POD Software Intervention – Preliminary Research Report November 2017

A variety of theoretical explanations as to the causation of literacy difficulties have been hypothesised. In summary, these include the phonological theory, the cerebellar theory and the magnocellular theory (Ramus, Rosen, Dakin, Day, Castellote, White and Frith, 2003). According to Prideaux, Marsh and Caplygin (2005) cerebellar theorists' postulate that the range of deficits associated with dyslexia can be attributed to a mild dysfunctional cerebellum evidenced by difficulties with skills such as balance, postural stability, motor coordination and automatisation. The phonological theory has at its core of dyslexia, a cognitive deficit in phonological awareness; whereas magnocellular theorists propose both auditory and visual temporal processing deficits resulting from impairment of neural pathways involving large magno cells (Prideaux et al., 2005).

POD Software Intervention (Behavioural Reading Pty Ltd)

The prescribed use of POD intervention software (POD - 10 daily sessions of one hour each) is designed to enhance Behavioural Reading™ Techniques, hypothesised to open new neural pathways and 'create the learning mind'. POD intervention is based upon the multi-deficit hypotheses (phonological, cerebellar and magnocellular) of dyslexia using computer-based tasks requiring central executive processing, sequencing, visual and auditory processing as well as phonological awareness skills (segmenting and blending letter sounds). POD is web based and available via online subscription.

The initial design stimulus of POD is based on several software programs commercially available that may or may not have been used in the Tyquin Group Speech Pathology and Reading Clinic over the last decade. The design of POD in its delivery and content has evolved following global improvements in computer technologies and web speeds.

Measurement and observation of student responses using standardised testing and anecdotal data has provided direction for POD software design to improve foundation skills necessary for reading including:

- Visual perceptual skills (visual tracking, visual memory, visual discrimination, visual form constancy and visual closure);
- Auditory perceptual skills particularly auditory discrimination;
- Phonological awareness skills; and
- Central executive sequencing.

Use of POD is prescribed and recommended for students eight years and over (although can be suitably adapted for younger students where appropriate) who have not been diagnosed with epilepsy or other neurological disorder. In addition to task requirements, students are encouraged to verbalise what they are doing, alternate coloured and clear glass lenses between the right and left eye (to increase the visual load and central executive loading to alternate hemispheres), tap out phonemes and read letter combinations phonetically (nonsense words).

Directly following the ten POD intensive sessions, students are instructed to read using the Behavioural Reading™ techniques. By combining the two therapies, it is anticipated that improvements in processing and phonological awareness skills combined with explicit reading instruction are transitioned into effective and efficient reading behaviours (Gruhl, 2013).

Preliminary Findings

At the time of this report, POD had been commercially available for 18 months. As with any new product entering a competitive market (particularly from a start-up position with little capital); take-up has been slow and growth has relied mostly on word of mouth. As such, only a small amount of schools have implemented it fully with their tier 2 and 3 students (students identified as tier 3 require individual learning instruction) and over a sufficient period of time to collect and measure quantitative data. Another factor is that the data belongs to participating schools and so it is a privilege and not a requirement for schools to share their data with Behavioural Reading Pty Ltd.

School 1

A public school situated in Lake Macquarie, NSW Australia (approximately 370 students K-6). Information provided by a Learning Support Intervention Teacher via email: 16 students from Years 1 & 2 targeted for POD since Term 2, 2017. 100% of students' improved in reading. Three of these students were Tier 3 students – of the three;

- Student 1 increased reading by 8 PM levels (*PM Benchmark* provides teachers with the tools and resources to assess and record students' current reading and comprehension abilities);
- Students 2 increased reading by 10 PM Levels; and
- The third Tier 3 student had not moved PM levels all year however having only completed one week of POD in Term 4, had moved 1 PM level.

