Explicit instruction in segmenting consonant blends alongside training in using vowel rime units will result in improved reading accuracy of text.

ABSTRACT

Intended educational outcomes for Young Australians, as outlined in The Declaration of educational goals for young Australians, 2008 is for development of literacy skills as foundation skills on which further learning depends. The continuum of learning in literacy, begins from basic competences in the early years and ranges through to the advancement and extension of these skills.

Early phonological awareness can a useful predictor in the trajectory of literacy skill development. However, it is widely reported that many children will not learn these skills through regular classroom instruction. An intensive intervention program, based on empirical research may be required to assist in the basic skills of blending and segmenting. Research has confirmed that phonemic awareness programs, letter sound instruction and explicit instruction in segmenting and blending is effective in improving reading outcomes for children experiencing difficulty.

This study examines the influence of explicit instruction in phonemic awareness, vowel rime units and segmenting and blending of a year 3 student with a history of literacy difficulties. Word reading accuracy, fluency and phonological awareness were tested before and after the intervention took place.

The student was withdrawn from the classroom for nine thirty minute sessions, over a two week period. Blending and segmenting tasks were taught intensively over this period, with a further assessment carried out at the conclusion of the teaching sessions.

The findings reflected those of current research in that explicit instruction in segmenting and blending instruction improved outcomes of the Sutherland Phonemic Awareness Test namely, rhyme production and sound deletion accuracy.

Self efficacy of this student has been the most noticeable change for this student, as reported by their classroom teacher, although this was not formerly evaluated.

INTRODUCTION

The relationship between phonological awareness as a predictor of future literacy success is well documented (Adams, 1990; Stanovich, 1986). As teachers, we are able to ascertain children's pre-reading phonemic awareness by assessing their phonological awareness and knowledge to assist in the early identification of children at risk of reading failure. Before tackling text, children need to be
proficient in the articulation of oral language skills. The knowledge and production of sentences, that words can rhyme and can be broken into individual sounds, syllables, and that new words can be made from manipulation and deletion of sounds. This knowledge of individual speech sounds and sounds within words assists in reading development by making the link between the spoken form by directly matching to letters and letter clusters.

Approximately 20% of children have difficulties with learning to accurately read text. (Munro 1996) The multi-levelled nature of text processing is complex, with many children unable to crack the code of segmenting spoken words into smaller sounds and the transferring the sound patterns of each orthographic cluster into other words. (Munro 1996) The difficulties faced by learner readers may put them at risk of problems associated with school failure. Munro believes (1998) that often school-based literacy intervention programs are short term and are unable to identify the specific nature of the reading difficulty. These interventions fail to take into account the complex nature of text processing, and findings of current research.

A substantial body of evidence over the last three decades, suggests that phonological awareness is significantly related to the acquisition of early reading skills and that for the majority of poor readers the basic source of their difficulty is failure to develop accurate and efficient automatic word recognition skills (Adams, 1990; Stanovich, 1986, 1996, 1992).

Research confirms that most successful phonemic awareness programs provide instruction on segmentation and blending training with letter sound instruction (Ball and Blackman, 1987; Wallach and Wallach, 1997; Williams, 1979, 1980) and that the systematic teaching of phonics, where children are taught to convert letters to phonemes and blend these phonemes into words, is more effective in improving reading outcomes (National Reading Panel USA 2000 as cited in Hempenstall 2005).

A study by Munro (1981) confirms these findings in that phonemic awareness has a positive influence on two aspects of reading text aloud, reading accuracy and reading fluency. This effect was noticed more greatly with young children and that phonological awareness developmentally influences reading and intervention and is more likely to be successful if implemented at an early age.

Similar findings from the National Reading Panel, 2001 as cited in Hempenstall 2005, found the two most sophisticated phonological skills, that are fundamental for children to master are segmenting and blending, which involve sound manipulation and that these skills need to be explicitly taught. Phonemic awareness programs that involve segmentation and blending training with letter sound instruction appear to have the most positive effect on reading achievement.

Segmentation training helps develop blending skills. Yopp (1988) suggests that segmenting & blending tap similar constructs but agrees with Perfetti, Beck, Bell, &
Hughes, (1987) that blending is a simple precursor to reading while segmenting is a more complex metacognitive linguistic skill. (Uhry, J.K., & Shepherd, M.J. 1993)

According to Nelson (2009) segmenting is a challenging skill that allows for continuous co-articulation of overlapping phonemes. These skills can impact on a student's ability to read accurately and fluently.

