

Action Research Project

Abstract

Phonological awareness influences reading ability. One natural sound unit is the rime. Few early intervention programs target the explicit teaching of rime units.

The present study investigates the explicit teaching of functional letter clusters such as onset and rime to low achieving readers, to improve prose reading ability.

Two students in Year Two were targeted as a result of their low achievements in Literacy. In the classroom setting the students were given explicit teaching of ten specific rime units. Ten sessions were undertaken over a two-week period. Word reading accuracy was tested before and at the conclusion of the intervention. Knowledge of isolated rime units was recorded before, during and at the conclusion of the intervention.

The hypothesis tested was:

Explicit teaching of functional letter clusters such as onset and rimes to low achieving readers improves prose reading ability.

The findings indicated that the explicit teaching of the targeted rime units improved the student's knowledge of rime and their prose reading ability.

Introduction

Two students nearing the completion of Year Two have experienced reading difficulties throughout Prep, Year One and Year Two. Their prose reading is slow and hesitant therefore lacking in phrasing and fluency.

Poor word and letter cluster knowledge combined with inefficient word reading strategies may have hindered these students progress. Research provides us with sound proof that children who do not make progress after a year of instruction continue to fall further behind their age peers. (Iversen, 1997). The students involved in this intervention fall behind their peers in reading fluently, word decoding and displaying an understanding of functional letter cluster knowledge such as onset (the initial consonant

or consonant cluster of a word) and rime (the vowel and following letter string in rhyme –often referred to as word families or phonograms).

According to Westwood (2001) children with learning difficulties tend to have problems in three important interrelated areas. These areas are phonemic awareness, phonic decoding skills and word recognition. Current relative literature discussing the teaching of reading, specifically determine that the concept of onset and rime is one important component of phonological awareness. Studies indicate that it is more natural and less difficult for young children, older children, and adults to segment spoken syllables into onsets and rimes than to segment them into individual phonemes or other structural elements. (Cunningham, 1999)

Rapid orthographic naming provides readers with the skills to make sense of letter clusters and patterns. At a Word level of understanding readers may know letter-sound links but may display difficulty segmenting words into sounds or into onset-rime and therefore are unable to blend a sequence of sounds into a word.

Testing of rime knowledge for this study involved recording the sound of each rime as well as an associated word. Pseudowords were recorded as correct as the sound association was the main concern. However, one component of the ten sessions with the students included discriminating between real words and pseudowords. Research provides information that if one wants to assess whether students know the elements of onset-rime--decodable words and can apply that knowledge to decode such words, one should use real rather than nonword test items. (Cunningham, 1999)

Proficient readers utilize many strategies. Early readers need to be provided with the skills to analyze words by their letter-sound and letter-cluster sound unit. Therefore the reader's word recognition is based on knowledge of the relationships among letters and letter clusters and their corresponding sounds. (O'Shaughnessy, 2000). This strategy-based learning provides the reader with skills required to decode unfamiliar words.

The use of analogy to assist reading a new word is perhaps not stressed enough in the early teaching of reading strategies. Therefore some readers experiencing difficulties have fewer strategies to call upon when facing unknown words in text. In using analogy the reader thinks about and manipulates what they already know about words. Competent word solvers have a large repertoire of strategies to draw from and use flexibly. (Pinnell & Fountas, 1998)

Strategies to utilize vary from learner to learner. It may be that some learners need to analyze words at a phoneme level before they can successfully make analogies involving rime. However, as Juel &

Minden-Cupp discuss, as the knowledge of consonants and vowels is internalised the understanding of the rime unit may be exactly what helps readers chunk and decode unknown words.

Strategies to assist in the learning of and using analogy to decode unknown words should include the emersion of rhyme in the early years. As stated by Wood (2000), Bryant found evidence that rhyme awareness appears to make a direct contribution to reading in a way, which is independent of phonemic awareness. Rhyme awareness may contribute to literacy in two ways: firstly, by contributing to the children's general phonological awareness and, secondly, by facilitating children's spontaneous use of orthographic analogies during reading development. (Wood, 2000)

Phonemic awareness is vital for reading development to occur. A multitude of abilities are required for readers to become proficient. Students who emulate proficient readers are able to:

- recognise rhyme
- identify the initial sound of a word
- recognise alliteration
- count or clap syllables in a word
- blend a sequence of phonemes to make a word
- break single syllables into onset and rime units
- break words down into a sequence of phonemes
- manipulate sounds to form different words

Explicit teaching of these strategies in the early stages of reading development provides students with a multitude of cues to draw on when decoding unknown words.

