

## **Hypothesis**

*The explicit teaching of onset and rime units to a year 2 student improves the student's ability to recognise and use letter cluster patterns in prose.*

## **Action Research Project**

### **Abstract**

There has been a large body of research that indicates that phonological awareness is closely linked to success in learning to read. This research indicates that explicit instruction in phonological skills can assist students become more competent word solvers and improve their reading accuracy. The concept of onset and rime is one important component of phonological awareness.

The present study involved working with a year two student who had participated in Reading Recovery the previous year but was making limited progress with his reading in comparison to his peers. The student demonstrated difficulty with identifying and using letter clusters to decode words.

The student participated in ten individual teaching sessions over a period of three weeks, which focussed on the explicit instruction of eight specific rime units.

At the beginning and the conclusion of the project, word reading accuracy was tested along with rime unit knowledge. During the intervention, on going records were kept of the reading accuracy of text passages that contained targeted rime units.

The hypothesis investigated was:

*The explicit teaching of onset and rime units to a year 2 student improves the student's ability to recognise and use letter cluster patterns in prose.*

The findings of the study indicated that the explicit teaching of the rime units led to an improvement in the student's ability to use letter clusters to decode unknown words. The gains made were more significant with the specific rime units that had been taught, rather than with his ability to decode unknown words using other letter clusters.

Implications of this study would indicate that explicit teaching and continued exposure and practise with further rime units and letter clusters would further impact on the student's decoding and word accuracy skills.

## **Introduction**

The process of reading is a complex task that involves working on the information in a text at a number of levels. The reader operates on text at the word level, the sentence level, conceptual level, topic level and the dispositional level. (Munro, 2002)

Students with reading difficulties can have difficulties at one or more of these levels and this impacts on their ability to engage successfully in a text whereby the reading is meaningful, accurate and fluent.

Some students have particular difficulty processing text at the word level, they are unable to read words accurately and automatically. Reading underachievers may have difficulty with storing how words are said, difficulty building a word meaning bank and establishing a network of meanings as well as difficulty with learning the sound units or patterns in words (Munro, 2002).

Establishing knowledge about the sound properties of language is defined as phonological awareness. Reynolds (1998) determined that phonological awareness was evidenced in the ability to count, isolate, remove, recombine and manipulate phonological units. These units make up a hierarchy that includes sentences, words, syllables, onset rimes and phonemes.

Many studies have investigated the impact of phonological knowledge on reading ability. Research indicates that it is the best predictor of early reading acquisition (Stanovich, 1993-94), better than I.Q., vocabulary knowledge and listening comprehension. Torgesen, Wagner and Rashotte et al. (1997) state that the inability of students to process the phonological features of language is the most common cause of reading difficulties. In another study, Griffith et al (1992) found that children with high phonemic awareness outperformed those with low phonemic awareness on all literacy measures.

Phonological awareness is needed for the student to begin making sense of the principle that letters map into sounds in written words, or the alphabetic principle (Stahl & McKenna, 2000).

Stahl and McKenna conclude that a key insight in developing early reading abilities is that one can break up an onset and a rime. The concept of onset and rime that is "psychologically accessible" (Juel & Midden-Cupp 1999) provides an approach to assist poor readers to recognise and use frequently occurring letter clusters to *chunk* or decode. Stahl and McKenna conclude that phonological awareness is necessary for word recognition and word recognition is necessary for word decoding.

The student in this study has learnt letter sound links (phonemes) but has difficulty segmenting words into sound units or onset and rime, and blending a sequence of sounds into a word. His knowledge of common letter clusters is restricted and he has difficulty converting a letter string into a sound pattern.

This study aims to investigate the impact of explicitly teaching onset and rime units on a student's ability to identify and use letter clusters in decoding and blending words in isolation and within prose.

## **Hypothesis**

*The explicit teaching of onset and rime units to a year 2 student improves the student's ability to recognise and use letter cluster patterns in prose.*

## **Method**

### Design

The study uses a case study XOX design (test, teach, test) in which the gain in the recognition and use of onset and rime, following explicit teaching of rime units, is monitored with a year 2 student experiencing reading difficulties.

### Participant.

The participant in this study was a year 2 student who had completed the Reading Recovery program in Year 1 but continued to experience reading difficulties and was making limited progress in comparison to his peers. A recently conducted educational psychological assessment indicated that the student was operating in the high average range of general intelligence, however in the classroom he finds the demands of the literacy tasks presented very challenging.

He is a reluctant reader and has difficulty with high frequency word recognition and using letter clusters or "chunks" to decode words. He becomes very frustrated with himself when he is unable to unlock the text, as he is aware that meaning is not being maintained.