A recent study by (Daly and Johnson 2008) compared student’s phoneme segmenting and blending skills of nonsense words between regular classroom instruction and specialist intervention. It was found that children who received specialist instruction, performance increased over time.

As so many children are confronted by difficulties in learning to read, initial instruction and intervention programs must be based on evidence based research and empirically tested strategies (Hempenstall 2005).

Research also confirms that some children will need more intensive instruction than what is provided in current classroom instruction (Wanzek and Vaughn 2007).

The present study aims to confirm the earlier research by examining how explicit instruction in segmenting and blending, with a grade 3 student can improve reading accuracy and fluency. This child is at risk of reading failure as his word reading accuracy is preventing him from developing reading fluency with his comprehension rates being effected as his cognitive load is taken up with decoding text at word level. This student may be at risk of developing a negative attitude to reading, avoid reading and limit his opportunities for future learning.

The hypothesis, is that explicit instruction in segmenting consonant blends alongside training in using vowel rime units will result in improved reading accuracy of text.
METHOD

Design

The Action Research uses a case study OXON design, in which the gains made by a grade three student were monitored in relation to segmenting and blending. The intervention was designed according to the hypothesis tested and the lessons planned according to the initial collection of data.

Participant

In my role as student services staff group, Visiting Teacher, I was unable to have access to a group of students or group data for the purpose of this Action Research. I have selected to work with one participant, as a case study approach to test my hypothesis. My participant was a Year three student who has a history of reading difficulties. This student has undergone numerous assessments to determine if his learning and behaviour difficulties can be explained by his cognitive profile. The results of his most recent (WISC assessment 2007) indicate there are difficulties with his Working Memory Index. (4th% ile) This is a measure of auditory short-term memory, sequencing skills, attention, and concentration, learning and memory. The test assesses the transformation of information, mental alertness and mental manipulation of information (Poulakis, 2007). These difficulties are often found among students who have reading difficulties as short-term memory skills are related to the sounds of language. Difficulties with short-term auditory memory makes remembering the sounds of language more difficulties and results in difficulties with reading as well as other areas of literacy.

This student's processing speed index assessed his short-term memory, visual motor coordination, visual scanning ability, visual perception, processing speed, attention, and motivation and learning ability. These results were within the average range 25th% ile. He has average visual processing skills. He had access to reading recovery in Year 1, with good gains made during this time. This student was selected to undertake this research, as he is undertaking specialist education intervention weekly outside school to address his areas of difficulty, particularly his reading and writing.

Their entry age and pre-test assessment result are shown in table 1.

Table 1

<table>
<thead>
<tr>
<th>STUDENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE 9 years 5 months</td>
<td></td>
</tr>
<tr>
<td>Sutherland Phonological Awareness Test</td>
<td>37</td>
</tr>
<tr>
<td>Neale Analysis of reading</td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>77% ile</td>
</tr>
<tr>
<td>Accuracy</td>
<td>8% ile</td>
</tr>
<tr>
<td>Comprehension</td>
<td>14th% ile</td>
</tr>
</tbody>
</table>
Rime Unit Test
(Dalheim 2004)  132 /153 = 86% accuracy

3 letter word error  12
4 letter word error  9

Materials

- Sutherland Phonemic Awareness Test
- Neale Analysis of reading
- Rime Unit test-Dalheim 2004
- Flashcards- blends, vowels
- Magnetic letters and whiteboard
- Jack and Jill lego blocks- three letter blends, vowel sounds, digraphs, word families, letter blends
- Smart cubes
- 3 D labyrinth- blends
- Magnetic letter
- Scrabble letters
- White board
- Flashcards
- Word family books Sunshine books
- Fitzroy readers
- Alphabetic card game

Teaching Tasks
All sessions included the following oral and practical sequential tasks

- Listening for number of sounds in words
- Listening for deleted and omitted sounds
- Manipulating sounds in words
- Identification of short and long vowel sounds
- Categorization of long and short vowel sounds
- Segmenting phonemes
- Blending phonemes
- Matching onset and rime-orally and visually
- Making pseudo words with onset and rime units taught
- Reading prose with rime units or familiar texts or both
- Game to consolidate skills taught- Bingo, alphabetics
Procedure