Method

Design:

The study uses an OXO design, in which the gain in recognition of rime units in words and pseudowords, following explicit teaching was monitored for two Year Two students displaying reading difficulties. Initial testing provided the classroom teacher with information pertaining to all Year Two student's knowledge of rime units. Both students, already designated by the teacher as experiencing reading difficulties, scored well below the class average in their reading accuracy, word recognition and knowledge of rime units. The explicit teaching was instigated with interim and post testing results recorded.

Participants:

The participants were two Year Two students successfully discontinued from the Reading Recovery intervention program in their second year of schooling. Student A is male and Student B female. Both students portrayed below class average results in all Literacy testing undertaken in their Prep, Year One and Year Two classes. These results are shown in Table 1.

Table 1.

Student A	Prep (2000) PreTesting	School Average (2000)	Prep (2000) PostTesting	School Average (2000)	Year One (2001) PreTesting	School Average (2001)	Year One (2001) PostTesting	School Average (2001)	Year Two (2002) PreTesting	School Average (2002)	Year Two (2002) PostTesting	School Average (2002)
Letter Identification	25	32.9	53	52.6	52	51.5	53	53.2				
Text Level	0	0.2	7	13.6	8	15.3	18	26.0	18	27.2	28	27.8
Burt Word	0	1.9	20	25.2	17	27.0	26	43.9	37	48.1	41	62.1
Student B	Prep (2000) PreTesting	School Average (2000)	Prep (2000) PostTesting	School Average (2000)	Year One (2001) PreTesting	School Average (2001)	Year One (2001) PostTesting	School Average (2001)	Year Two (2002) PreTesting	School Average (2002)	Year Two (2002) PostTesting	School Average (2002)
Letter Identification	13	32.9	54	52.6	53	51.5	54	53.2				
Text Level	0	0.2	7	13.6	5	15.3	21	26.0	21	27.2	28	27.8
Burt Word	0	1.9	23	25.2	20	27.0	30	43.9	41	48.1	49	62.1

Both students have developed skills and shown significant improvement. However, they fall behind their peers when working at a Word level. Specific difficulties for these students could include:

- Recognising and rapidly naming letter clusters in words
- Learning and storing letter clusters

- Segmenting words into onset and rime
- Transferring letter cluster information
- Processing words beyond the single letter level

These students require skills to be able to approach texts at various levels. They are encountering difficulty at the Word level and for them to become more efficient readers at the Sentence, Conceptual, Topic and Dispositional levels intervention was deemed necessary. The explicit teaching of ten specific rime units was instigated.

Materials:

- Neale Analysis of Reading Ability (Neale, 1998), to assess reading rate, accuracy and comprehension whilst reading aloud.
- Dependable Rimes checklist – students provide both rime sound and word or pseudowords.
- Reading accuracy ascertained using both Clay Observation Survey and PM Benchmark Kit One.
- Ten rime units displayed on flashcards (as determined through pre testing, printed in three various fonts: Times New Roman, Comic Sans MS and Victorian Modern Cursive)
- A selection of words for each rime unit displayed on flashcards (Appendix 1)
- Decodable texts (Appendix 2&3)
- Access to computer – Word Document opened ready for students to add to.

Procedure:

The two students worked with the classroom teacher for 35 minutes while the other students remained engaged in small group literacy activities. Due to school commitments two sessions were taken daily over a two-week period.

Flashcards displaying the new rime, printed in three different fonts (Appendix 4) were presented to the students for each session.

The students and teacher discussed the sound and noted any differences in the fonts.

The students then proceeded to type on a Word Document any words or pseudowords for the rime unit. This was then printed out and the students proceeded to work with teacher discussing each word.

Students marked pseudowords differently to known words using a highlighter.

From a selection of words (including all words from current rime unit), students chose one at a time. These were placed on chart marked **Sound of the Day** and **Different Sound Ending**.

Students were then provided with a Decodable Text (Appendix 2&3) and cued that retelling was required. Same text was used for several sessions.

Students highlighted words with the rime unit from that session or a known word from a previous session.

Each session concluded with students responding to “Today I found out that…”

Session outline see Appendix 4.

