

*Explicit teaching of dependable rime units to year 1 and 2 students who are at risk, will concurrently improve word reading, prose reading and spelling.*

## **Abstract**

Many children do not use word knowledge well when reading. They read words using inefficient strategies, which causes them to invest a lot of time and effort on word reading at the expense of comprehension.

These children do not make links between different areas of literacy learning, and are therefore unable to transfer what they know when reading or writing novel words. The prediction of this study is that explicit teaching of dependable rime units to year 1 and 2 students who are at risk, will at the same time improve word reading, prose reading and spelling.

The present study looked at 12 children in Grade 1 and 2, who showed varying degrees of word level difficulty. It aimed to show that explicit teaching routines could lead to gains in all three areas of word reading (Rime Units), word writing and text level. Rime units were tested with a 76 word test adapted from Munro's; using a similar procedure; from these words 25 were chosen for the spelling test and the children's text levels were ascertained using a PM Benchmark Kit.

The 10 teaching sessions were based on procedures set out by Munro (1998), where children worked on a range of tasks where they would say, rhyme, put into sentences, segment, blend, spell, write, and build onto words; they read them in prose, and then also review past words in every session.

The study also was designed to investigate possible ways that this explicit instruction could be differentiated, enabling future use of these procedures in whole class settings that catered for all children.

The findings indicated that greater gains were made by the teaching group, with these gains being more consistent across the three areas of word reading, word writing and prose reading. The control group showed gains more specific to one area or two areas, either improving significantly in text level or in reading and writing words. The testing results supported the view that word reading and writing did have developmental trends.

The study showed the value of explicitly showing children links that could be made between what they know about reading words and writing words. It also pointed to the importance of reviewing and revisiting content. The study also showed ways that make it possible to teach rime units in a whole class setting, with a wide ability range.

## **Introduction**

Many junior children demonstrate difficulty with word reading accuracy. Munro, (1995) talked about the trend that occurred over the two previous decades, being a shift of focus away from teaching word reading. This had a crucial effect on those who experience reading difficulties, making them unable to link their oral language knowledge to the written word. These readers direct most of their attention to word reading, at the expense of meaning. They are unable to recognize many words automatically and must attempt to sound out unknown words. Good readers automatically use word knowledge and are able to transfer this knowledge to novel words.

Children with poor phonological knowledge tend to use Distinctive Visual Features when reading, using some letters from a word to support a guess. The quality of the guess often varies according to their ability to predict and make meaning of text.

Vadasy and Sanders (2008) referred to Perfetti's (1985, 1987) verbal efficiency theory, describing the bottleneck created by inefficient word and text reading, which uses attention that should be directed at comprehension. Their research showed that improvement in RAN led to gains in fluency of reading.

Munro (2004) talked about how children need to phonologically decode words, recognize letter patterns, match them to sounds the sounds they make and remember them long enough to blend into a word. This lack of automatic word recognition leads to limited text comprehension.

Bowey, Storey, & Ferguson, (2004) researched the connection between naming speed and processing difficulties, finding that children with reading difficulties often have phonological processing difficulties. Their findings suggest that phonological processes are essential to word naming speed tasks.

Munro (1997) stated that children experiencing difficulties with phonological and phonemic knowledge demonstrated difficulty segmenting words of more than three letters into sounds, they read letters as individual units, not in groups, relied heavily on the first two or three letters of a word and did not transfer knowledge from a known word to a new word. He talked about the 'reciprocal causal' link, how phonological knowledge improved literacy ability and visa versa. He stated that phonemic ability can predict future ability in reading and spelling.

Juel, C. & Minden-Cupp, C. (2001) referred to the work of Goswami, (1995) and Treiman, (1992), which puts phonological knowledge into a developmental progression. At around four or five years old children can hear onset and rime units, but may need specific reading instruction to develop awareness of individual phonemes in rime units.

They stated that early reading instruction should be based on onset rime units because they are easier for children to work with. Children can successfully use analogy to read and write new words using rime units. In the 37 dependable rime units, the vowels are used in a predictable way. These help the children learn to chunk and decode words. The children need some consonant and vowel knowledge first.

