades two, four and six wrote more words, wrote words faster and expressed more ideas in essays by pen than by keyboard; and in 4<sup>th</sup> grade they wrote more complete sentences by pen than keyboard. Furthermore, the sequential finger movements required to write by hand activate brain regions involved with thought, language, and working memory (Berninger, 2009). Mangen and Velay in 2011 found that the physical act of holding a pencil and shaping letters sends feedback signals to the brain. This leaves a motor memory, which later makes it easier to recall the information connected with the movement. Conversely this did not happen for people who learned new letters with a computer. Their minds had not connected the letter with a motor function (Mangen and Velay, 2011).

All of the aforementioned evidence supports the Write2Spell2Read view that learning literacy through handwriting helps the student to spell correctly, embed this learning in long-term memory and therefore be able to express ideas with fluency. In the Write2Spell2Read program knowledge of the letter combinations that spell sounds is achieved through writing movements that are repeatedly practised. This is the same as a concert pianist or elite sportsman who learns patterns of correct hand movements through continual repetition until automatic.

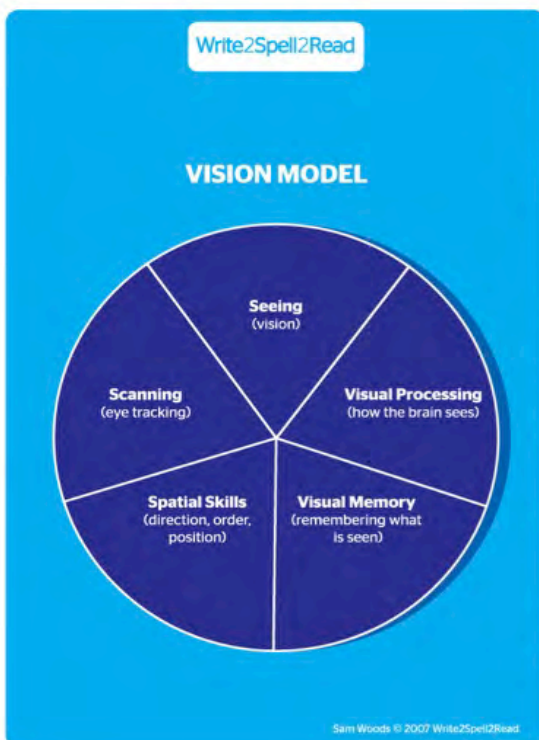
The skills a student requires for effective literacy acquisition are complex, as can be seen from the Motor, Vision and Auditory Models below. Through its design, Write2Spell2Read develops all these individual skill areas simultaneously until the student has automatic motor, visual and auditory skills (automaticity). The connected triangle develops Automatic Literacy Skills by reinforcing each sub-skill shown in the models below.



**Automatic Motor Skills – Handwriting**



**Automatic Visual Skills – Letters, Numbers, Letter Combinations, Words**



**Automatic auditory skills – sounds, words, dictated sentences**

The image is a composite of two parts. On the left is a circular diagram titled 'AUDITORY MODEL' with a blue background. The diagram is divided into six segments: 'Hearing', 'Phonemic Awareness (hearing and using single sounds)', 'Phonics (sounds and letter combinations that make words)', 'Auditory Memory (remembering what is heard)', 'Speech & Language', and 'Auditory Processing (how the brain hears)'. The 'Write2Spell2Read' logo is at the top left of the diagram, and a copyright notice 'Sam Woods © 2007 Write2Spell2Read' is at the bottom right. On the right is a photograph of several young children in a classroom, looking towards the left. The photo is framed by a blue border. A small '© 2014' watermark is visible at the bottom left of the photo area.

## Success by Design

The Write2Spell2Read program was designed taking into account this latest scientific research as to how children learn literacy skills. The following section will explain how ‘The Science’ behind learning was integrated into ‘The Design’ of Write2Spell2Read to help children succeed.

As well as combining motor, visual and auditory learning to teach literacy skills, Write2Spell2Read unlike other programs has been designed so that students acquire a strong Working Memory. This is the memory that can be thought of as ‘the glue’ that allows a student to hold and work on lots of motor, visual and auditory information in the brain at the same time. It is the memory necessary to bring together, letter formation, spelling, punctuation, etc. to express ideas and write a fluent story. Once a student develops automatic handwriting, visual and auditory skills, the brain has more Working Memory space to enable writing and reading fluency and comprehension. As stated by Levine (2002) a strong Working Memory (using memory for complex tasks) is essential in allowing the brain to convert written symbols into sounds, and therefore the ability to write, spell, read and express ideas through text (Levine, 2002).

To do this, Write2Spell2Read has students perform ‘Working Memory Activities’, such as ‘Working Memory Grids’ and ‘Blindfold Writing’ (shown below) to strengthen this crucial literacy skill, so necessary for a successful literacy outcome.

Write2Spell

### Working Memory Grids


9 Cell Memory Grid Activity - Copy from Teacher

	a	b	c
1	a_e	ai	
2	ay		ey
3		eigh	a

Write2Spell

### Blindfolds

- Strengthens Working Memory, Motor Memory & Visual Memory



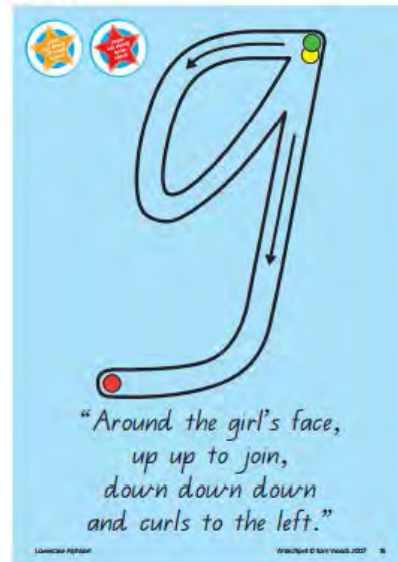
What also makes Write2Spell2Read different is that it teaches, at the same time, the letter name, the sound and how to write each letter. Each alphabet letter (lowercase and capital) is reinforced with a picture that has been specifically chosen to mimic the shape of the letter, using objects that begin with the sound and letter being taught (see Pictures 1 and 2 below). This eliminates confusion and helps students to see the letter shape in the ‘mind’s eye’, write the letter correctly and automatically without reversals, as well as learning the sound the letter makes. Teaching the motor component of writing the alphabet letters, while at the same time learning the letter names and sounds they make, is crucial to acquiring literacy.

Picture 1.



An Alphabet Picture Card with Write2Spell2Read Picture Talk

Picture 2.



A Tracking Card with Write2Spell2Read Writing Talk

Alphabet graphics, like the ones above, link sight, sound and writing. This is a metacognitive approach. Each letter and the picture share the same visual shape and as well the word girl starts with the 'g' sound. Write2Spell2Read uses 'Writing Talk', also shown in pictures 2 and 4, to assist with direction of handwriting movements. This same learning system is applied to learning the numbers from 0 through 20, complimented by pictures that match the shape of the numbers (see Pictures 3 and 4 below). The first 9 numbers are described in a poem that facilitates learning.