Plastic pockets were provided for each student to store copies of both words printed from computer and the decodable text passage.

Data collection included:

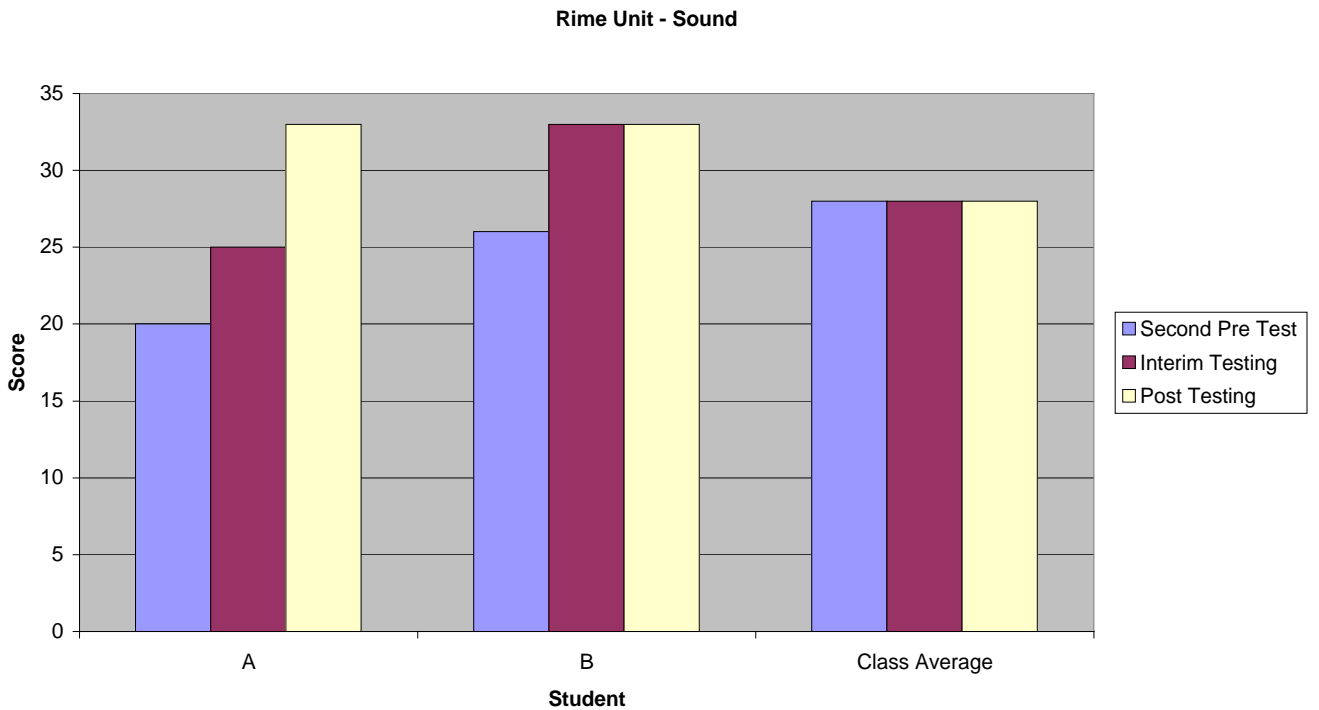
- Initial testing of all Year Two students to determine their knowledge of rime sounds by providing a word or pseudowords
- Initial testing of all Year Two students using the Burt Word Test
- Initial testing of all Year Two students to ascertain their Instruction Reading Level
- Pre intervention testing of designated students of their rime unit knowledge
- Pre intervention testing of designated students using Neale Analysis to record Reading Rate, Accuracy and Comprehension
- Interim testing of designated students of their rime unit knowledge
- Post testing of designated students of their rime unit knowledge
- Post testing of designated students to ascertain their Instruction Reading Level
- Post intervention testing of designated students using Neale Analysis to record Reading Rate, Accuracy and Comprehension

Results

In pre testing both students recorded well below the class average in their knowledge of rime unit sounds. The first pre test indicated to the classroom teacher that Student A knew only 18 sounds and Student B knew 21 sounds. As displayed in the Graph below in a second pre intervention test Student A knew 20 sounds and Student B knew 26. This shows an increase of two sounds for Student A and an increase of five sounds for Student B. However, both scores are still below the class average of 28.