Munro (2000) wrote about how phonological knowledge develops in children. As children move through these stages their ability to use letter / sound knowledge increases. He referred to the number of separate phonemes that a child could use at once the *phoneme awareness span*. This has an influence on word reading ability. The amount of phonemic knowledge the children can manipulate does increase over time.

The Victorian Essential Learning Standards (VELS) English Continuum sets out specific areas of phonemic knowledge that children need to demonstrate at particular levels. For example, at 1.25, which is half way through the second year of school, students are expected to be able to use phonological and word knowledge to blend three sounds automatically, or four or five sounds with some attention, into a word, as well as being able to use onset and rime to segment one syllable words. Students should learn consonant digraphs such as 'sh', 'ch', 'th'; they should be able to substitute letters to form new words, such as cat, hat, bat; and to build words using a base word, for example, at, bat, bats and batted. They should also use analogy to problem solve words. At level 1.5 students are expected to be able to spell words of one syllable with regular rime units, and some two-syllable words with regular spelling.

Onset / rime manipulation is an easy task for children – all 37 dependable rime units are constant, that is, they sound the same every in every instance that they occur, making them highly transferable. Individual sounds do not need to be remembered as in phoneme segmentation tasks. Only one part of the word

needs to be manipulated. This increases the likelihood of successful task completion.

However, rather than teach manipulation of rime units in isolation, this study aimed to enable the students to make and use connections they make about words, and to practice what they know in context. It aims to develop routines that link word reading, word writing and fluent reading of prose. Yopp and Yopp (2000) stated that phonemic awareness should be taught explicitly, and should also be taught in reading and writing contexts.

Stahl (2001) stated that long vowels would be mastered in reading before being mastered in spelling, due to the fact long vowels are represented by letter combinations, making them harder to encode orthographically. This study will focus for the ten lessons using short vowel rime units, in order to isolate one particular area for mastery. However, it will also test strategies that would enable differentiation of explicit teaching of rime units to occur, just as differences within a range of abilities occur within a junior classroom.

A study by Juel and Minden-Cupp (2001) found that different abilities require differentiated instruction for word reading. Children with fewer literacy skills require more work in phonics, as well a range of vocabulary and meaning building tasks. Instruction should consist of onset / rime work as well as work sounding and blending the phonemes in the rime units. Children also need plenty of practice independently reading text, so they can learn to work independently with rime patterns. They also stressed the importance of providing hands on,

sorting tasks, especially for low operating children. These tasks lead them to make decisions and comparisons about words. They found that in the most successful classroom in their study, the teacher modelled the use of word recognition strategies, the children used hands-on materials and the instruction groups were small. They combined explicit teaching with the reading and writing of words – using what they know in context.

Iverson, (1997) also recommended teaching onset and rime units, because they are bigger than phonemes and smaller than syllables and they also support both spelling and reading. Iverson also contends that children can increase the number of words they can read and spell by using analogy

The present study explores the links between reading words, reading prose and writing words, including how phonological developmental links these areas at different stages. The hypothesis of this study is that explicit teaching dependable rime units to year 1 and 2 students, who are at risk, will concurrently improve word reading, prose reading and spelling. The improvement will be due to increased phonological and orthographic knowledge used to improve recoding and the use of analogy when reading and writing. The study will examine whether gains will be made in automatising phonological processing, enabling the children to more efficiently segment and blend to read words, which in turn will lessen need for attention at a word level, with the result of better comprehending actions being used.

## **Methodology**

### Design

The OXO design was used in this case study (test, teach, test) to investigate growth that occurred as a result of explicit teaching of rime units.

### Participants

The present study aims to improve the prose reading, word reading and word writing of Grade 1 and 2 children through teaching automatic reading of words that have dependable rime units. However the writer also wanted to investigate how applicable the teaching strategies would be to a classroom context, and to explore ways the teaching could be differentiated.