Initial Assessment results are indicated in Table 1.

### Student

Age	7 years 8 mths
Reading Instructional Level	17
Burt Word Test	26
Orthographic Word test. (J. Munro)	31
Rime Test (Teacher devised)	19/ 30 rimes known 56/ 85 words known

Table 1

## **Materials**

Materials used included the following:

### **Assessment Tools**

- Burt Word Test.
- PM Benchmark Texts.
- Orthographic Word Test (J.Munro)
- Rime Test (Teacher devised) (Appendix 3)

### **Teaching Session Requirements.**

- Prepared passages of prose containing the rimes to be targeted. (Appendix 2)
- Additional copy of the passages for the teacher for recording purposes.
- Whiteboard and markers.
- Magnetic Letters.
- Flashcards with words containing rimes. (Appendix 4)
- Prepared games
  - e.g. Snakes and ladder format with words inserted which contain focus rimes
    - Dice game: one die having onsets on all sides and the other die having the rime.
    - Card games: concentration / snap.
- Student Exercise book.
- Computer access with Powerpoint program available.
- Computer disk with prepared Powerpoint slides, which flash the words that contain the focus rime.

## **Procedure**

The student in the study was withdrawn, on a one to one basis, for 10 sessions that included the pre and post testing sessions.

The sessions were held over a three week period with an average of three / four sessions per week depending upon other school /classroom demands. Each session was 35 –40 minutes duration. The rime units that were identified by the pre test as ones the student did not know, were the units chosen to be explicitly taught during the teaching sessions.

### *Session 1* Pre testing

### *Session 2* -

- The student is asked to read a short passage of prose as the teacher takes a running record.
- Following the reading, the student's attention is drawn to one of the words in the passage that contain the rime unit that is to be focussed on in the teaching session.
- The rime unit is highlighted and demonstrated by the teacher on the whiteboard.
- The student is asked to make the word with the magnetic letters.
- Then using other onsets, further words are made with the magnetic letters.
- These words are written by the student on the whiteboard.
- The words are written on flashcards which are read and games are played. eg snap, concentration or another game is used that also focuses on the targeted rime.
- The words with the rime unit are recorded in the student's workbook by the student.
- The student is then presented with a slide show on powerpoint that flashes words with onsets and the rime. The student controls the speed of presentation by pressing the arrow key after each word is said.
- The student then is presented with a different passage of prose from the one at the beginning of the session, and asked to underline all the words he can find that contain the rime.
- The student then reads the passage of prose and the teacher takes another running record.
- The student takes his workbook home to share his new knowledge.

### *Session 3 – 9*

- These sessions have the same format as session 2, except at the beginning of these sessions the rime unit from the session before is revisited using the powerpoint slideshow.

### *Session 10*

- Post testing.

## Results

The table below shows the results of the four assessment instruments used with the student in the pre test session.

Assessment Tools	Score
1. Reading Instructional level	17
2. Burt Word Test (n 110)	26
3. Orthographic Word Test. (Munro) (n 84)	31
4. Rime Units (stand alone) ( 30 rimes )	19 rimes
5. Words containing the above Rime units (85 words)	56 words

Table 2 Pre test results.

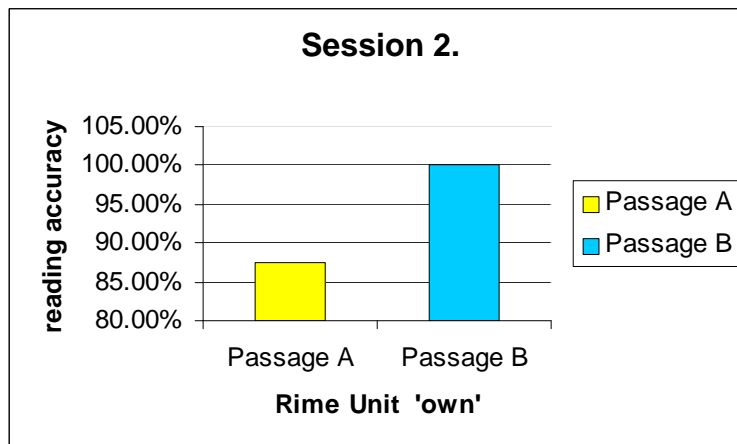
It was interesting to note that the student was unable to correctly identify the rime unit **'irl'** as a stand alone letter cluster, however identified the word **'girl'** correctly when reading the rime word list. It could be concluded that the word **girl** is part of his sight word vocabulary, however he was unable to transfer his knowledge of this word to identify the letter cluster **irl** or to use analogy to correctly read the other words in the list, **swirl / whirl**, which have the same rime unit.