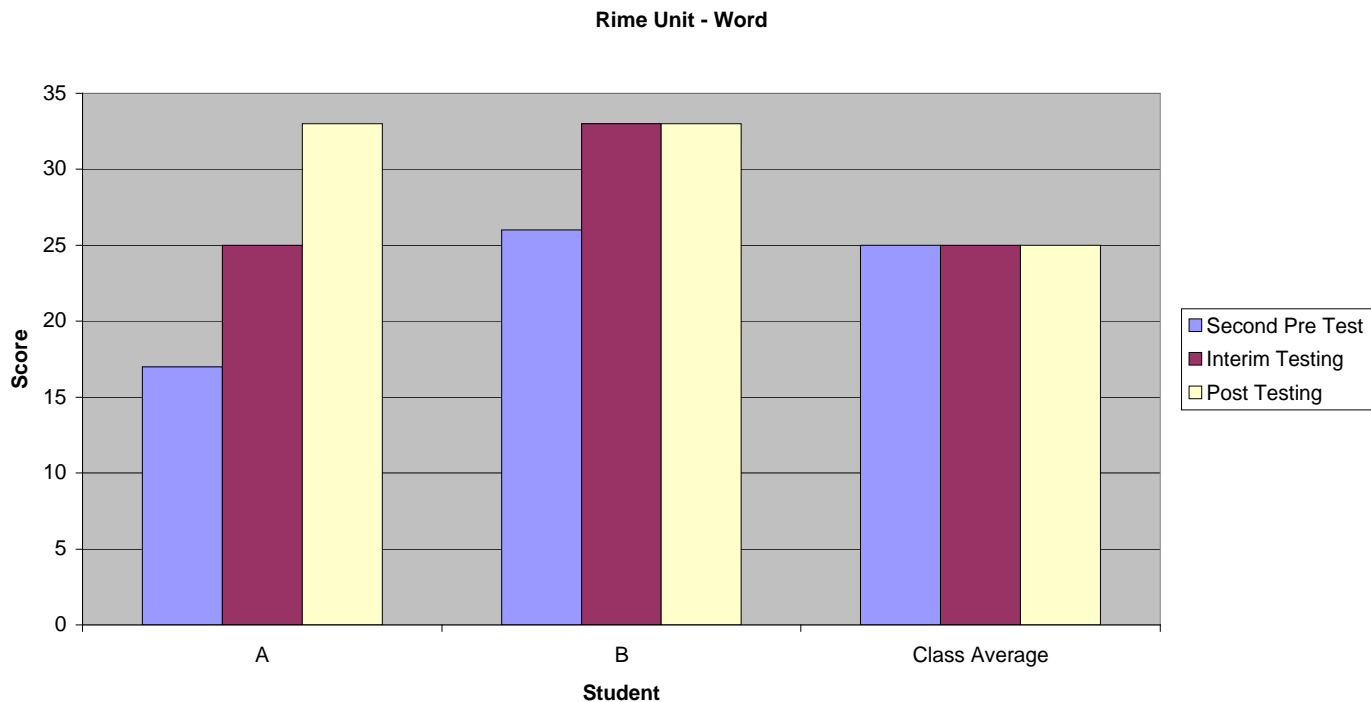
The interim testing indicated that Student A's sound knowledge had improved by five sounds and Student B had actually exceeded the class average by five sounds.

In post testing both Students exceeded the class average by five sounds.