Picture 3.



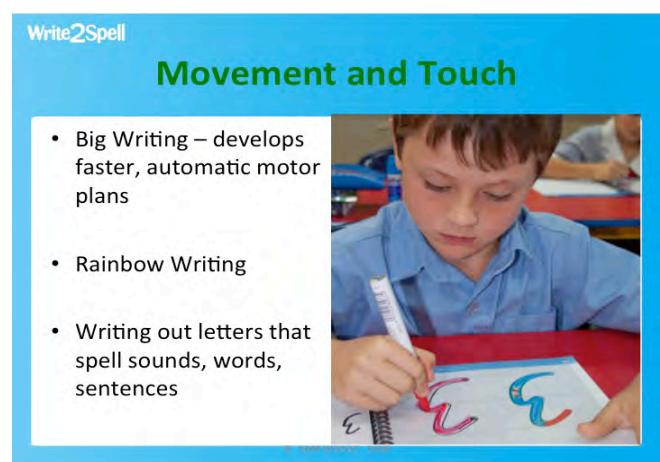
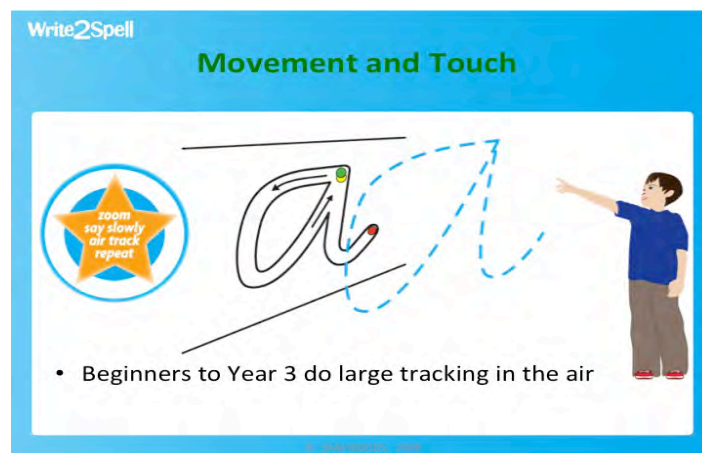
A Number Picture with Write2Spell2Read Picture talk

Picture 4.



A Tracking Card with Write2Spell2Read Writing Talk

For handwriting practice, Write2Spell2Read provides a range of resources that enable students to practice large, slow tracking or writing movements, at the same time as saying out loud through rhymes, the direction of their handwriting movements. Again, see pictures 2 and 4 for examples of Write2Spell2Read ‘Directional’ or ‘Writing Talk’. ‘Writing Talk’ ensures correct letter and number formation, as well as laying down correct movement memory, so that writing becomes automatic. This allows students to later concentrate their efforts on the story they are writing, their spelling, punctuation and grammar, or in the case of numbers, math skills. Large letter and number writing on a vertical surface is far more effective than small writing on a horizontal desktop surface to achieve this result.



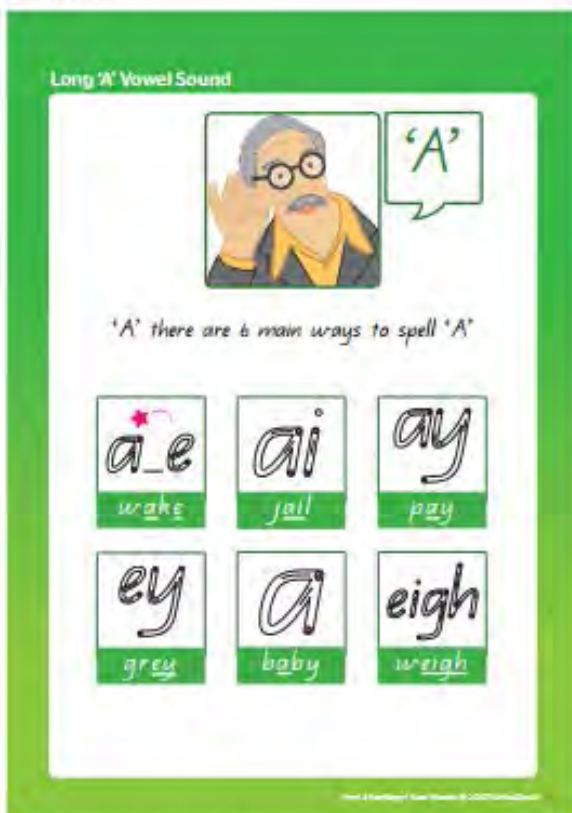
In contrast to many spelling programs, the Motor, Visual and Auditory triangle is also activated simultaneously in the Write2Spell2Read Spelling program. The blend, vowel, consonant sounds and word endings, and the letter combinations that spell those sounds, are taught using sound picture cards that students remember in the mind’s eye of the brain. Unlike other programs, Write2Spell2Read places importance on teaching all the main letter combinations that spell the sounds in words every time, so that students can easily blend sounds for reading and spelling. The introduction of sounds, letter combinations that spell sounds and word endings are introduced in the correct developmental sequence. Active writing of letter combinations that spell sounds, spelling words, and sentences using these words, is emphasised, not just looking and learning.

Picture 7.



A Write2Spell2Read Blends Card - 'br'/'pr'

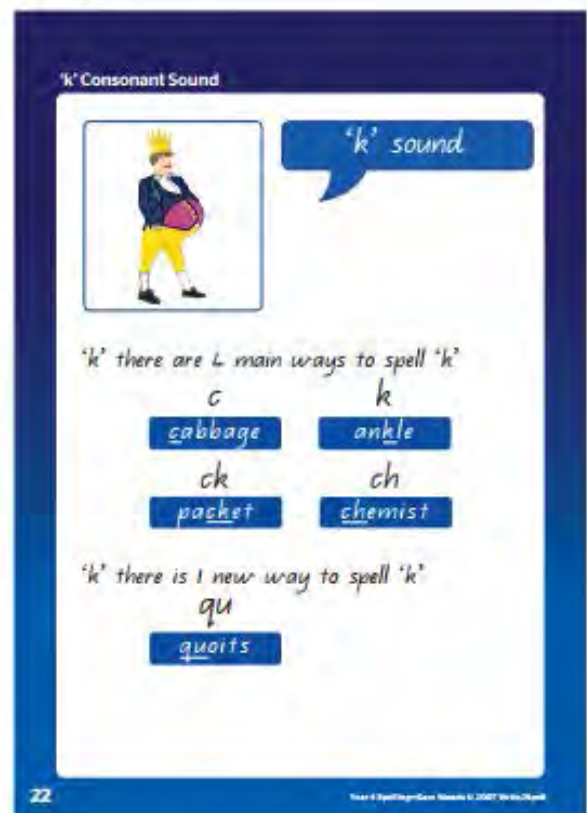
Picture 5.