The school in this present study is a small school of six classes. The children who were targeted for this study have been chosen from either the writer's Prep / One class or from the Grade 1 /2 class next door. All children in the study had been taught by the writer in their Prep year. They all speak English at home.

The students were from the lowest 25% of the Grade 2 cohort and the lowest 50% of the Grade 1 cohort, based on CEOM Literacy Pre Testing results. There were a total of 12 children, in the study. 5 children were in the control group and 7 in the teaching group. Both groups were represented by children reading below Reading Recovery text level 10, children reading between text levels 10 and 20 and children reading above text level 20.

One child had received Reading Recovery in Grade One, with the data showing a definite regression in text level since discontinuing. This child also has vision problems, but is able to read normal size print. Three of the grade 2 children were in the teaching group and one was in the control group. The eight children from Grade One are from two different classrooms, four from the Prep /One and four from the One / Two. One child in the teaching group and one in the control group are on the Reading Recovery tentative list. Two children, one from each group suffer the same chronic illness, which can, at times, impact on their learning due to pain and lack of sleep. The three Year one children who scored highest in the CEOM Literacy Pre Testing, were also tested on Rime Units and Spelling to provide comparisons and Benchmarks for attainment.

Table 1: Student Demographics

child	0 = Teaching 1= Control 2= Benchmark Group	Age in MONTHS	Gender 0= Female 1=Male	Years of Schooling	Class group Prep /One =0 1/2 =1	Intervention No=0 RR 2008=1 RR2009 ( tentative list) = 2	Burt Word Score in CEOM Pre- Testing	Text Level in CEOM Pre Testing
1	0	80	1	1	0	0	19	7
2	0	88	0	2	1	0	41	21
3	0	75	0	1	1	0	30	14
4	0	95	0	2	1	1	32	21
5	0	76	1	1	0	2	12	6
6	0	74	0	1	1	0	24	10
7	0	93	1	2	1	0	34	26
8	1	80	1	1	0	0	25	9
9	1	78	1	1	0	2	17	6
10	1	81	0	1	1	0	27	14
11	1	74	0	1	1	0	29	12
12	1	95	1	2	1	0	39	23
13	2	81	0	1	0	0	41	27
14	2	88	1	1	1	0	44	27
15	2	83	1	1	1	0	77	28

All the junior children at this school had reached, at the end of the previous year, the text level benchmarks as set for Prep and Grade One. However, some children showed word level difficulties when reading and writing words. When reading aloud, sounding words in unmanageable ways was evident. For example, some would break words into single sounds, such as b-e-a-c-h for beach.

The children in the study did not demonstrate that they were automatically transferring knowledge of one word to another when reading or writing. Two of the children in the study had difficulty writing even simple CVC words.

The use of Distinctive Visual Features, (guessing from the beginning sound or part of a word) was evident in prose reading for all of the children in the study. They would then have to go back and reread and self correct, in order to make sense of the text. Analysis of their running records highlighted a need to improve whole word recognition, the need to automatise the use of letter cluster links, improving both phonological and orthographic knowledge.

It was decided to investigate teaching an intervention group with a range of abilities, this group's text levels range from level 7 to level 21. This was to provide comparisons between the size and type of words that children successfully work with at different levels, enabling correlation to be made between age, level of text and the types of words children could read and write.

The teaching took place in a small group, because the participants came from two classes. The teaching group was withdrawn from their classrooms for a series of ten 45 minute lessons. The children were all happy to leave their classrooms for this teaching. All requested to keep their 'learning folders', which contained their word bags and reading passages at the conclusion of the ten sessions.

### Materials

#### **Testing**

Rime Unit Test (adapted from Course Notes) appendix 1

Spelling Test (adapted from Rime Unit Test) appendix 2

PM Benchmarking Texts

Stop watch for timing.

The Rime Unit Test was reduced to 76 words. This was to provide a focus on short vowel Rime units, as many of the children in the study has already shown confusions with short vowel sounds, such as 'a' and 'u'; and 'i' and 'e'. This did, in fact, point to an appropriate focus for the ten teaching sessions.