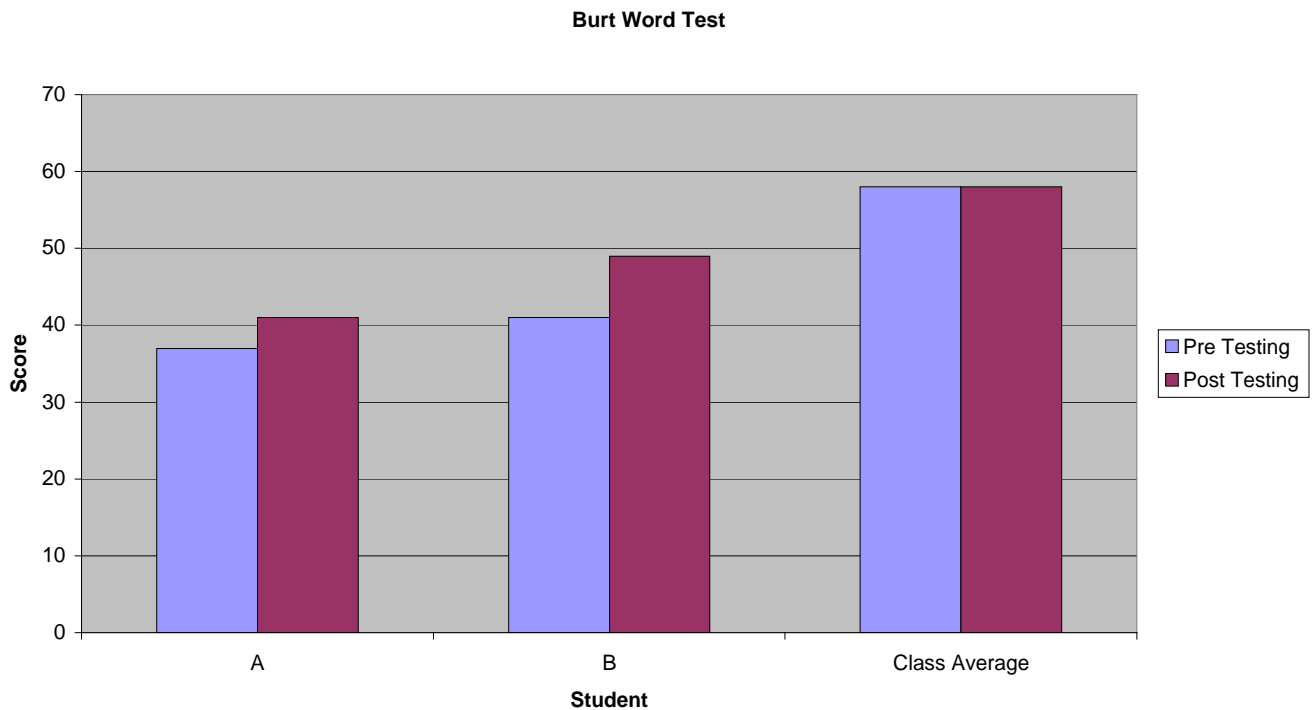
In pre testing both students recorded well below the class average in providing a word/pseudowords using a rime unit. The first pre test indicated to the classroom teacher that Student A could provide only 11 words and Student B could only provide 18 words. As displayed in the Graph below in a second pre intervention test Student A provided 17 words and Student B provided 26 words. This shows an increase of six words for Student A and an increase of eight words for Student B. However, Student A's score is still below the class average of 25. The interim testing indicated that Student A's word knowledge had improved by eight words and Student B had actually exceeded the class average by eight words.

In post testing both Students exceeded the class average by eight words.



The Burt Word Test results, shown below, indicate that both students scored well below the class average in the pre test. Student A by 21 words and Student B by 17 words.

In the post testing, however Student A improved by 4 words and Student B by 8 words. Both students are still below the class average indicating to the classroom teacher that further explicit teaching could be considered.



Both students' Instructional reading levels increased as indicated in Table 2. Student A showed a ten level gain and Student B a seven level gain.