A Vowel sound family - Long 'A' Sound

Year 3 level

Picture 6.



A Consonant sound family - 'k' Sound

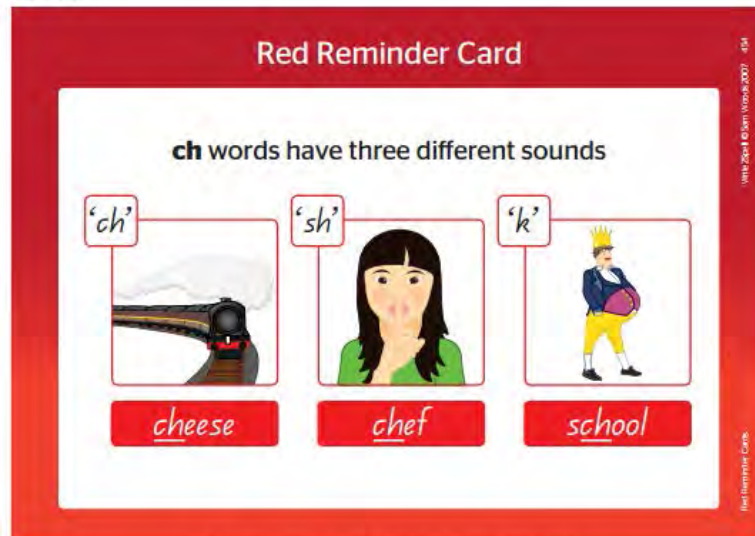
Year 4 level

Spelling graphics link sight and sound, and help students see letter patterns. These graphics show students that the one sound, found in the variety of words shown, is made by several different letters



or letter combinations. Organising sounds in this way helps young students to see ‘the big picture’ (a metacognitive approach), and so organise their learning.

Picture 8.



A Write2Spell2Read Red Reminder Card - 'ch'

Picture 9.



How to track on a Vertical Surface

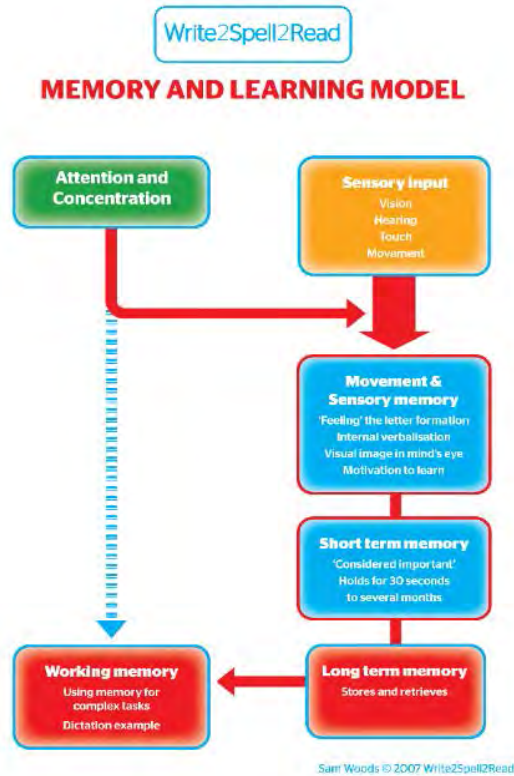
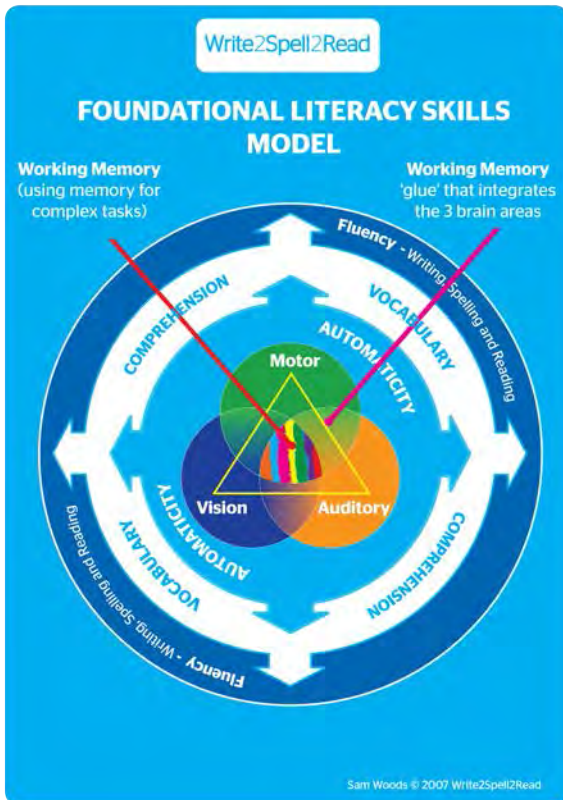
Picture 10.



How to write on a Vertical Surface

Once a child is automatic with the foundational building blocks of literacy, their brain is able to focus on more complex literacy skills including vocabulary, comprehension and fluency in writing, spelling and reading (refer to the model below). As the Write2Spell2Read Memory and Learning Model indicates, Working Memory is the central ‘glue’ on which the more complex literacy skills rely. Unless children are automatic in their literacy building blocks, their brains won’t be able to think how to use those building

blocks to express their thought in writing. Equally important, is their ability to both fluently decode and understand text for reading, both of which require a strong Working Memory.



# Empirical Data

## Quantitative Data

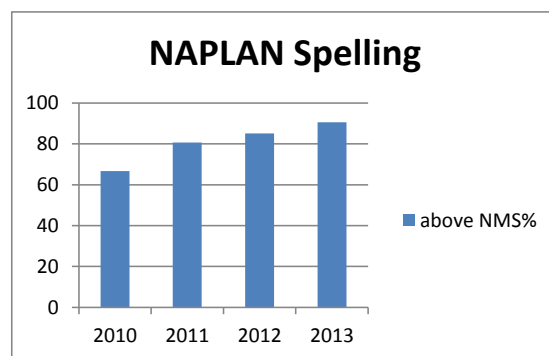
For the purposes of this section we present quantitative data from Moura State School and Therapy Works for Kids (clients with learning difficulties).

### Moura State School Statistics

The Write2Spell2Read program was introduced to Moura State School in 2010. Since the program's inception a clear correlation between the program and improved spelling can be seen, results are shown in Table 1. As students progress from Prep to Year three, NAPLAN (National Assessment Program – Literacy and Numeracy) spelling results consistently increased from 67 % of students scoring above National Minimum Standards to 90.5%. Furthermore, the percentage of students who are appearing in the top band of NAPLAN spelling evaluation has increased from 9.5% to 26.2%.