At the beginning and end of each teaching session a running record was taken of a short piece of prose that contained words with a particular rime unit.

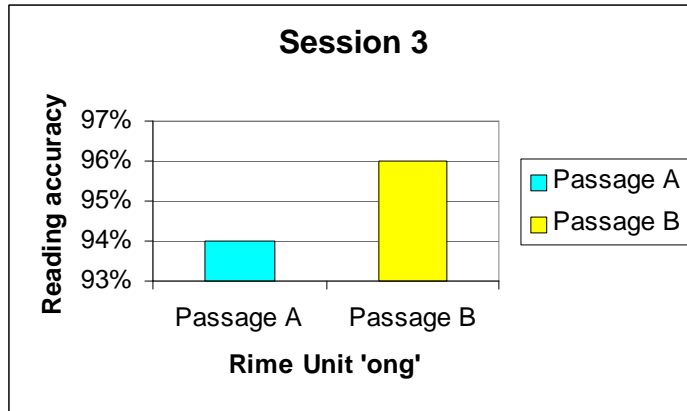
The first passage (A) was read before explicit instruction on the rime unit. The second passage (B) was read at the end of the teaching session.

The following graphs depict the reading accuracy rate of each passage of prose over the eight teaching sessions.

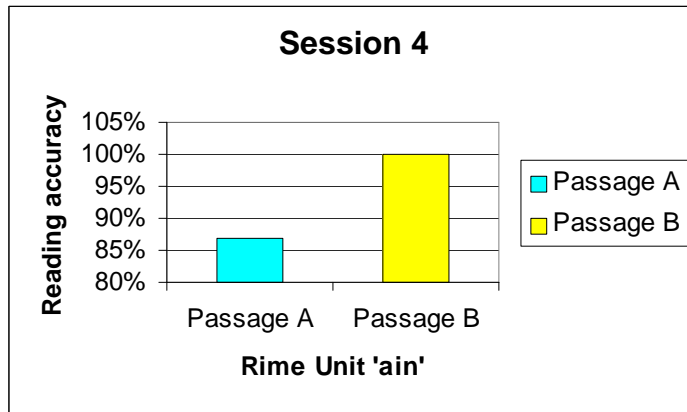
Graph 1.