Nine 30 minute morning sessions were conducted during the morning literacy block of the school day. Sessions were held over a 2-week period prior to term 3 holidays. (The student was absent for one of the sessions)

Session 1 Pre test
Session 2 Segmenting and blending 2 and 3 sounds
Session 3 Segmenting and blending to make words
Session 4 Deletion of sounds in words
Session 5 Deletion of sounds in words
Session 6 to revise short vowel sounds and words and identify bends in text
Session 7 to practise blending nonsense words
Session 8 to practice deletion of initial, medial and final sound
Session 9 Post test

Lesson details are shown in Appendix

RESULTS

Pretest /post test battery

- Neale Analysis of reading-Rate, Accuracy, Comprehension
- Sutherland Phonological awareness
- Rime Unit Test

<table>
<thead>
<tr>
<th>Sutherland Phonological Awareness Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPAT R SUBTEST SCORES</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
<th>Change % ile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllable counting</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Rhyme detection</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Rhyme Production</td>
<td>2</td>
<td>4</td>
<td>+ 2</td>
</tr>
<tr>
<td>Blending CVC</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Subtest 3 Rhyme Production</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Table 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre Score / error</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring, sing</td>
<td>0</td>
</tr>
<tr>
<td>Coat, float</td>
<td>1</td>
</tr>
<tr>
<td>Sand, hand, land</td>
<td>1</td>
</tr>
<tr>
<td>Cap, tap, lat</td>
<td>0</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td>2</td>
</tr>
</tbody>
</table>
### Subtest 8 Segmentation Blends

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Pre Score / error</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train (4 sounds)</td>
<td>0 Tr blend</td>
<td>0 Tr blend</td>
<td></td>
</tr>
<tr>
<td>Spoon (4 sounds)</td>
<td>0 Sp blend</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tent (4 sounds)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scrub (5 sounds)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Subtest 10 Deletion- Boundary Consonant

Table 4

<table>
<thead>
<tr>
<th></th>
<th>Pre Score / error</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spade (-s)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bred (-b)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Swing (-s)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Scream (-s)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>1</td>
<td>2</td>
<td>+1</td>
</tr>
</tbody>
</table>

### Subtest 11: Deletion- Internal Consonant

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Pre Score / error</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (-p)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Slide (-l)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>cold</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bent (-n)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>2</td>
<td>4</td>
<td>+2</td>
</tr>
</tbody>
</table>
### Subtest 12 Nonword reading

**Table 6**

<table>
<thead>
<tr>
<th>Word</th>
<th>Pre Score / error</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>mup</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>trom</td>
<td>0</td>
<td>Tom</td>
<td>1</td>
</tr>
<tr>
<td>pilk</td>
<td>0</td>
<td>pill</td>
<td>1</td>
</tr>
<tr>
<td>Spont</td>
<td>0</td>
<td>spot</td>
<td>0</td>
</tr>
<tr>
<td>scrif</td>
<td>1</td>
<td>skin</td>
<td>1</td>
</tr>
<tr>
<td>fouse</td>
<td>0</td>
<td>fossy</td>
<td>0</td>
</tr>
<tr>
<td>hipstan</td>
<td>0</td>
<td>hichan</td>
<td>1</td>
</tr>
<tr>
<td>mespuntal</td>
<td>0</td>
<td>misel</td>
<td>1</td>
</tr>
<tr>
<td>scrif</td>
<td>2</td>
<td>6</td>
<td>+4</td>
</tr>
</tbody>
</table>

### Subtest 13: nonword spelling

**Table 7**

<table>
<thead>
<tr>
<th>Word</th>
<th>Pre Score / error</th>
<th>Post</th>
<th>Future Teaching points</th>
</tr>
</thead>
<tbody>
<tr>
<td>lut</td>
<td>0</td>
<td>lute</td>
<td>1 bossy e rule</td>
</tr>
<tr>
<td>drim</td>
<td>0</td>
<td>dem</td>
<td>1 Blend practice</td>
</tr>
<tr>
<td>relt</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>flonk</td>
<td>0</td>
<td>Flonck</td>
<td>1 ck after short vowel</td>
</tr>
<tr>
<td>splad</td>
<td>0</td>
<td>sblad</td>
<td>1</td>
</tr>
<tr>
<td>bouse</td>
<td>0</td>
<td>bas</td>
<td>0 Base vowel digraphs ou</td>
</tr>
<tr>
<td>staslint</td>
<td>0</td>
<td>saslint</td>
<td>1 Staslint t added</td>
</tr>
<tr>
<td>rostandic</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total (max 8)</td>
<td>2</td>
<td>34.5 15th % ile</td>
<td>5 39.5 46th % ile</td>
</tr>
</tbody>
</table>
### Neale Analysis of Reading