PM Level Growth in Two Terms - Three Tier 3 Students
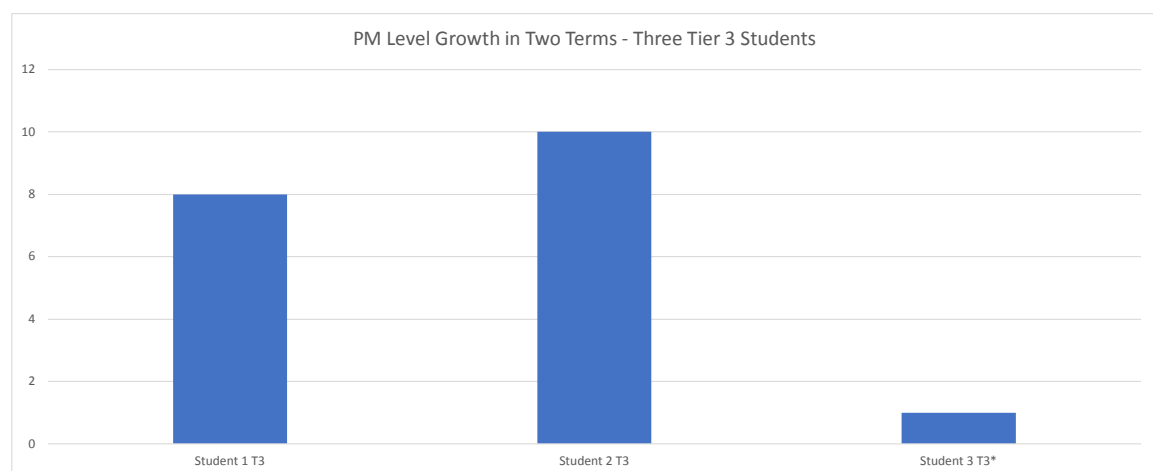
*Only one week of POD intervention completed at the time of report.

An additional seven students (all were reading at below target level) completed POD sessions in Term 2. These students were selected as they were performing at a

reading level at least 4 levels below the targeted level for their year group. Currently out of these seven students:

- Four students currently reading at the expected level (57%);
- One student reading one level below grade expectation;
- One student at 2 levels below (Previously 4 levels below target); and
- One student at 4 levels below (previously 6 levels below target).
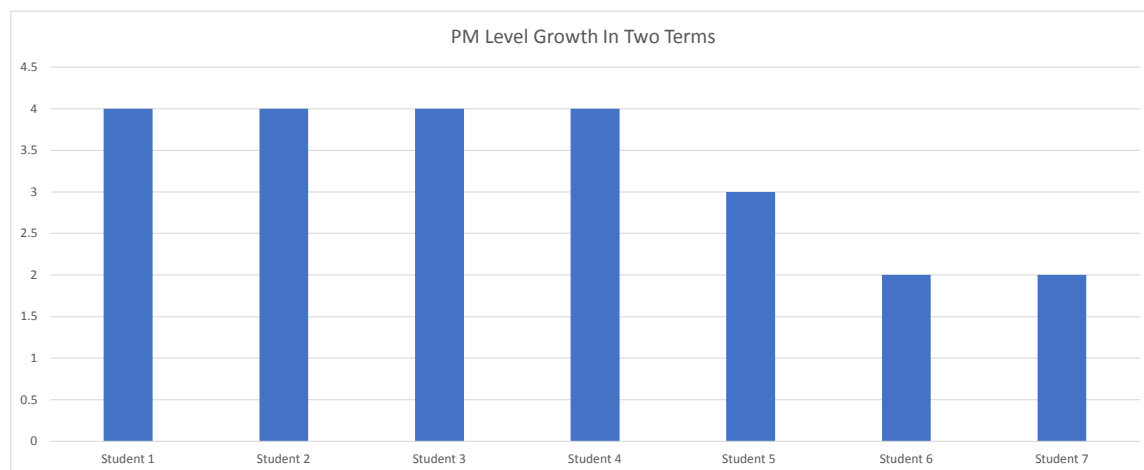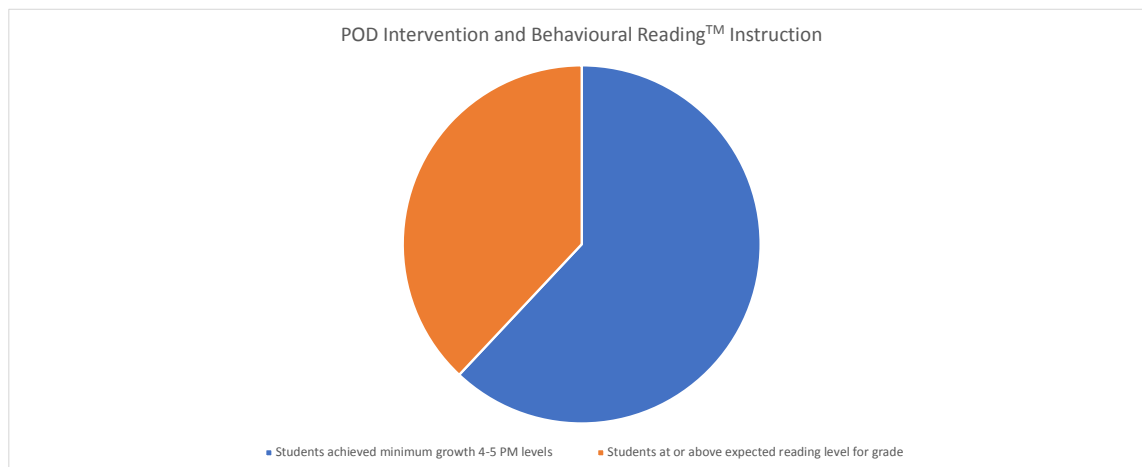