Table 2. Text Level

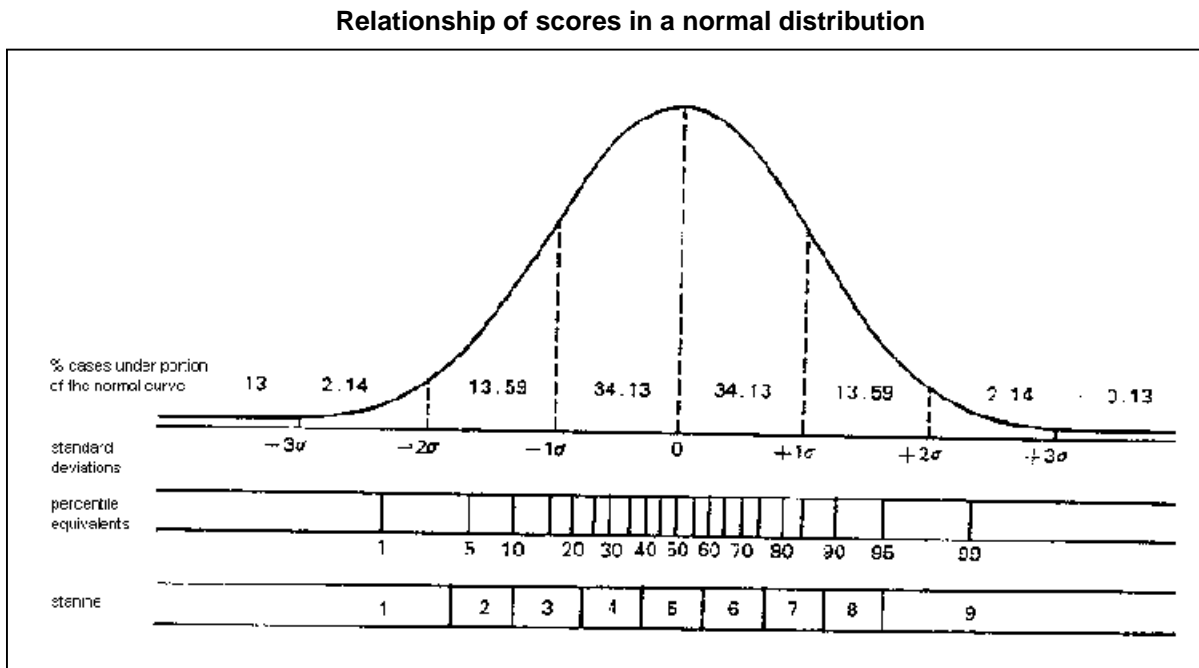
	Pre Test	Post Test	Change
Student A	18	28	10 Levels
Student B	21	28	7 Levels

Table 3 depicts the data collected from the Neale analysis, indicating that both students improved in their results. The Percentile rank in the reading rate for Student A did not improve, however this student remains within the Stanine value of 5 as seen in Figure 1, shown below. In analysing the following data the improvement overall seems to suggest that some explicit learning occurred. Both students improved in their reading accuracy as well as comprehension.

Table 3.

Student A	Pre Testing Rate	Post Testing Rate	Pre Testing Accuracy	Post Testing Accuracy	Pre Testing Comprehension	Post Testing Comprehension
Age at testing: 8years 10months						
Reading Age	8.4	8.8	6.9	7.3	7.7	8.8
Age Range	6.8 to 10.0	7.1 to 10.3	6.2 to 7.3	6.8 to 7.10	6.9 to 8.6	7.10 to 9.7
Percentile Rank	55	51	15	31	39	67
Stanine	5	5	3	4	4	6
Student B	Pre Testing Rate	Post Testing Rate	Pre Testing Accuracy	Post Testing Accuracy	Pre Testing Comprehension	Post Testing Comprehension
Age at testing: 8years 4months						
Reading Age	Less than 6 years	7.0	7.2	7.4	7.5	8.0
Age Range	Less than 7yr 7mth	5.6 to 8.9	6.7 to 7.9	6.9 to 7.11	6.6 to 8.3	7.2 to 8.10
Percentile Rank	14	30	23	33	33	50
Stanine	3	4	3	4	4	5

Figure 1:



Discussion

This study examined how the explicit teaching of functional letter cluster knowledge such as onset and rime would impact on the prose reading ability of low achieving readers. Both students seemed a little apprehensive in the initial stages of the intervention. Student B wanted to know why they were chosen from the other year Two students.

As the sessions progressed the confidence in completing each set tasks was obvious. Both students displayed enthusiasm when presented with the Decodable text, reading and encouraging each other. Student B noticed, and stated that she was reading more fluently. Both students initiated a game of Snap using a variety of the flashcards designating a specific rime unit. Student B was intent on supplying words for the rime units, which contained more than one initial sound.

At the conclusion of session seven, Student B indicated that she would like to write a narrative using some of the words.

The students made significant gains in their prose reading ability. Their Instruction Text levels increased, although statistically Year Two students make significant gains in this area at the conclusion of Year Two. Benefit for these students will hopefully continue in Year Three.

School commitments were a concern at the time of this intervention. Literacy testing, whole school swimming program and a Science incursion deemed it necessary to conduct two sessions each day of the intervention.

Conducting the intervention within the classroom also provided the inevitable interruptions.

The results show that the two students involved in this intervention did indeed show improvement in the areas tested. Both are still behind their peers in respect to fluency and their own confidence in undertaking Literacy tasks. Perhaps with ongoing intervention in Year Three both these students will minimise the gap between their Literacy testing results and their peers.