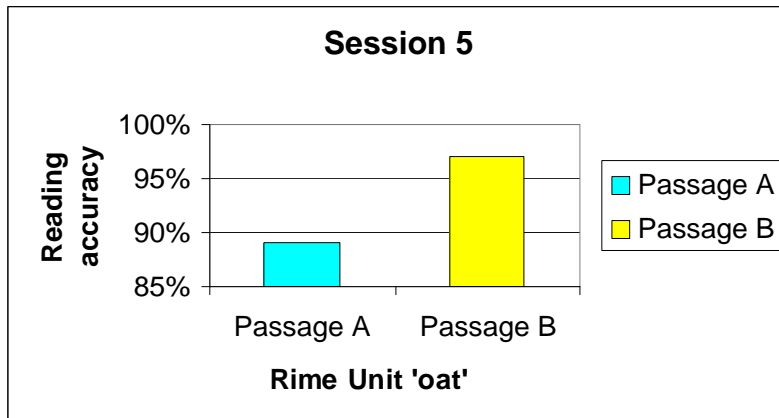
Graph 2



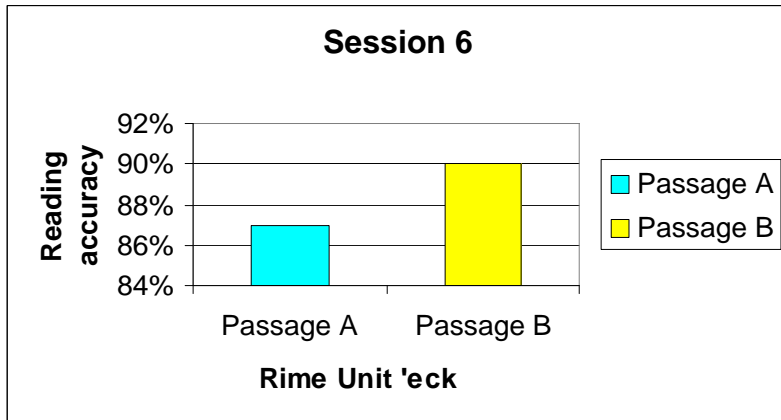
Graph 3



Graph 4



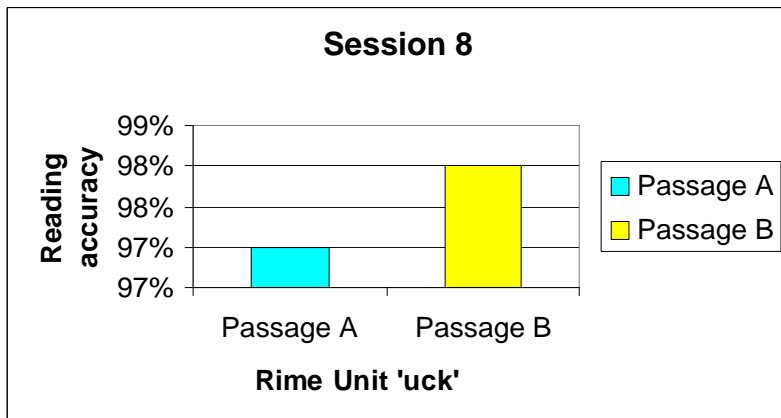
Graph 5



Graph 6

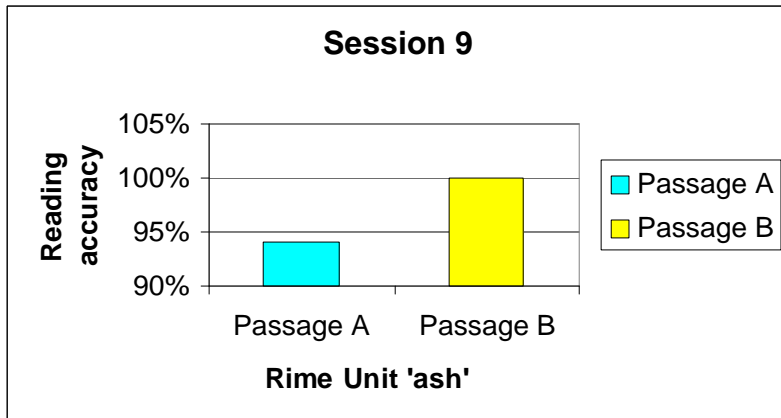


Graph 7





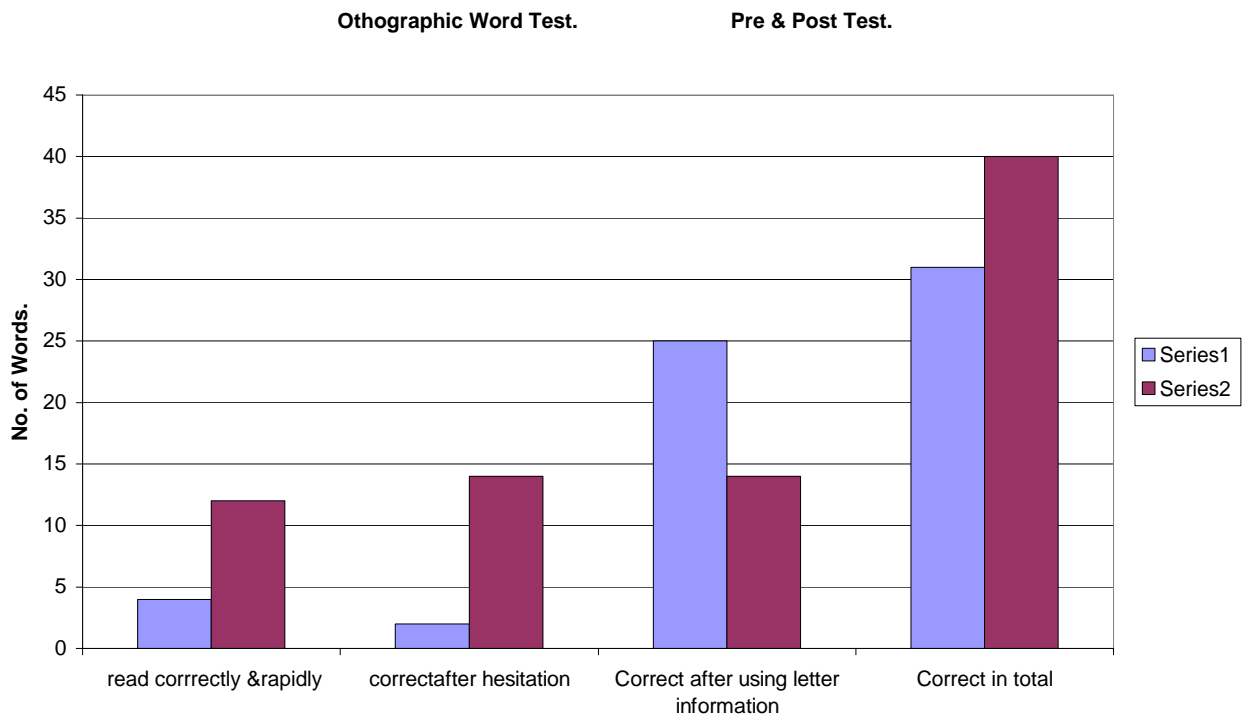
Graph 8



In each of the sessions the student's accuracy rate for the second prose passage improved following direct instruction, as he identified and used the rime unit to assist the reading of the text.