Table 1: Year 3 Students NAPLAN Spelling Test Results

NAPLAN Spelling (Year 3)		
	Above NMS %	% in Top Band
2010	66.7	9.5
2011	80.6	9.7
2012	85.1	12.8
2013	90.5	26.2



Reading abilities for students using the Write2Spell2Read program are evaluated using Text Level Guidelines. Text level Guidelines, demonstrated in Table 2, are successive levels of reading ability gauged from levels one through twenty-six. Using this broadband approach children are asked to read aloud words of varying difficulty, evaluated and then assigned a respective level of classification. Recording and tracking changes over multiple periods of time is one standardized method for monitoring students reading ability and growth. Approximate reading ages are generally used for students' five to eight or more years of age.

Table 2: Text Level Guidelines

**Broadband text levels and approximate reading ages**

Colour Broadband	Level (and approximate time spans to consolidate in each Level)	Approximate reading age
Magenta	Level 1	<p>Texts in Levels 1 – 14 have a fine gradient of difficulty, so it is not possible to give a specific reading age to each level. However they would be within the reading age range 5 years – 6.5 years.</p> <p>This fine gradient of difficulty in Levels is used in <i>Reading Recovery</i> but it may be more appropriate for classroom teachers to work within the colour broadbands.</p>
	Level 2	
Red	Level 3	
	Level 4	
	Level 5	
Yellow	Level 6	
	Level 7	
	Level 8	
Blue	Level 9	
	Level 10	
	Level 11	
Green	Level 12	
	Level 13	
	Level 14	
Orange	Level 15 3 months	Reading age 6.5 – 7.0 years
	Level 16 3 months	
Turquoise	Level 17 3 months	Reading age 7.0 – 7.5 years
	Level 18 3 months	
Purple	Level 19 3 months	Reading age 7.5 – 8.0 years
	Level 20 3 months	
Gold	Level 21 3 months	Reading age 8.0 – 8.5 years
	Level 22 3 months	
Silver	Level 23 3 months	Reading age 8.5 + years
	Level 24 3 months	
Emerald	Level 25 6 months	
	Level 26 6 months	

In accordance with the broadband approximate reading age table, reading abilities are classified by reading levels and students should be of corresponding reading age. For example, a student of between 7 and 7.5 years of age would be expected to test between levels 17-18. Younger students achieving those levels, suggests above average reading ability.

Reading level results for Moura State School are summarized in Table 3. Data shows that since the Write2Spell2Read program was introduced to students in 2010, students met or exceed correlating expected reading levels in each and every year.

It is important to understand that class results improve more as students have access to the program for each additional year. The class highlighted below in green was introduced to the Write2Spell2Read program for their prep year in 2010, that same class's results are tracked as they proceeded through to Year 3. The Prep class of 2010 was the first class to have access to the Write2Spell2Read program from Prep to Year 3.

Table 3: Moura State School - Reading Levels

Reading Levels						
Year of Study	2010	2011	2012	2013	Average Score	Expected Level
Prep	2	3	5		3.3	1-14
Year 1	11	15	16	14	14.0	1-14
Year 2	20	22	23	20	21.3	15-18
Year 3	20	26	28	30	26.0	19-22

Each Queensland school is responsible for setting literacy benchmarks, assessment standards and data collection requirements. At Moura State School, the person responsible for this task is Michelle Lang, Head of Curriculum. Moura State School deploys a number of tests including "Waddingtons' reading and spelling" which produces a standardized score to classify literacy. Combinations of these scores are used to set minimum literacy standards and benchmarks to track development as students progress through their primary years. The school's goal is to have 80 % of students meeting or surpassing minimum requirements each year. Since the implementation of the Write2Spell2Read program at Moura State School higher percentages of students have been achieving minimum levels. Indeed, the programs results have been so positive that Michelle Lang has since needed to revise these thresholds upwards.

## Therapy Works for Kids

Therapy Works for Kids is an occupational therapy clinic, which treats children with developmental and learning difficulties and is currently using the Write2Spell2Read program. Occupational therapists assess students and assist in the development of literacy skills primarily with underperforming children. In order to track improvement and to identify and evaluate difficulty areas, students are assessed on the following abilities:

- Motor Skills
- Visual Skills
- Auditory Skills
- Working Memory
- Automaticity of Skills
- Fluency of Vocabulary and Comprehension
- Fluency of Writing
- Fluency of Spelling

Assessment is undertaken at the beginning and end of treatment with each of the above criteria assigned a score of one through nine. The scoring criteria below is used to score student's performance compared to same age peers:

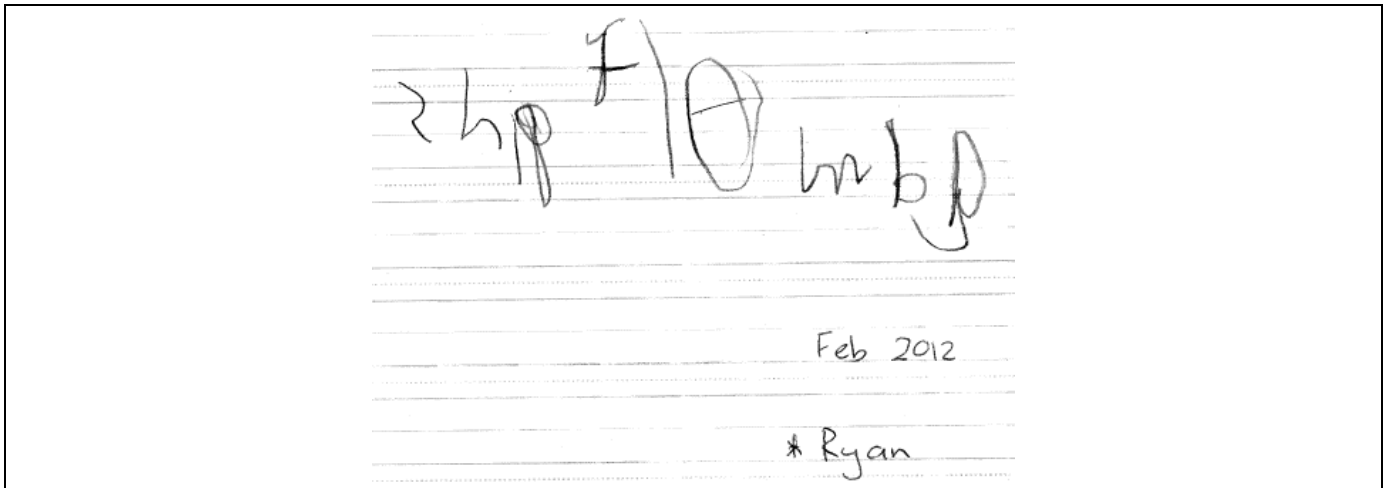
- |                                 |                  |                                 |
|---------------------------------|------------------|---------------------------------|
| 1 - Significantly Below Average | 4 - Low Average  | 7 - Borderline Above Average    |
| 2 - Below Average               | 5 - Average      | 8 - Above Average               |
| 3 - Borderline Below Average    | 6 - High Average | 9 - Significantly Above Average |

Table 4 shows results for a sample of students selected at random. The data in the table demonstrates how the evaluation process, used above by Therapy Works for Kids, is recorded. To see a larger, more complete sample size, please see Appendix C. The data clearly shows the improvement students have made using the Write2Spell2Read program.