The implications as a result of this intervention could include more explicit teaching of the rime units within the literacy block. There are various games and activities that revolve around learning and applying the knowledge of functional letter clusters such as onset and rimes.

This particular study could have provided the students with further Decodable text with which to apply their new found knowledge. The time constraint was a concern and conducting this intervention during such a frantic time of the school calendar was challenging.

Students arrive in classrooms with varying degrees of knowledge. Many have already begun to build upon information obtained from their individual environments. As schooling progresses some students

require intervention that will allow them to become independent learners. Students experiencing difficulties often exhibit low self-esteem and avoidance tactics.

To be able to read students require knowledge of the linguistic system. As Pinnell and Fountas state most educators agree that:

- Phonological awareness is an important factor in early reading and writing success.
- Children need some powerful, explicit, meaningful and interesting instruction in phonics and other principles of how words are constructed.
- Children need numerous opportunities to use phonological information while reading and writing continuous text.
- Fluent, simultaneous processing of visual, phonological, syntactic, and semantic cues while reading for meaning is the foundation of all literacy.

There are many and varied ideas and concepts on how best to approach the instruction of Literacy. This study provides some degree of evidence that the explicit teaching of functional letter clusters such as onset and rime to low achieving readers improves prose reading ability.

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Appendix 1

Rime units and words used on flashcards.

Rime unit	3 letter words	4 letter words	5 letter words
2 letter – 2 sound rime units			
aw	jaw, law, paw, raw, saw,	claw, draw,	straw
3 letter- 2 sound rime units			
ell	bell, dell, fell, Nell, sell, tell, well	shell, spell	
ick	Dick, lick, Mick, Nick, pick, Rick, sick, tick, wick	brick, click, chick, flick, prick, slick, thick, trick, stick, 'spick'	
3 letter- 3 sound rime units			
ank	bank, dank, Hank, rank, sank, tank	blank, crank, drank, Frank, plank, prank, spank, thank	shrank
est	best, jest, lest, nest, pest, rest, test, vest, west, zest	chest	
(VV)C rimes			
eat	beat, feat, heat, meat, neat, peat, seat,	bleat, cheat, pleat, treat, wheat	
VCe rimes			
ake	bake, cake, fake, Jake, lake, make, rake, sake, take, wake	Blake, flake, stake,	
ale	Dale, gale, male, pale, sale, tale,	shale, stale, whale	
ide	hide, ride, tide, wide	glide, pride, slide,	stride
oke	Coke, joke, poke, woke	bloke, broke, choke, stoke, spoke	stroke

Appendix 2

Decodable Texts

Ross and Jack go camping

Today was the first day of the holidays.

Ross and his friend Jack were going camping.

Ross packed his sleeping bag, his tent, a mug and his clock into his backpack.

Jack's mum drove Ross and Jack to the end of the track.

The boys went down the track until they saw a nice mossy spot to put up the tent.

It was dark so Ross made a fire. They had hot milk in their big mugs.

Ross and Jack got into their sleeping bags.

They sung some songs and looked at the stars.

Ross fell to sleep. He slept like a log.

Jack didn't sleep too well. He tossed and turned.

He was dreaming that he fell down a well in a sack and hurt his back.

In the morning the boys packed up and walked back down the track to meet Jack's mum. It had been a good trip.

ELL, OSS, ACK

152 words

Readability for 100 words: 10 sentences, 111 syllables = Approx. grade level 2

The joke is on you!

Mick and his friend Rick liked to play tricks on their friends.

One day they were having lunch with their friend Jack.

"We'd like to do a trick," said Rick.

Mick picked up a moth on the end of a long stick and went to flick it at Jack. But it got stuck on the stick.

"You missed. Let's try and eat our lunch with sticks," said Jack

So Mick picked up two sticks. He tried to use them like tongs.

He started to eat his food, then he stopped.

What's wrong?" said Rick

"There's a moth on this stick." I feel sick", said Mick.

"Oh no! He must have picked up the wrong stick," said Rick.

"Ha ha! The joke is on you", said Jack.

"That will teach you not to play tricks on friends", said Jack.

And he laughed and laughed as he ate the rest of his lunch.

ICK, ONG, ITH, OTH

151 words

Readability for 100 words: 11 sentences, 114 syllables = Approx. grade level 2

A barbecue with friends

Nick and his friend Chuck had some friends over for lunch.