#### Pre Intervention

#### Post Intervention

Table 8

<table>
<thead>
<tr>
<th></th>
<th>Raw score</th>
<th>% Rank</th>
<th>Stanine</th>
<th>Performance descriptor</th>
<th>National Profile Level</th>
<th>Reading Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>31</td>
<td>29</td>
<td>8</td>
<td>2</td>
<td>V low</td>
<td>1/2</td>
</tr>
<tr>
<td><strong>Comprehension</strong></td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>3</td>
<td>Below Average</td>
<td>1/2</td>
</tr>
<tr>
<td><strong>Rate</strong></td>
<td>86.1</td>
<td>78.9</td>
<td>77</td>
<td>6</td>
<td>Average</td>
<td>3/4</td>
</tr>
</tbody>
</table>

Minimal changes were recorded here, post test was conducted at the end of term and the student was tired.

Comprehension raw score was one less in post intervention

Improvement in word reading accuracy was noted at post intervention testing (2 points of raw score accuracy is still very low.

Reading rate raw score was slightly slower

Percentile rank for accuracy remained the same

Comprehension dipped by 1% between pre and post intervention

Rate percentile decrease by 9% as student paid more attention to word reading accuracy.

### Rime Unit Test

#### Pre Intervention

#### Post intervention

Table 9

<table>
<thead>
<tr>
<th>3letter words</th>
<th>4 letter words</th>
<th>4 letter words</th>
<th>5 letter words</th>
<th>4 letter words</th>
<th>5 letter words</th>
</tr>
</thead>
<tbody>
<tr>
<td>bin</td>
<td>pin</td>
<td>thin</td>
<td>spin</td>
<td>rock</td>
<td>Sock</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Stock</td>
<td>stock</td>
</tr>
<tr>
<td>can</td>
<td>man</td>
<td>Plane</td>
<td>than</td>
<td>bell</td>
<td>well</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>shell</td>
<td>spell</td>
</tr>
<tr>
<td>day</td>
<td>say</td>
<td>play</td>
<td>Stay</td>
<td>back</td>
<td>pack</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>say</td>
<td>pack</td>
<td>back</td>
</tr>
</tbody>
</table>

- Minimal changes were recorded here, post test was conducted at the end of term and the student was tired.
- Comprehension raw score was one less in post intervention
- Improvement in word reading accuracy was noted at post intervention testing (2 points of raw score accuracy is still very low.
- Reading rate raw score was slightly slower
- Percentile rank for accuracy remained the same
- Comprehension dipped by 1% between pre and post intervention
- Rate percentile decrease by 9% as student paid more attention to word reading accuracy.