The accuracy rate for all Passage B texts fell into the *easy* category while 5 of the A passages were considered *hard*, 2 were scored as *Instructional* and 1 was in the *easy* range.

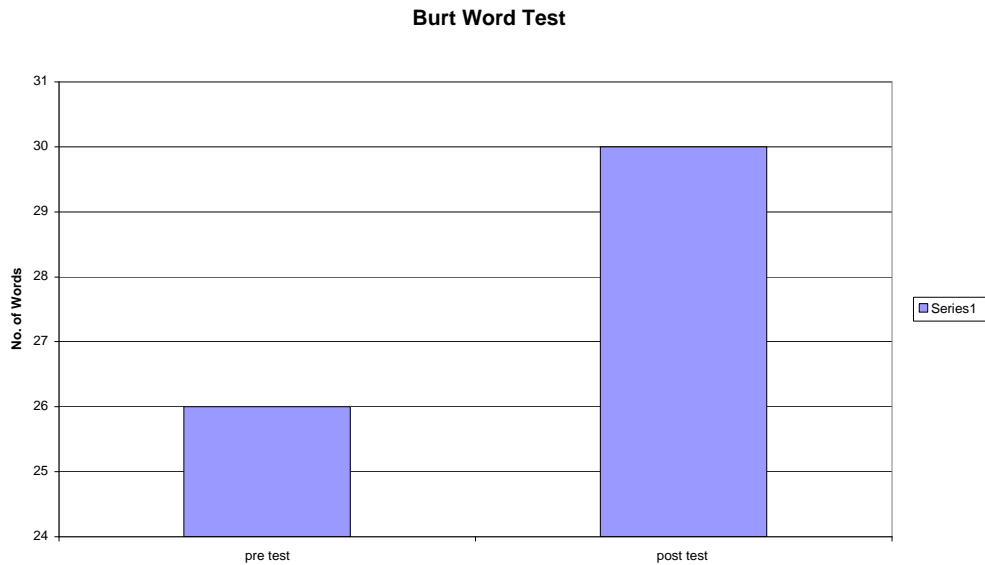
### Orthographic test results



The results of the orthographic test show that the student was able to correctly identify more words overall in the orthographic word test following the project teaching sessions. The number of words the student knew rapidly or with a hesitation had increased. The student was more successful at

identifying and using letter clusters with some automaticity than in the pre test where many words were sounded out letter by letter.

### Burt Word Test



The results of the Burt Word test showed a small gain in word knowledge (4 words) however in looking at the errors made, the student failed to identify some simple rime units, relying instead on distinctive visual features to identify the word. e.g. *sad* read as “said”, and *pot* read as “top”.