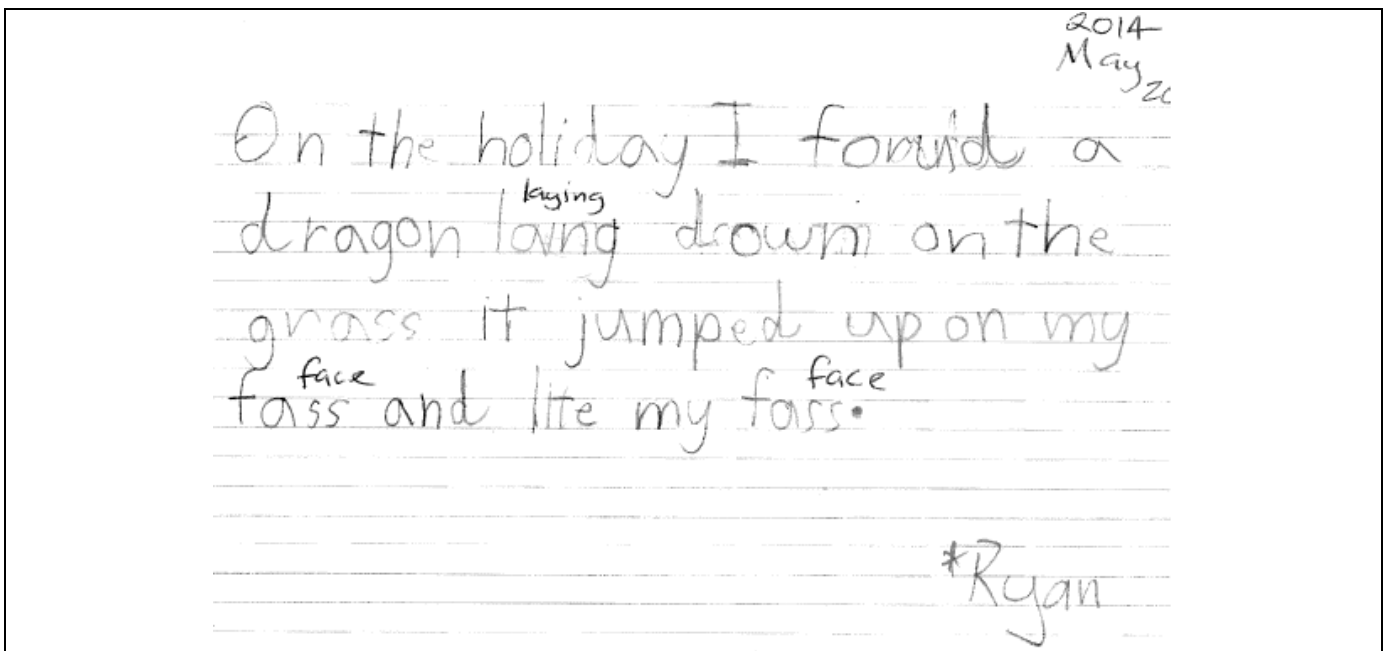
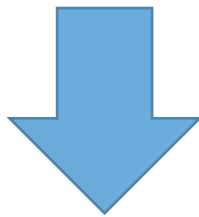
Table 4: Therapy Works For Kids - Student Evaluations

Student Name	Year	Motor Skills	Visual Skills	Auditory Skills	Working Memory	Automaticity of Skills	Fluency of vocabulary and comprehension	Fluency of Writing	Fluency of Spelling	Total	Improvement	% Improvement
Wade	2007	2	3	1	1	1	1	1	1	11		
	2013	4	5	4	4	5	5	5	5	37	26	236%
Luke	2011	2	4	2	1	1	4	1	1	16		
	2013	5	5	4	4	5	5	5	5	38	22	138%
Ryan	Feb '12	2	4	4	3	2	2	2	2	21		
	Jun '13	4	8	5	3	4	4	4	4	36	15	71%
Will	2011	2	2	2	1	2	2	1	1	13		
	2013	5	5	4	5	5	5	5	5	39	26	200%
Lachlan	2009	1	2	2	1	1	3	1	2	13		
	2013	4	4	4	4	4	3	5	5	33	20	154%
Domonic	2012	3	5	5	3	3	4	3	5	31		
	2014	5	6	5	4	5	5	4	6	40	9	29%

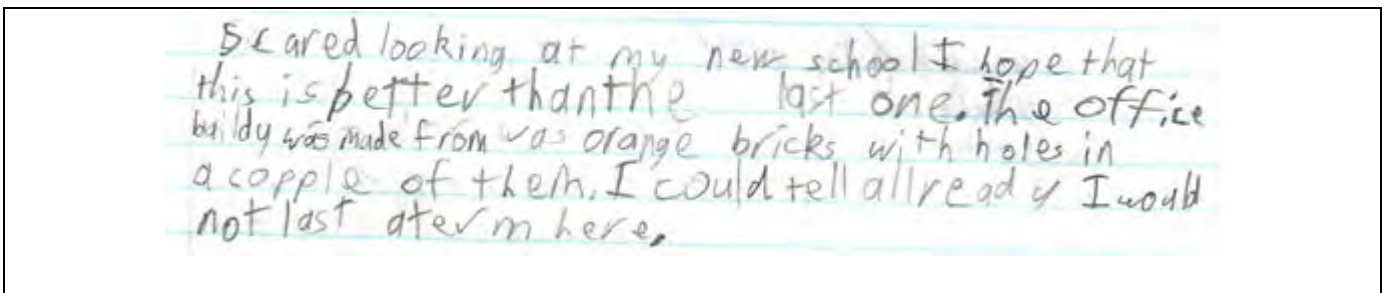
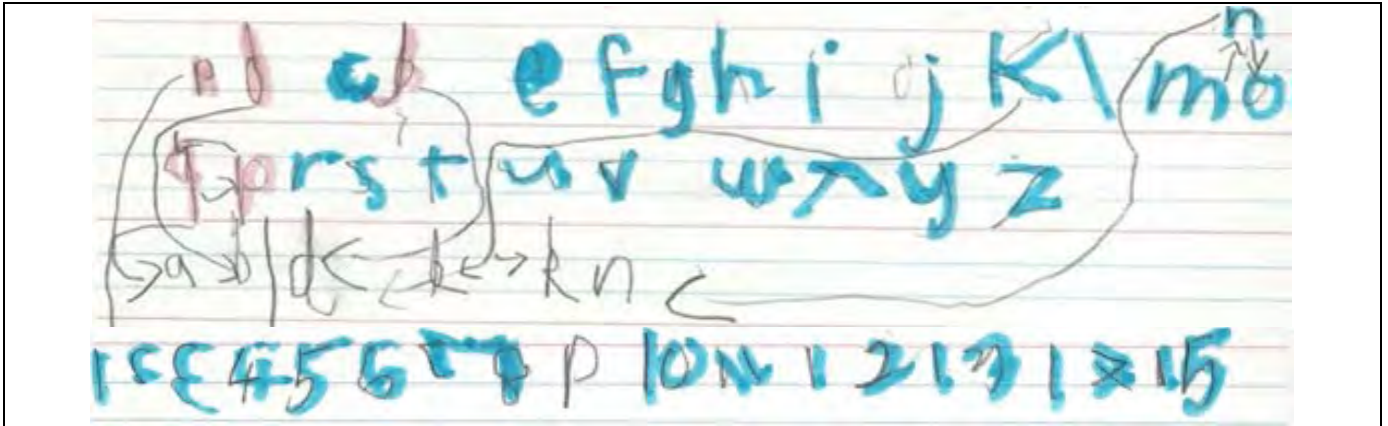
Work samples that were evaluated in Table 4 are shown in the following. Here you can see how dramatic student's success is using the Write2Spell2Read program.