The test was structured so the child could read two CVC words with a given rime unit, one four phoneme word with the rime unit, and one word with either the 'ch' 'th' or 'sh' digraph. This would point to other needs that would also be present, and provide opportunities for further differentiation. The test was administered in the same way as the Rime Unit Test from the course notes.

The Rime Unit Test Data was scored as a percentage, comparisons were made between individual scores, and mean scores were calculated for all three groups. With the Benchmark group of Grade One children showing the highest mean and the teaching group having the lowest mean score. The test results were then analysed to see which rime unit groups the children had the most success with the 'it' and 'uck' rimes and the least success with the 'ab', 'ot', 'unk', 'ink', 'ump' rime units. Generally, not a lot of transference of knowledge from one word to another was evident in the teaching and control groups. The more success rime units were paired with the more challenging ones for the teaching sessions. The results of the Rime Unit Test showed that many of the children had difficulty reading words with four phonemes, and they did not always transfer knowledge of one word to another. As predicted, there were also some difficulties with the 'ch', 'sh' and 'th' digraphs. The three Grade One Benchmark children scored considerably higher than the other children (including the grade two children), demonstrating automaticity and accuracy on their word reading. By timing the Rime Unit test, comparisons were able to be made with regard to individual children's automaticity. Some children invested a substantial amount of time and effort into working out unknown words, especially when there was no context to provide any clues. Many could isolate individual sounds, but could not put them together successfully, for example, saying, "t-a-n-k, tack". Inversely, timing the reading also identified children who read words very fast, just by looking at a word's Distinctive Visual Features, usually using the beginning letter

and then guessing from any of the other letters present, for example reading “shot” for “shop” or “wig” for “wing”.

25 words from the Rime Unit Test were used for the spelling test. It contained a CVC example of each rime unit, however not the most common example of each rime unit, for example, the test contained the words ‘pat’ rather than the word ‘cat’, which they may know as whole unit from sight. The test also contained words with four phonemes, i.e. ‘pump’, as well as examples with the diagraphs ‘ch’, ‘th’, ‘sh’. Again, the children tested had more success with the three phoneme words and struggled with the four phoneme words; also ‘ch’, ‘sh’ and ‘th’ caused problems for many of the children.

The results of the Benchmark group were interesting for the spelling test, with scores showing a much wider range of accuracy for spelling, than evident in the Rime Unit test. This raises questions about the transference of knowledge from reading to spelling and the differences in developmental trends from reading words to writing words.

With the Benchmark Text Levels, the errors made were analyzed for trends. With a definite trend emerging in use of Distinctive Visual Features present in the Visual errors, where first part or sound of a word and some of the letters were used to support an incorrect guess.

### **Lessons** *(See appendix 5 for detailed session plans)*

The seven students in the teaching group were withdrawn for ten 45 minute lessons over a period of four weeks.

Of the 21 rime units tested, there was no rime unit set that were completely known by all the children in the teaching group. Two rime units were covered in each session, making a total of 20 covered.

A range of teaching strategies as set out by Munro (1998) were used in this study to address teaching knowledge of onset rime units. These strategies were used to provide opportunities to teach the rime units in context and also to enable the students to transfer knowledge from one mode to another, so they can both read and write the target words, and build up use of analogy. The strategies included saying and segmenting the target words orally; making up rhymes and using the words in sentences; segmenting the words; transferring the rime unit to other words; reading the words in prose and also visualizing and writing the words. The study aimed to establish routines over ten lessons that improved word reading, word writing and prose reading in a connected, reciprocal manner.

The rime units were paired and ordered according to difficulty, starting with the easier combinations occurring the first sessions. This was to provide less challenging word level work whilst the establishing routines and language to used throughout. The first sessions enabled the students to build onto what they already knew. By providing opportunities for success and creating positive learning experiences in the first sessions, the children saw themselves as 'learners' and were then more open to being challenged in the later sessions.

(Munro 1995) recommended beginning with three and four letter words that have 1:1 mapping, aiming to support children to use groups of letters in words automatically when reading words.