The friends were from Hong Kong and they wanted to have a barbecue.

Chuck went to pick up some meat from the shop.

Nick got the plates, some tongs and a cloth for the table.

The friends from Hong Kong got lots of sticks and wood for the fire.

Nick cleaned the barbecue with a wet cloth.

Chuck came back with lots of meat. They cooked all the food and sat down for lunch.

They ate and ate and ate. The food was so yummy they all wanted to lick their plates.

All of a sudden Nick went red in the face.

"What's wrong with you?" asked Chuck.

"I have eaten too much and I feel sick" said Nick.

So after lunch they all went for a very long walk. Then they sat by the fire and sang songs.

They were all still full from their very big lunch.

ICK, ONG, ITH, OTH

160 words

Readability for 100 words: 11 sentences, 121 syllables = Approx. grade level 2

Appendix 3

Decodable Texts (continued)

Stop the heatwave!

Tess was a **girl** who lived on a **wheat** farm.
There was a heatwave and Tess didn't like the **heat**.
Each day Tess had to get the **train** into town to go to school.
She sat on her **seat** in the hot **train**.
At school, Tess was top of her class.
All the children called her the **brain**.
At the end of every week the class had a test.
Some tried to **cheat** in the test, just to **beat** Tess, but she still won.
Every day for lunch she ate her **meat** roll and for a **treat** she ate a jam bun.
She would sit in her **seat**, looking very **neat** and she didn't say a word.
One day Tess stood up in class and began to **shout**.
"I can't stand this **heat**! I wish it would **rain**!"
Just then it did start to **rain**.
The whole class went **out** into the **main** street and stood in the **rain**.
From now on Tess was called the girl who shouts at the rain.
EAT, OUT, AIN, IRL
172 words
Readability for 100 words: 9 sentences, 112 syllables = Approx. grade level 2

Kim's best friend

Kim was going to **spend** the night at Deb's house. Deb was Kim's **best** friend.
She got out her pink night-dress, her tooth brush and her red **vest**. She put them in her back-pack. Kim said good night to her mum and dad and walked to her friend's house.
When she got to Deb's house they played in her bedroom.
Deb's little sister kept going in the bedroom. She wanted to show Kim a **nest** in the tree, but it was too dark outside.
"Mum will send you to bed if you keep being a **pest**", said Deb.
When it was time for Deb and Kim to go to bed, Kim started to sob.
She had left her doll at home.
"I will **lend** you my doll for the night", said Deb.
Deb gave Kim her doll and she **held** it to her **chest**.
She **held** Jan's doll and fell to sleep. Kim **slept** the **rest** of the night.
In the morning she jumped out of bed and they both **crept** outside to see the nest.
The baby birds were still asleep.
ELD, EST, END, EPT
182 words
Readability for 100 words: 11 sentences, 120 syllables = Approx. grade level 2

Appendix 4

Session Outline – Onset and Rimes

Activity	Task Description	Time
Rhyming Activities (including pseudowords)	<p>Introduce rime for current session using flash cards displaying rime in a variety of fonts (Times New Roman, Comic Sans MS and Victorian Modern Cursive).</p> <p>Using computer, students record on individual Word document any words with same ending.</p> <p>Both students interact with each other to provide support.</p> <p>Word document printed at time of session.</p> <p>If an error is made, tell student with an appropriate explanation.</p>	10 mins
Rhyming Activities (using printed copy)	<p>Using document printed distinguish between pseudowords, known words and unknown words.</p> <p>Appropriate explanation given for the meaning of unknown words.</p>	10 mins
Reading and Discrimination	<p>Students provided with a chart marked: Sound of the day:</p> <p>Different sound ending:</p> <p>Students also provided with a variety of flash cards displaying three, four and five letter words formed from ten specified rime units. Students to place flashcards in appropriate section.</p> <p>If an error is made, tell student with an appropriate explanation.</p>	5 mins
Text Reading	<p>Students read passage selected from Decodable Texts and highlight the designated rime unit for current session. If Text is being used again students highlight any words with known word endings-.</p> <p>Students cued that they will have to retell the story.</p> <p>New rime unit for next session introduced</p>	5 mins
Reflective	<p>Teacher to record students response to: Today I found out that.....</p>	5 mins

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