### Instructional Reading level

Pre –test: Level 17

Post Test: Level 19

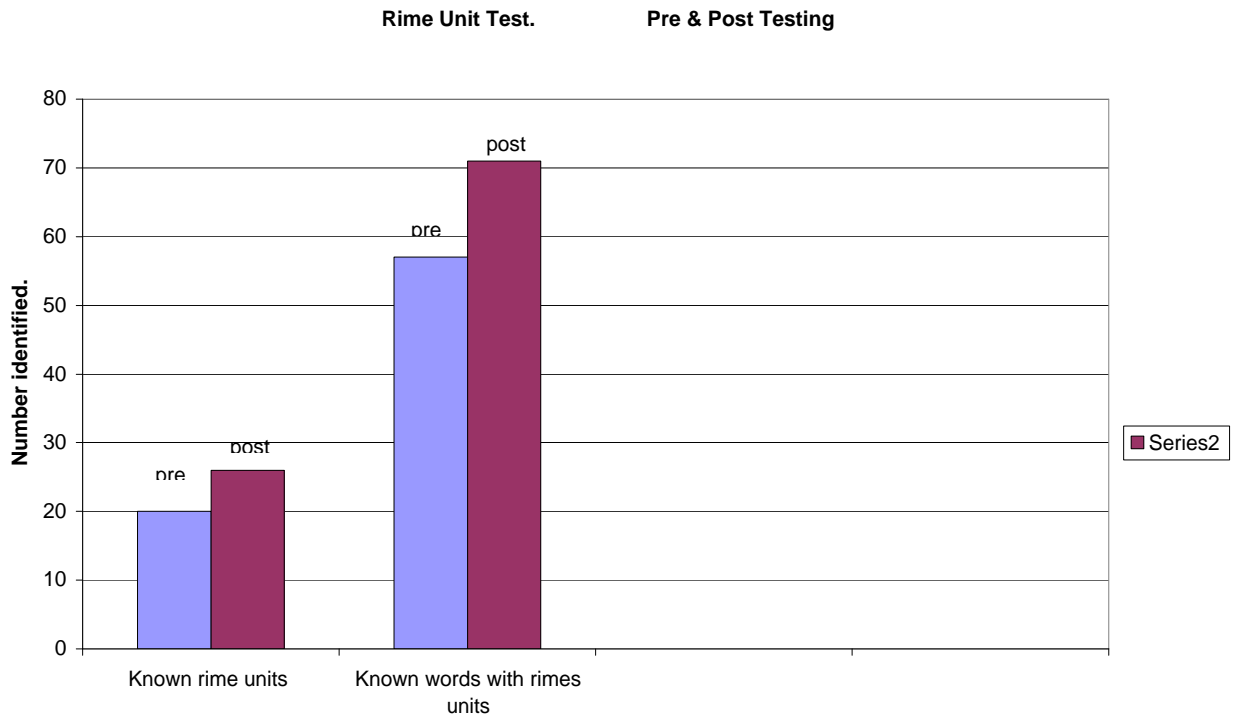
Reading accuracy had improved over the study and the use of all cues was evident in the running record.

### Rime Test. (Appendix 3)

The rime test consisted of two aspects.

A group of 30 three-letter rime units were tested in isolation, and then a list of words was presented to the student to read that contained the same group of rimes.

The rimes that were not known in this test determined the content for the teaching program.



Following the teaching sessions the student increased his knowledge of stand-alone rime units by 20%. His ability to recognise and use the rime units in words read in isolation, also increased, an improvement of 16.5%.

## Discussion

This action research project investigated the premise that *the explicit teaching of onset and rime would increase a student's ability to recognise and use letter cluster patterns in prose reading.*

The results show an overall increase in the student's knowledge of rime units as well as gains made in word knowledge, and in reading accuracy. This study would appear to support the hypothesis that increasing the student's facility with letter cluster units, in this instance onset and rimes, impacts on the student's reading ability.

Research by Torgesen, Wagner et al (1998) concluded that appropriate intervention can bring reading growth of children weak in phonological processing skills within normal limits. *Appropriate intervention* is a key element of any program design that aims to change and improve learning behaviours. Identification of the specific area of student need and a planned course of intervention that responds to that need can make a difference to improved learning outcomes.

Successful learning occurs when it is explicit and student centred. ( Freebody, Ludwig & Gunn 1995; Edwards – Groves 1998)

This project focussed on the explicit teaching of rime units and the use of analogy to build word knowledge.

As the teaching sessions continued, the student showed a greater awareness and realisation that attending to known letter clusters within a word could assist with the successful decoding of unknown words.

The student in this study was very aware of using meaning cues when reading and he would respond with frustration when he realised that meaning had broken down but that he was unable to successfully to decode the text. The explicit teaching of onset and rime and the use of analogy to build word knowledge improved the student's skill at the word level and enhanced the repertoire of reading strategies that he employed as he read.

In the prose reading tasks at the beginning and end of each lesson, this improvement in skill and knowledge was demonstrated. The student was able to apply his new learning to the second passage and in each instance he was able to read the text with greater accuracy (see graphs 1 –9).

It was not part of this study to measure the reading rate / fluency with which the prose passages were read, however anecdotally it was noted that even though reading accuracy improved, the 'processing speed' of the text for both passages A & B appeared the same. This aspect of the project could be investigated in further studies Torgesan, Wagner et al (1998) found in their research that "reading fluency is much more difficult to affect than reading accuracy"

McNeil A (2001) also stated the consideration should be given to the idea of differences in 'phonological processing speed' and that this may impact on reading development.

The implications from this study highlight the importance of intervention that is appropriate, informed and explicitly taught.

Edwards-Groves (2002) describes explicit teaching as

1. Knowing the learner.
2. Responding to the learner
3. Implementing focused lessons
4. Reflecting and reviewing.

Teachers need to identify the particular reading difficulty that a student is having and respond to his /her needs with specific instruction that leads to an increase in skill development.

This study provides support to the approach of using onset and rime as a means to developing a student's understanding of how words work, how to look for patterns in words to assist decoding and how to use analogy to solve unknown words. These reading skills, at the word level, assist with improved prose reading accuracy.