Student Ryan's improvement from February 2012 above to May 2014 below.



Student Lachlan's work samples from 2009 and 2013 below.



In the above work sample, when Lachlan commenced the Write2Spell2Read program in Term 3 Year 2 of 2009, he had significant difficulties in the 3 brain areas critical for literacy acquisition – the Motor, Visual and Auditory areas. His handwriting of letters and numbers was not automatic scoring 1 – significantly below average; making many reversals due to significant motor problems, namely motor planning. Lachlan had eye tracking and depth perception difficulties as well as below average visual motor skills (score of 2 – below average). Diagnosed with a mild central auditory processing disorder, he had difficulty with phonemic awareness, filtering out background noise and auditory memory (score of 2 – below average). This resulted in significant working memory difficulties scoring 1 – significantly below average and reduced fluency of spelling (score of 2 – below average), writing composition (score of 1 – significantly below average) and reading comprehension.

The work sample from Term 4, Year 6 in 2013 clearly shows significant literacy improvements across the 3 areas. Lachlan is able to generate his ideas and compose a different genre of text fluently scoring 5 - average, demonstrating his automatic handwriting skills without letter reversal and his improved motor planning scoring 4 – low average. Lachlan's visual processing skills have improved to the low



average range, now being able to track visual information fluently (score of 4 – low average). Auditory skills have improved, with Lachlan being in the low average range for phonological awareness and auditory memory (score of 4 – low average). His ability to correctly spell single words during a spelling test is in the average range (score of 5 – average). His working memory, although significantly improved since 2009, is still in the low average range (score of 4 – low average), making spelling complex genre text more difficult. Lachlan often demonstrates the correct letters within words, but in the wrong order.

## Qualitative Data

In addition to the annotated data previously discussed, Write2Spell2Read is in receipt of a range of qualitative data and information that supports the efficacy of the program.

### The Rockhampton Grammar School Prep Students 2013

In the following work samples, prep students were given explicit instruction from the Write2Spell2Read program, their work displays its effectiveness within mainstream classrooms and indicates the speed which children can develop the automaticity of handwriting and phonics.



**Anabel**  
CASE STUDY For Progression of Handwriting  
Prep 2013 Rockhampton Grammar School

- Above average student
- Average Fine Motor Skills
- Rushes handwriting

**Term 1**



**Term 2**



**Term 3**



**Term 4**



Sam Woods © 2007 Write2Spell2Read

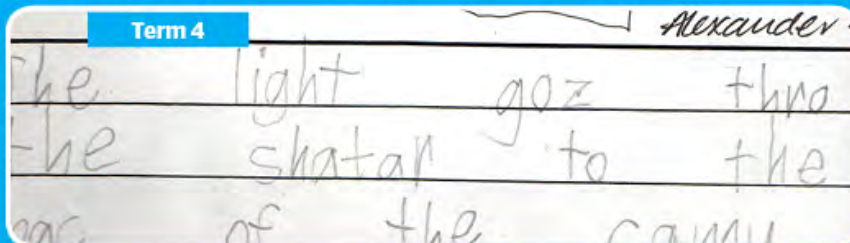
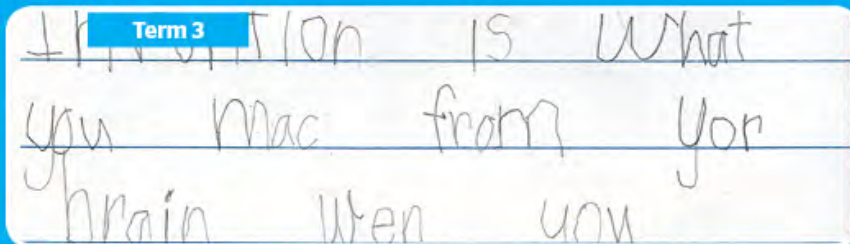
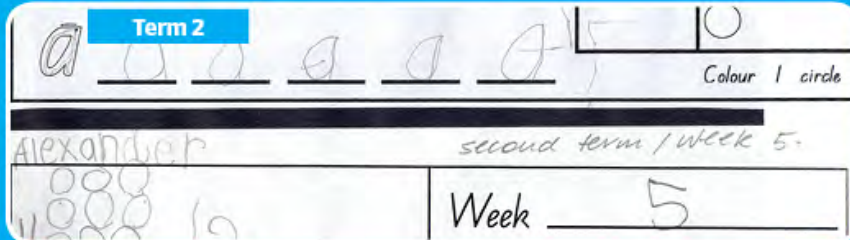
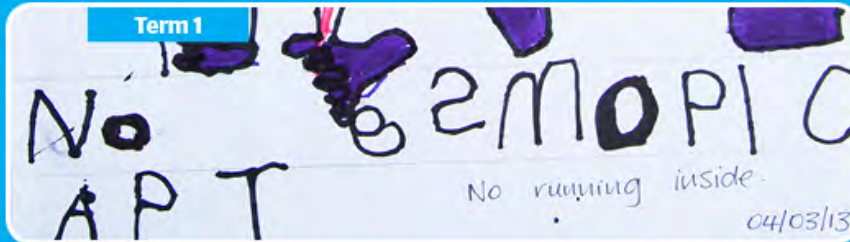


Write2Spell2Read

**Alexander**

**CASE STUDY For Progression of Handwriting  
Prep 2013 Rockhampton Grammar School**

- Average student
- Mild ASD traits
- More Immature than peers
- Bilingual - very well travelled
- Difficulties slowing down and thinking about what he is doing.