Year 1 students were introduced to POD at the beginning of term 3. Of the six students included, five were reported to be at target level after one term.
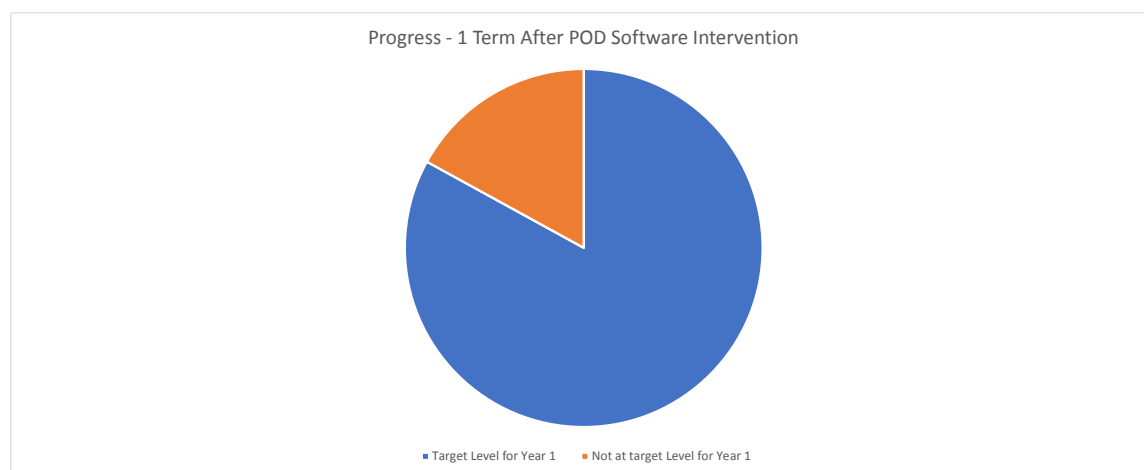
Behavioural Reading™ Techniques

It was reported that a number of other children had participated in small group and individual lessons of Behavioural Reading™ reading instruction, while some of these children had also participated in POD, of the 21 original Year 2 participants, 8 children (38%) achieved at or above expected level with regard to reading ability (expected growth for the year is 4-5 levels for Year 2). 16 of the 21 students achieved a minimum growth of this level, with students registering growth as much as 10 levels by the middle of term 4.