Explicit teaching of onset and rime, as well as incorporating tasks that focus on and allow practice and reinforcement of onset and rime units within the literacy block, can support reading underachievers by improving reading accuracy.

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## **Appendix 1**

*The explicit teaching of onset and rime units to a year 2 student improves the student's ability to recognise and use letter cluster patterns in prose.*

### **Teaching Unit for onset and rimes.**

*(35 –40 mins)*

<b>Activity</b>	<b>Description</b>	<b>Time (approx.)</b>
Reading Text	1. Student is asked to read a short passage of text that contains a particular rime unit. (Passage A) 2. Teacher takes a running record	2 mins
Identifying rime unit	1. Teacher takes a word from the passage, which contains the rime unit and writes it on the whiteboard. 2. Teacher articulates the word, highlighting the rime.	2mins
Using Magnetic Letters	1. Student is asked to make the word with magnetic letters. 2. Teacher makes another word with the same rime unit and asks the student what do they notice about the two words. 3. Teacher gives another word from the same rime family for the student to make. 4. Student is asked to suggest a word or words.	5 mins
Writing Activity	1. List of words are made with the same rime unit. 2. Student writes the words on the whiteboard and articulates them as he /she writes.	5 mins
Games	1. Words with rime units are written on flashcards and read. 2. Game is played with the words e.g. snap / concentration / snakes and ladders.	10 mins
Recording	1. Words with the target rime unit are recorded in the student's workbook to take home and practise.	5 mins
Computer use	1. Words with the target rime unit have been put into a powerpoint presentation, one word per slide, for the student to flash each word on the screen and read. 2. The student can control the speed of presentation using the arrow key.	5 mins
Text reading	1. Student is given a different passage (Passage B) , which contains the same rime unit. 2. The student is asked to identify all the words with the target rime unit by underlining the words. 3. The student then reads the passage and the teacher takes a running record.	5 mins

## Appendix 2

Text read by student in larger font.

own

### Passage A

The man rode an old brown horse down the road to town. In town he was to look for the King's crown that was missing. The man looked everywhere but he could not find the crown. With a frown on his face he rode out of town and back to see the King.

### Passage B

The clown came into the town to see the King. His job was to try and make the king smile instead of frown. The clown fell down and rolled over for the King, but the King would not smile. The clown then took off the King's crown and put it on himself. The clown looked so silly that the King smiled.

ain

### Passage A

The rain was falling on the ground and going down the drain. Tom ran to cross the busy main road and fell over. He had sprained his foot and the pain made him cry. He saw a big muddy stain on his new pants. His mum would be cross when she saw them.

### Passage B

The big dog had a chain around his neck and was barking in the rain when Tom saw him. Tom felt sorry for the dog and went to complain to the man in the house. No one was home. Tom could see the dog straining on the chain to get out of the rain and to get into his kennel.

ong

### Passage A

The little boy was walking home from school singing a song to himself. He did not look at the road he was taking and took a wrong turn. He was lost! He didn't cry, but tried to be strong. Then he heard the ding dong of the clock in the town. He walked towards the clock and found the right street. It took him a long time to get home but he was happy to get there.

### Passage B

A strong wind was blowing down at the sea. The little boy took off his thongs and ran into the water. He played in the waves for a long time and when he got out his skin was red. He was sunburnt! He was wrong not to put on his sunscreen. He should have remembered the song "slip, slop, slap".

oat

### Passage A

The little boy made a small wooden boat that he was going to try on the pond. It was a cold and windy day and the boy put on his coat and carried the little boat down to the water. He put the boat into the water to see if it would float. The wind blew and the boat sailed across the pond to the other side.

### Passage B

The old billy goat was always eating the farmer's food. He had also eaten the farmer's coat that had been hanging on the line. The farmer had an idea. He would put the goat in a paddock and dig a water moat around the paddock. So this is what he did. The farmer would take a little boat out to see the goat and feed him oats and the goat was happy on his own island.

**eck**

**Passage A**

On the deck of the ship the Captain looked out to sea. He could see a little speck in the distance that could be a pirate ship. He went to get his telescope to check. It was not a pirate ship but an old wreck sticking up out of the water. He would go and check if there was anyone still left on the ship who needed help.

**Passage B**

The little bird hopped around on the deck looking for food. He had a long neck that would bob up and down as he pecked for little specks of food. The man came out onto the deck and put some seed in a bowl. The bird came up to the bowl to check what was there. He was happy to see the food.