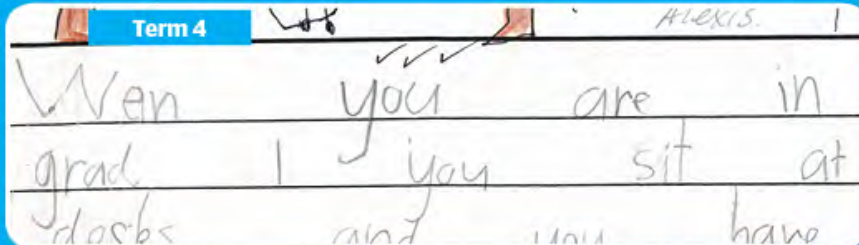
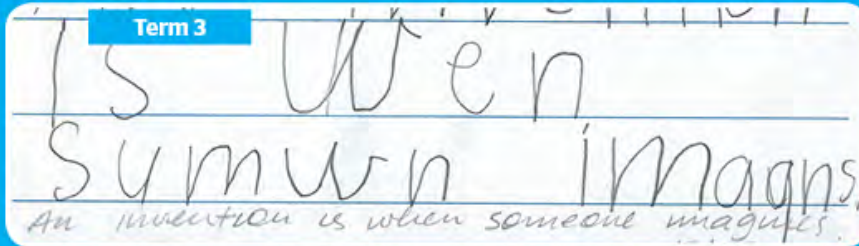
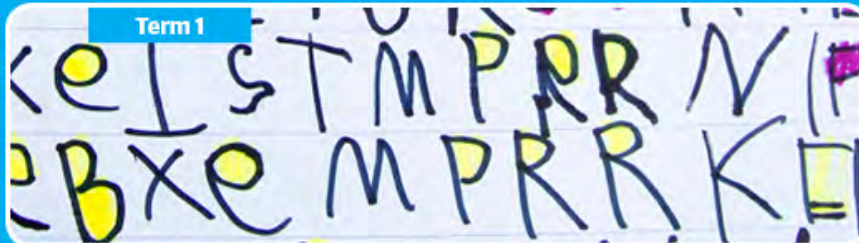
Sam Woods © 2007 Write2Spell2Read



Write2Spell2Read

**Alexis**  
**CASE STUDY For Progression of Handwriting**  
**Prep 2013 Rockhampton Grammar School**

- Below average student at start of prep
- Significant speech production difficulties - difficult to understand her speech initially
- Lack of self-confidence initially



Sam Woods © 2007 Write2Spell2Read

## Testimonials

The following testimonials have been collected from institutions using Write2Spell2Read as a literacy teaching program. These professionals' experience with literacy development speaks loudly to the effectiveness and appreciation for this program.

### *C & K Leichhardt Community Kindergarten, Rockhampton*

*Sam Woods recently presented a workshop sharing with early childhood professionals her Write2Spell2Read Program. The Write2Spell2Read Program certainly fills a void many families and professionals seem to be experiencing.*

*The program has been cleverly designed to ensure children are enthusiastic to engage in developing their literacy and numeracy skills in an enjoyable, non-pressured way, and also provides families with a tool to support and encourage in a positive manner.*

*I have spoken with families who after attending their children's prep interviews and hearing what the prep expectations are feel worried about how they will be best able to support their children. I have watched how by simply looking at the Write2Spell2Read book and becoming familiar with its philosophy parents find the answers they have been looking for. They ask, "Where has this been? It all makes so much sense."*

*Sam Woods has developed a much-needed program to assist all children. Sam's dedication and professionalism is evident in just how many positive elements there are in the program, for example:*

- The recognition of just how important heavy muscle work and movement is in allowing children to be able to focus and concentrate, and therefore allowing them to be able to learn.*
- The appropriate visuals.*
- The traffic light coloured guide spots.*
- The poetry that gently reminds children how to form letters and numbers.*

*Sam Woods' knowledge and passion is a great resource for children, families, early childhood and primary school professionals.*

**Carissa Huff**

**C & K Leichhardt Community Kindergarten, Rockhampton**

### *Moura State School*

*At Moura State School we have used Write2Spell2Read across the whole school for the last 4½ years with enormous success in the lower school especially with the students who started with the program in prep and are now in year 4. The teachers of these students have noticed a dramatic increase from other classes they have taught regarding their spelling ability. We use the program across the entire school and have continued to use it despite C2C, as all of the spelling components are covered (granted at different times by the program) and is in a logical progression. The program uses sensory motor, visual and auditory methods of teaching the sounds from the letter names and sounds through to the blend, vowel and consonant sounds and letter combinations. It revises the vowel and consonant combinations over the higher grades and provides lists of words according to the combination, so you can either use the list provided or extend or lower as required. Prep has a workbook which introduces the letter names and sounds, Year 1 and 2 have both a spelling and a handwriting book (because the way the letter sounds is also how the letter is written - further reinforcement to save confusion), Year 3 have a spelling text and Year 4 to 7 have a teacher resource book which the teacher follows. The full program is also taught from the Interactive Whiteboard Program.*

*I can highly recommend the program to you and encourage you to look into it with the program developer, Sam Woods.*

**Michelle Lang, Head of Curriculum, STLaN, Key Teacher  
Moura State School, Central Queensland**

## *Middlemount Community School*

*Last year, 2013 we ran the program with Prep and Year 1. This year we moved the program up into Year 2 and Year 3.*

*Prep (prep is in their second Year of doing W2S2R) – Student X has slow development and poor retention of knowledge. He started off only being able to remember some of the pictures, to being able to use them to help with his reading and writing. The fact that he could use the picture clue to visualise what the letter was, and what sound it made helped him beyond belief!*

*Year 3 (Year 3 is in their first year of doing W2S2R) - can see the practical aspects of the jumping and zoom and move, learning each spelling sound, and the different ways to spell the sound is helping the lower end of my students to improve on their spelling, moving the information from short term to long term.*

*STLAN – less kids are receiving intervention in year 1 and 2 for their letter and sound knowledge. In year 1 the students' knowledge is very consolidated after doing W2S2R during their Prep year. A lot less students are reversing letters. We are unsure of impact on spelling at this stage as first year using it in Year 2 and Year 3.*

*Year 5 Teacher (W2S2R is used as an intervention program for spelling with some Year 5 students) – currently have a student working on the Year 3 W2S2R program. He started on the W2S2R Year 2 program last year (in Year 4). At the beginning of 2013 (Year 4), he was working at a beginning Year 2 level of spelling. He is now currently working at a standard Year 3 level. He has made a full 12 months of progress in 12 months. This is excellent for him, as in previous years, his progress was very slow. His confidence in his ability has also improved as he knows he has a clear knowledge of spelling and does not always need to ask others for assistance or reassurance.*