POD Intervention and Behavioural Reading™ Instruction

■ Students achieved minimum growth 4-5 PM levels   ■ Students at or above expected reading level for grade

School 2

A public school situated in Cessnock, NSW Australia (approximately 80 students K-6). Information provided by Early Action for Success Instructional Leader via email: POD software intervention and Behavioural Reading™ statistics as at Week 5 Term 4, 2017. Six Students (years 1 & 2) were targeted for POD software intervention from Term 1, 2017. It was reported that 100% of students improved in reading. Four of these were identified as tier 3 students:

- Student 1 (year 1-tier 3) increased reading ability by 6 PM levels (received POD intervention in term 3);
- Student 2 (year 2-tier 3) increased reading ability by 6 PM levels (received POD intervention in term 2);
- Two students (year 1- tier 3) are now at stage level in reading and comprehension (POD in term 2);
- One student in year 2 at stage level for reading and comprehension, completed POD intervention at the start of term 4 to alleviate anxiety about learning and changes at school. The student is now more settled and is experiencing a marked improvement in spelling skills when writing; and
- Final student (year 1-tier 2) is now at stage level for reading and comprehension. The student completed POD intervention due to the inability to concentrate in class. There has also been a reported slight improvement in 'on task behaviour'.

Behavioural Reading™ Instruction (pre POD Software Intervention)

Four year 3 students completed POD intervention during first term, 2017. These students had all been targeted and received Behavioural Reading™ instruction during 2015 and 2016 as they were identified as Tier 3 students (year 1, PM level 6, term 3, 2015). Three out of the four students achieved stage level in reading and comprehension during 2016 (i.e. Behavioural Reading™ instruction alone). An additional student (year 3) was tier 3 in term 3, 2015 (year 1 PM level 6). The student took part in Behavioural Reading instruction and attained stage level in

reading, comprehension and writing by the end of 2015. In NAPLAN 2017, the student received a band 6 in reading and band 5s in writing, spelling, grammar and punctuation. POD software intervention was not required for this student.
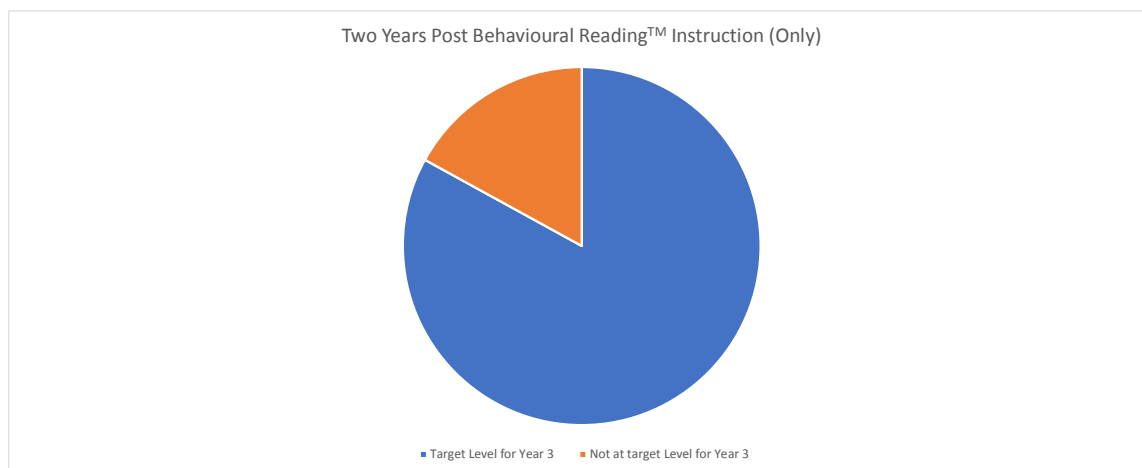
Behavioural Reading™ Instruction and POD Software Intervention

For four out of the five students noted above who also completed POD, the following NAPLAN 2017 results were reported

- Two students achieved band 3 for reading and writing with one of these students achieving band 3 for spelling and band 4 for grammar and punctuation. Both students considered 'on track' for year 3;
- One student achieved band 3 for reading, grammar and punctuation and band 4 for writing and spelling and considered 'on track' for year 3;
- One student is still tier 3 but his teacher has noted a growth in confidence and an improvement in his work habits.