### Rime Unit Test

#### Pre Intervention

#### Post intervention

Table 9
<table>
<thead>
<tr>
<th>saw</th>
<th>paw</th>
<th>draw</th>
<th>thaw</th>
<th>hill</th>
<th>fill</th>
<th>chill</th>
<th>Split</th>
<th>meat</th>
<th>beat</th>
<th>cheat</th>
<th>treat</th>
</tr>
</thead>
<tbody>
<tr>
<td>cab</td>
<td>Tab</td>
<td>grab</td>
<td>crab</td>
<td>ring</td>
<td>wing</td>
<td>thing</td>
<td>bring</td>
<td>cake</td>
<td>make</td>
<td>Shake</td>
<td>snake</td>
</tr>
<tr>
<td>bug</td>
<td>mug</td>
<td>plug</td>
<td>slug</td>
<td>duck</td>
<td>Lucky</td>
<td>truck</td>
<td>Stuck</td>
<td>date</td>
<td>Late</td>
<td>Plate</td>
<td>state</td>
</tr>
<tr>
<td>hot</td>
<td>not</td>
<td>shot</td>
<td>spot</td>
<td>Sick</td>
<td>slick</td>
<td>pick</td>
<td>brick</td>
<td>thick</td>
<td>name</td>
<td>came</td>
<td>shame</td>
</tr>
<tr>
<td>fat</td>
<td>pat</td>
<td>Chat</td>
<td>cheat</td>
<td>tail</td>
<td>mail</td>
<td>snail</td>
<td>trail</td>
<td>rice</td>
<td>mice</td>
<td>slice</td>
<td>spice</td>
</tr>
<tr>
<td>cap</td>
<td>tap</td>
<td>clap</td>
<td>trap</td>
<td>bank</td>
<td>tank</td>
<td>thank</td>
<td>Drank</td>
<td>ride</td>
<td>hide</td>
<td>Slide</td>
<td>Bride</td>
</tr>
<tr>
<td>hop</td>
<td>top</td>
<td>stop</td>
<td>shop</td>
<td>mask</td>
<td>task</td>
<td>flask</td>
<td>-</td>
<td>fine</td>
<td>mine</td>
<td>shine</td>
<td>Spine</td>
</tr>
<tr>
<td>lip</td>
<td>zip</td>
<td>Drip</td>
<td>ship</td>
<td>junk</td>
<td>bunk</td>
<td>trunk</td>
<td>chunk</td>
<td>more</td>
<td>core</td>
<td>store</td>
<td>snore</td>
</tr>
<tr>
<td>hit</td>
<td>pit</td>
<td>Spit</td>
<td>Grit</td>
<td>pink</td>
<td>wink</td>
<td>think</td>
<td>Stink</td>
<td>Woke</td>
<td>poke</td>
<td>broke</td>
<td>spoke</td>
</tr>
<tr>
<td></td>
<td></td>
<td>split</td>
<td>gritt</td>
<td></td>
<td></td>
<td></td>
<td>sink</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dalheim 2004

**Pre Intervention errors** = 23

**Post intervention errors** = 17
General improvements were made over the 9-session interval. A decrease in errors of 4th % ile from 16%ile to 12%ile. Overall accuracy improved from 83% ile to 87%ile, a 4 % improvement.

**Error / Orthographic analysis of rime unit test**

### Table 10

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Errors made</strong></td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>83%</td>
<td>87%</td>
</tr>
<tr>
<td><strong>Change</strong></td>
<td></td>
<td>+4 %</td>
</tr>
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</table>

### Table 11

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
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<tbody>
<tr>
<td>3 letter words</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4 letter words</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>5 letter words</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Sounds in words deleted</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sounds in words inserted</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Letter confusion p/b</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Letter order changed</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Letter sound changed</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Vowel confusion</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Self correction</td>
<td>2</td>
<td></td>
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</table>
In the analysis of errors of the pre and post testing of the rime unit the following was noticed:

Attempts remain unchanged after the intervention

**sound added**
Sock-stock
Suck-sucked
Pump/plump
Stink /sink

**sound changed cr/ch**
Crest-chest
Plan-plane

**order of sounds changed**
Spilt-split
Bride-bird

**Words incorrect at pre test Correct at post test**
Tab
Shake
Luck
Late
Plate
Sick
Chat

**Words correct at pre test and incorrect at post test**
Drank
Slide
Spine
Spit
Main
DISCUSSION

This action research case study model examined how a direct teaching targeted intervention, informed by developing a hypothesis around the student’s difficulty, can assist word reading fluency and accuracy.

The pretesting procedure and triangulation of data has been useful to refine my hypothesis and assist in my understanding of the student’s difficulty, which then formed the basis for my lesson planning.

The known difficulties in this student’s short term working memory or verbal memory is impacting on his segmenting and blending ability, and hence his ability to hold, process and understand spoken language. Short term working memory is directly related to the speed with which we can articulate words, which further influences the speed at which children learn new words and learn to read. (As cited by Alton, 2001)

Children learn to retain increasingly more knowledge in memory as they read. They learn to retain nonverbal and verbal knowledge for a brief duration, retrieve verbal information from long-term memory with increasing efficiency. This helps the learner reader to store and comprehend what they read. They learn to use rehearsal, elaboration and chunking more efficiently,

Coupled with this student’s short-term auditory memory difficulty, is his difficulty with attending to a task and concentrating for given periods of time.

Comparison of pre-test and post-test scores for this student show increases in accuracy in all categories. Although gains were not formalized in the reading test result, gains were made in the phonological processing subtests. Most of the sessions began with a warm up listening exercises of counting the number of sounds in a word, giving a number where a word with that number of sounds needed to be given, and removing or adding sounds. This was quick, fun and repetitious. This student soon got into the routine of 5-10 minute of ‘playing with sounds’. That close scrutinizing of listening for sounds, isolating sounds in word, blend strings of sounds, and repeating them orally without a visual code, has supported my hypothesis.