**Compiled by Helga Scott**  
**Head of Curriculum, Middlemount Community School, Queensland**

### *Le Smileys Early Learning Centre, Gracemere*

*Write2Spell2Read is a brilliant program that provides all children with the tools they require to put phonics, letters and writing together.*

*Personally our twin boys went from not knowing the alphabet to being able to say the letter, the sound of the letter and write it within weeks.*

*We commenced using it in our kindergarten program and we have had a fantastic response from the children and families. The majority of the children (4-4 ½ years old) know their letters and sounds and are currently commencing tracing their names and then writing their name in preparation for school.*

*Some of our advanced kindergarten children have commenced putting together sounds and making words such as cat, dog. This tool has also assisted the children with reading and some children are recognising words in cooking; reading ingredients, etc.*

*They never cease to amaze me. I believe Write2Spell2Read has enabled the children to do this by giving them early literacy skills.*

*I highly recommend the program.*

**Michelle O'Rourke**  
**Owner of Le Smileys Early Learning Centre, Gracemere, Queensland**

### *Rockhampton Grammar School*

*The Rockhampton Grammar School Early Learning Centre and Prep has found Write2Spell2Read a highly effective literacy program that caters for a range of children's learning styles and also allows teachers to cater for the needs of students who need extension, as well as those who have learning difficulties. Write2Spell2Read is a truly multisensory program that has been developed through the expertise of a highly experienced occupational therapist. This program is so simple and yet so effective, providing real outcomes for all students and all learning styles. We easily incorporate Write2Spell2Read as a number of no fuss learning routines throughout the day and the time we spend with the program always delivers great results for the children. Write2Spell2Read provides us with alphabet and number knowledge including phonics and handwriting components in one easy program.*

**Bronwyn Thomson and Adair Mehlhose**  
**Prep Teachers, the Rockhampton Grammar School**



## Conclusion

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Recognising problems with current and previously adopted learning methods, Write2Spell2Read was designed. It is an integrated literacy program where writing, spelling and reading are not taught in isolation but delivered as a whole. The program uses unique, multi-sensory processes that deliver measurable improvements in a child's ability to write, spell and read with linked visual, auditory and kinesthetic learning preferences. What differentiates Write2Spell2Read from other literacy programs is that its innovative design integrates the three critical areas of the brain used in literacy acquisition – the motor, visual and auditory areas. Write2Spell2Read uniquely combines handwriting, with explicit and developmentally sequential phonics instruction, as well as visual processing skills, to improve literacy outcomes. This program strengthens and improves working memory where others do not. Its design focuses on how a child learns and thinks rather than how a teacher or parent would conceptualise teaching them. The program is embedded with explicit, developmentally appropriate learning strategies using the National Curriculum. The Write2Spell2Read program is a proven, evidence-based literacy program based on the latest neuroscience research that delivers measurable results and superior learning outcomes for all students.

## Appendix A

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The following references were used in both this report and the development of the Write2Spell2Read program.

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## Appendix B

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The Write2Spell2Read program is taught with the following available resources:

- Write2Spell2Read Interactive Whiteboard Teaching Program Beginners to Year 7
- Write2Spell2Read Beginners Handwriting Instruction Booklet
- Write2Spell2Read Teachers Manual
- Write2Spell2Read Spelling Rules and Guidelines Book
- Write2Spell2Read Student Handwriting Workbooks – Beginners, 1 and 2
- Write2Spell2Read Student Spelling Workbooks – 1 to 3
- Write2Spell2Read Student and Teacher’s Spelling Workbooks - 4 to 7
- Write2Spell2Read Full Wall Card Kits – A3 and A4 size
- Write2Spell2Read Beginner’s Handwriting Wall Card Kit
- Write2Spell2Read Year 1 Handwriting Wall Card Kit
- Write2Spell2Read Desktop Cards – Beginners, Year 1, Cursive
- Write2Spell2Read Beginners Alphabet Poster
- Write2Spell2Read Numbers Poster
- Write2Spell2Read Blend Sounds Poster
- Write2Spell2Read Vowel Sounds Poster
- Write2Spell2Read Consonant Sounds Poster



# Appendix C

Data in Table 4 was compiled from randomly selected student analysis, such as the one demonstrated below. All of the assessments were performed by paediatric occupational therapists and other medical specialists and each assessment is kept on file at Therapy Works for Kids.

- SCORE**
1. Significantly Below Average
  2. Below Average
  3. Borderline Below Average
  4. Low Average
  5. Average
  6. High Average
  7. Borderline Above Average
  8. Above Average
  9. Significantly Above Average



Student Name	Year	Motor Skills	Visual Skills	Auditory Skills	Working Memory	Atomicy of Skills	Fluency of vocabulary and comprehension	Fluency of Writing	Fluency of Spelling	Total	Improvement
*Brad	Dec 2013	4	7	4	2	3	4	3	3		
	May 2014	5	7	4	3	4.5	4	4	4		

Student Name	Year	Motor Skills	Visual Skills	Auditory Skills	Working Memory	Atomicy of Skills	Fluency of vocabulary and comprehension	Fluency of Writing	Fluency of Spelling	Total	Improvement	% Improvement
Wade	2007	2	3	1	1	1	1	1	1	11		
	2013	4	5	4	4	5	5	5	5	37	26	236%
Luke	2011	2	4	2	1	1	4	1	1	16		
	2013	5	5	4	4	5	5	5	5	38	22	138%
Ryan	Feb '12	2	4	4	3	2	2	2	2	21		
	Jun '13	4	8	5	3	4	4	4	4	36	15	71%
Will	2011	2	2	2	1	2	2	1	1	13		
	2013	5	5	4	5	5	5	5	5	39	26	200%
Lachlan	2009	1	2	2	1	1	3	1	2	13		
	2013	4	4	4	4	4	3	5	5	33	20	154%
Domonic	2012	3	5	5	3	3	4	3	5	31		
	2014	5	6	5	4	5	5	4	6	40	9	29%
Heidi	2012	2	3	2	2	3	2	2	2	18		
	2014	4	4	3	3	4	3	3	3	27	9	50%
Brad	Dec '13	4	7	4	2	3	4	3	3	30		
	May '14	5	7	4	3	4.5	4	4	4	35.5	5.5	18%
Stuart	Feb '12	4	3.5	4	2	2	2	2	2	21.5		
	Jun '13	4	3.5	5	2	4	4	4	4	30.5	9	42%
Brooke	2012	3	2	2	2	2	2	2	2	17		
	2014	4	5	5	4	5	5	5	5	38	21	124%
Braith	2013	2	4	5	4	3	4	2	2	26		
	2014	4	5	5	4	4	4	4	3	33	7	27%
Nora	2013	2	2	2	1	2	2	2	2	15		
	2014	5	5	5	4	5	4	5	5	38	23	153%