### POD Software Intervention and Qualitative Information

A student recently completed POD intervention software for the second time following specific advice from Philip Gruhl and also because the student reported that it had made a difference in being able to learn. The student's teacher commented that there has been a perceived improvement in cognitive skills; appearing more confident and that the student's written expression is improved, easily read and logical.

Six students in years five and six completed POD. No quantitative information was collected however consistent reports in sustained attention, confidence and independent learning behaviours were reported by classroom teachers. An additional eight year six students are due to complete POD term 4.

School 3

A comprehensive co-educational High School situated in the Manning Valley, NSW Australia (approximately 950 students' years 7-12). Information provided by Deputy Principal Instructional Leader via email: POD software intervention and Behavioural Reading™ statistics as at Week 6 Term 4, 2017. 23 Students (year 7) were targeted for a combination of POD software intervention and Behavioural Reading instruction from Term 3, 2017. It was reported that of the 19 students re-tested post intervention (4 were not re-tested due to absenteeism) 100% of students improved in reading and comprehension; assessed using the NEALE Analysis of Reading Ability (NEALE). The NEALE is an ACER formal assessment designed to measure the accuracy, comprehension and rate of reading, monitor reading progress and obtain diagnostic observations of reading behaviour. Reading range is 6 to 13 years. Nine students (47%) were identified as Aboriginal and Torres Strait Islander (ATSI). Four students (21%) had a reported diagnosis including mild intellectual impairment (IM), visual processing, and 'learning centre student'. One student was reported as having English as a Second Language (ESL). Results in reading and comprehension age gains following interventions were reported as follows:

Comprehension Results on NEALE Pre and Post POD & BR Interventions
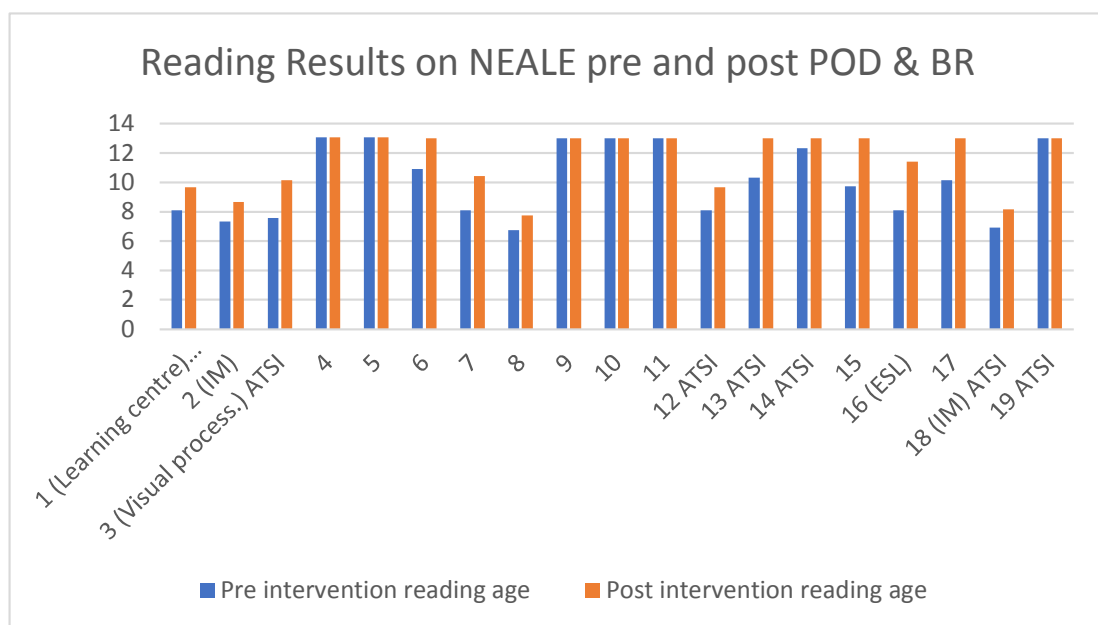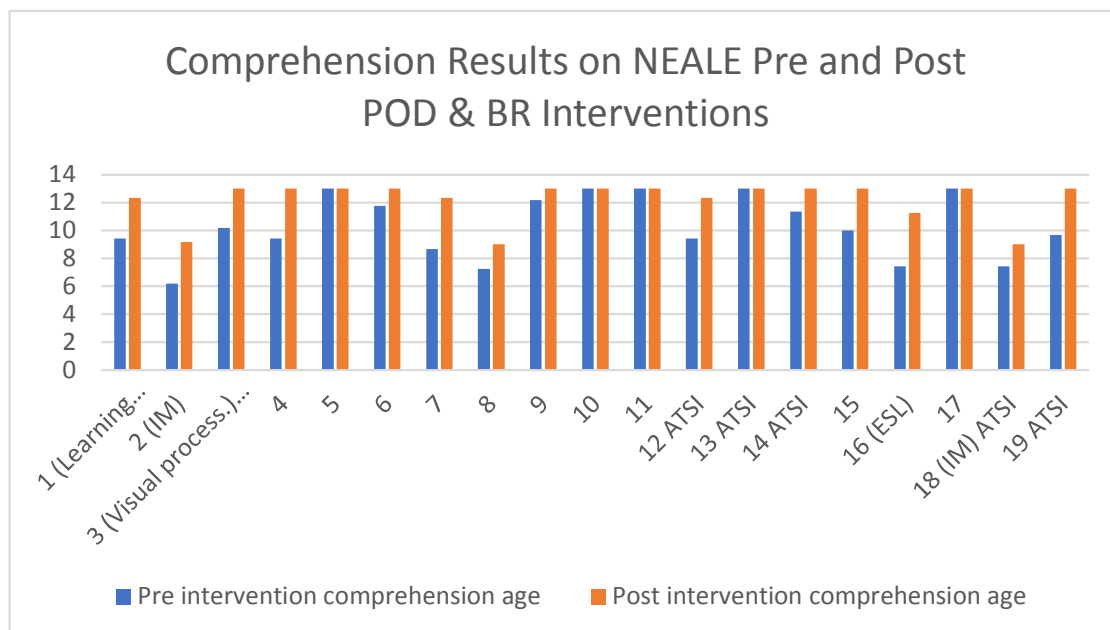
POD software intervention was administered as prescribed (i.e. 10 x 1 hour sessions, consecutively over two school weeks) and behavioural reading instruction during each session. On average reading age improved 1.4 years and reading comprehension age 1.9 years following 10 hours of POD Intervention software and Behavioural Reading™ instruction. These gains may have been higher given that the age range for the NEALE has a ceiling of 13 years.

At the time of report, an additional 50 students were reported to be completing POD Intervention software and Behavioural Reading™ instruction in term 4, 2017.

Conclusion

Preliminary data supporting the use of POD software intervention and Behavioural Reading™ reading instruction from three schools (two Primary schools and one High school) in NSW have demonstrated both interventions to be positive, effective and efficient in the treatment of students with literacy difficulties in the school environment for different ages, cultural backgrounds, learning abilities and potentially students from English as a Second Language background.

Further data is required to further support POD software intervention and Behavioural Reading™ reading instruction as evidence-based literacy interventions. Data from participating schools will continue to be collected. It is envisaged that once enough data is collected, Behavioural Reading Pty Ltd may be in an improved position to pursue a research grant for a comprehensive study or ideally be pursued by researchers in the higher education market or through the Department of Education.

References

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