The student is implicitly and explicitly recognising single sounds in words, he is blending sounds segments into whole words as well as manipulating sounds in more complex ways. He has shown dramatic improvements in his ability to isolate, name and manipulate sounds as seen in his SPAT results.
Significant gains were made in the overall result of the **SPAT** testing, with a 50% increase in:

- The rhyme production subtest,
- Deletion internal consonants
- Non word reading subtest,

(see table 2,5,6)

A 75% increase in:

- Segmentation- blends
- Deletion boundary from
- Non word spelling

(see table 3,4, 13)

In analysis of each of the subtest **8 Segmentation**, Indicates that pre test score of 0 with the inability to separate the first and second consonant sound- t,r,ai, n (4) tr was counted as one sound. As was spoon- s-p.oo-n (4) sp was counted as one sound. Similar results with tent (4) and scrub (5) After the intervention the student was able to separate all of these sounds. The improvement here can be attributed to the oral language exercises and listening exercises and games at the beginning of each session.

In **subtest 10 deletion-Boundary Consonant**, pre intervention the subject was unable to identify the word pade after the first sound s was removed, and cream after the first sound s was removed. Post intervention results, the subject scored 4/4 in this subtest.

**Subtest 12 Nonword reading**; a score of 2/8 was achieved. Post intervention, this result was 6/8
Error analysis indicates that
tromp was read as tom ( r,p deleted)
pilk was read as pill (distinct visual features,k deleted)
sprot was read as spot (DVF, n deleted)
scrif was read as skin
fouse was read as force, fossy (ou sound not consolidated)
hipstan was read as hichan
mespuntal was read as misel

**Subtest 13: Nonword Spelling**

Pre-intervention results show: 2/8
**Lut** spelt as lute (long vowel sound, final e rule)
Trends from the results recorded indicate the benefits of direct instruction in blending and segmenting words has benefitted student's learning and his phonemic awareness span. This result is encouraging, even though this improvement is yet to infiltrate to his reading accuracy and fluency and his spelling ability. His classroom teacher has commented that she has noticed improvements in both his attitude and his learning independence.

This student treats certain blends as single sounds and is unable to name the first sound in words. He inserted or added sounds to words he is asked to segment. This demonstrates his inflexibility in phonemic links may be associated with short term memory (Wagner, Torgesen, Laughton, Simmons and Rashotte, 1993) as cited in Munro J. (2000) As his cognitive profile indicates in the WISC assessment, short term memory may be influencing his retention and utilisation of sounds and the number of sounds that can be manipulated is reduced as he was required to respond to Information presented to orally manipulate the sound.

His less elaborate phonological network doesn't allow him the flexibility to delete sounds in more complex words. Often during the sessions the student showed a preference to want to see the orthographic representation of the word, before he was confident enough to produce a response.

As this skill required his attention and concentration the task was challenging. The student's concentration is proving to be an issue both in the classroom setting and in a one to one situation. He would frequently go off task, either by diverting attention to another preferred task, which he himself initiated, or by initiating conversation about a topic of interest to him. Concentration was limited during all the sessions and he fiddled with material or was out of his chair at times. Alternate timeslots were incorporated into his lessons to determine the optimal time for him. The block straight after morning recess, in a very bare room with no visual distractions, appeared to be the best one to one learning environment.

My research supports earlier research as well as my hypothesis in that, directly targeting teaching the skills of segmenting and blending as well as isolating initial, medial and final single and vowel sounds in words, improves phonemic awareness. These findings are supported by earlier research that state that specialist intervention is often required to make a difference to student outcomes in literacy levels. An unexpected outcome from this research was verbal feedback from his classroom teacher about improvements in spelling and behaviour.
I am confident with ongoing work on his known difficulty, through ongoing sessions guided reading and reading conferences, further gains will continue to be made. Whereby I would expect automaticity and reading independence to develop alongside as improvement in reading comprehension. This project could be researched further looking into at what point does the measured improvement in phonemic awareness, transfer to reading automaticity, independence and comprehension levels.