**ash**

**Passage A**

Across the sky there was a flash of lightning and then a big crash as a big old gum tree fell to the ground. It smashed into the roof of the house and a flash was seen. The house was on fire! The people in the house dashed outside and ran to safety.

**Passage B**

The man was late for work and dashed out to his car and sped off. He was driving too fast and crashed in a pole as he went around the corner. He got out to look at his smashed car and then saw that he had a big gash on his leg. He would need to see a doctor to fix his leg and he would be very late for work!

**eat**

**Passage A**

The farmer's wife was getting the meat ready to cook and turned the heat up in the oven. This was to be a special treat for her husband as it was his birthday. She also was making him a cake and was beating the cream to put on top. The farmer was out in the fields planting the wheat and would come home soon. He would be surprised!

**Passage B**

It was a very hot day and the heat made the players very tired. They were trying to beat the top cricket team. When lunchtime came, it was too hot to eat the meat pies that were for lunch so they had fruit sitting on the seats in the shade. It was going to be a long afternoon!



## **uck**

### **Passage A**

The truck was taking boxes of toy ducks to the shop. It was a wet day and the road was slippery. The truck slid in the rain and got stuck in the mud at the side of the road. The truck driver got out to look at the muck. He knew what to do. He got a sack and tucked it under the wheel. He then tried to move the truck. It worked, what luck!

### **Passage B**

The man wanted to steal some ducks from the farm. One night he took his truck to the farm and snuck into the barn. He was going to chuck the ducks into a ruck-sack, then run back to his truck and drive away. But the ducks began to cluck loudly when the man picked them up. Luckily the farmer woke up and chucked a rock at the man who quickly ran away and drove off.

### Appendix 3

List folded and student reads down the column.

#### Rime Test.

<b>eat</b>	<b>heat</b>	<b>meat</b>	<b>seat</b>
<b>out</b>	<b>pout</b>	<b>shout</b>	<b>lout</b>
<b>ain</b>	<b>rain</b>	<b>pain</b>	<b>drain</b>
<b>irl</b>	<b>girl</b>	<b>whirl</b>	<b>swirl</b>
<b>eet</b>	<b>feet</b>	<b>meet</b>	<b>sheet</b>
<b>oat</b>	<b>coat</b>	<b>goat</b>	<b>float</b>
<b>awn</b>	<b>lawn</b>	<b>dawn</b>	<b>yawn</b>
<b>ern</b>	<b>fern</b>	<b>stern</b>	
<b>oil</b>	<b>boil</b>	<b>soil</b>	<b>coil</b>
<b>aul</b>	<b>Paul</b>	<b>haul</b>	
<b>ole</b>	<b>hole</b>	<b>pole</b>	<b>sole</b>
<b>ute</b>	<b>cute</b>	<b>flute</b>	<b>brute</b>
<b>ate</b>	<b>date</b>	<b>hate</b>	<b>mate</b>
<b>ite</b>	<b>bite</b>	<b>kite</b>	<b>site</b>
<b>ush</b>	<b>hush</b>	<b>rush</b>	<b>mush</b>
<b>uck</b>	<b>duck</b>	<b>luck</b>	<b>truck</b>
<b>ang</b>	<b>sang</b>	<b>rang</b>	<b>clang</b>
<b>oll</b>	<b>doll</b>	<b>toll</b>	<b>poll</b>
<b>iss</b>	<b>miss</b>	<b>kiss</b>	<b>hiss</b>
<b>ull</b>	<b>dull</b>	<b>gull</b>	<b>mull</b>
<b>ick</b>	<b>sick</b>	<b>pick</b>	<b>tick</b>
<b>ong</b>	<b>song</b>	<b>long</b>	<b>wrong</b>
<b>oth</b>	<b>moth</b>	<b>cloth</b>	
<b>iff</b>	<b>sniff</b>	<b>cliff</b>	<b>stiff</b>
<b>all</b>	<b>ball</b>	<b>tall</b>	<b>fall</b>
<b>ock</b>	<b>rock</b>	<b>sock</b>	<b>clock</b>
<b>uff</b>	<b>puff</b>	<b>huff</b>	<b>stuff</b>
<b>ass</b>	<b>mass</b>	<b>lass</b>	
<b>ung</b>	<b>sung</b>	<b>rung</b>	<b>stung</b>
<b>ell</b>	<b>bell</b>	<b>fell</b>	<b>spell</b>

30 rime units / 85 words.

Appendix 4

brown town clown frown

long song wrong thong strong

belong

rain drain main pain sprain stain

chain

moat boat coat goat float

neck deck peck check speck wreck

ash crash bash flash dash gash

smash

duck tuck luck truck stuck chuck

cluck

eat meat heat seat beat wheat

cheat

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