This intervention will continue for this student with the next stage of intervention to continue with blending and segmenting, move toward letter clusters and chunking. Continue with reading fluency exercises through paired and reciprocal reading and revisit visualising and paraphrasing as strategies to assist with his reading comprehension. An individual learning plan will be implemented in the classroom and assistance given to the classroom teacher in minimising visual distraction to his learning environment.
REFERENCES


Christensen, C., 1997 *Onset, Rymes and Phonemes in Learning to read*, Scientific studies of reading, 1 (4) 341-358


Hempenstall, K 2005 *Preventing and overcoming reading failures*. Dsylexia Assessment and Education Eentre Workshop


Munroe J 2000 *Phoneme awareness span: a neglected dimension of phonemic awareness*. Australian Developmental and Educational Psychologist, 17,1,76-89

Muno, J *Literacy Interention Strategies, Course Lecture Notes* (2010)

National Reading Panel Report (USA & Great Britain) (April, 2000)

Neale,M *Analysis of reading*, ACER 1999

Neilson R. Sutherland Phonological Awareness Test (1995)


APPENDIX- LESSON DETAILS

**Session 1 Objective:** To segment and blend two and three sounds
Oral blending of consonant blends skill practice and reinforcement

- one, consonant s, t, p, b,
- with short vowel rime clusters
  ot, og, in, ig, ep, uck, ao eg, un, ab, im etc
- using smart cubes

- Two and three sounds in words
  say the word, using counters to identify individual sounds. –horse, cheese, wish, map, six, plan

Using counters to nominate sounds to isolate phoneme and blend

Segment words (CVC) Demonstrate orally how to break words up into individual sound cat, fat, rat

**Session 2 Objective:** To segment and blend words into sounds

Revise session 1

Sound boxes - stretch out sounds in words as student places counter in each box


- target areas
  tr, sh, ch, b, pl, sm, st, spr / o, u, e, a, i

use whiteboard for modelling and flashcards cut into consonant blends and adding short vowels. Practice saying them with eyes closed and reading them.

Practice blending consonant blends with short vowel sounds.

Rime unit ain
Spain, train, chain, etc.
Oral and writing practice

Read familiar text

Session 3 Objective: To segment and blend sounds into words

Oral blending of consonant blends skill practice and reinforcement
two and three consonants
target areas
tr, sh, ch, b, pl, sm, st, sp

use whiteboard for modelling and flashcards cut into rime units and consonant.
Practice reading these.
Using 2/3 letter consonant blends, play bingo. Teacher models the word, student identifies the blend on the chart

<table>
<thead>
<tr>
<th>bl</th>
<th>cl</th>
<th>dr</th>
<th>fl</th>
<th>fr</th>
</tr>
</thead>
<tbody>
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<tr>
<td>str</td>
<td>sw</td>
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<td>tw</td>
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Session 5 Objective: To manipulate (delete and add) sounds in words

Orally blend and segment given words eg
Might, house, stable, snake, ladder, spain
Practice reading blends on flashcards, blend with vowel digraphs.
Read short passage with ain as target vowel cluster

say
spain without the s,
spain without the p
practice with other real chain, train, stain, brain and nonsense words shain, flain,

Written practice of same words- white board
Session 6 Objective: To delete sounds in words

Orally blend and segment given words eg
might, house, stable, snake, ladder, spain
Practice reading blends on flashcards, blend with vowel digraphs.
Read short passage with ain as target vowel cluster

Session 7 Objective: To revise short vowel sounds in words and identify blends in text

Play snap, saying short vowel sounds as card is retrieved
revise blends
Play Make 5 card game, to practice blending and segmenting
Using highlighter read and highlight blends in prose.

Session 8 Objective: To practice blending nonsense words

Pile of blends, sl.scr, bl.scr, pl.cl, etc
Pile of short vowels a, e, i, o, u
Pile of consonants g, s, t, c, p, b, etc

Add pile of rime units- ap, ay, as own, ain, ime, oil, ate, ew, irt

Session 9 Objective: To practice deletion of initial, medial and final sound.

Pipe, sound removed p = pie
boat, sound removed b = oat
race, sound removed r = ace
moon sound removed n = moon
nail, sound removed m = ail
deer, sound removed d = ear
rope, sound removed p = roe
rice, sound removed r = ice
gate sound removed g = ate
pine, sound removed n = pie
hair, sound removed h = air

Session 10 Objective: To practice manipulation of sounds to make a new word.
Word castle game- start with one word, players change one letter to make a new word