A crucial component of this teaching is the reflection and discussion that leads students to describe what they do, and what they know. Munro calls this '**meta-orthographic**' knowledge. It is seen as a vital part of developing self efficacy and automaticity in use of the strategies being taught.

Similarly, Juel and Minden-Cupp (2001) talked about the importance of paying attention to the sound units of words they see in text, so they can use and transfer this knowledge of spelling patterns, independently in the future. This is seen as developing what they refer to as a 'self- teaching mechanism'.

Iverson (1997, also talked about metacognitive awareness – knowing what – knowing what information to use, and how and when to use it.

The VELS Writing Continuum states, at Level 1.75, that student should be able to talk about their knowledge of how words are spelt, what strategy to use and when to use it.

In the teaching sessions, student reflection and articulation of what they know and what they do is seen as an integral part of the explicit teaching, not just at the end of each session, but throughout each session,

All children were provided with a folder, to which was added over the course of lessons:

**Word cards**, (appendix 3) each child's set was stored in a plastic bag and reviewed and sorted during each lesson, supporting growth in RAN. Contents of the word bags varied from child to child, according to individual needs and abilities, over the course of the sessions. By adding new words, to the target words, with rime units already covered, opportunities were provided to practice using analogy and what they were learning about word building.

**Prose to read** (appendix 4) each session used prose passages written using the first rime unit taught. Each passage was written at three readability levels, an early Grade 1, a late Grade 1 and at a mid grade 2 level. The easiest passage was read first by the whole group, used for discussions about meaning and reading strategies for words and prose. The other passages were added to children's repertoires after individual running records had indicated they required a higher level of text.

**Sentences-** sentences and rhymes that were composed by the group were displayed in the teaching area, to revisit over the course of the sessions.

Also:

**Sound boxes / counters** Used to provide a concrete link to identification of phonemes in words.

**Paper and textas** for writing words

**Whiteboard** for teacher to write words

## **Results**

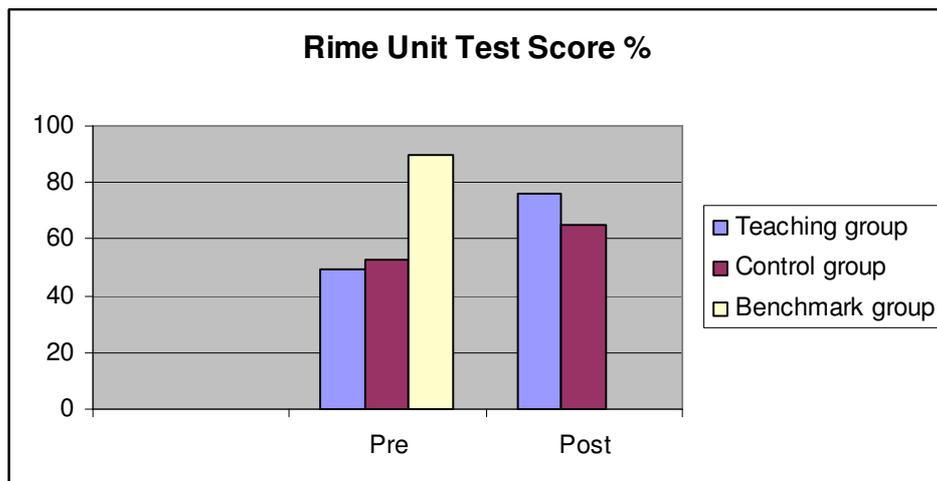
The prediction that teaching dependable rime units would lead to literacy improvement is examined in this section.

The most obvious trend that can be seen from the results of the post testing was the more consistent movement across all three areas by the teaching group.

These children all made progress in text level, the rime unit test score and spelling test score. The children in the control group made progress in some areas; however, the progress could be seen as less consistent. (see appendix 6, Testing Results Table)

Looking at Figure 1, a substantial increase in the mean score for reading Rime Unit was evident for the teaching group. In the Pre Test, the control group's mean score was higher than that of the teaching group; however, after ten teaching sessions, the control group's mean was below that of the teaching group. This is to be expected, as Rime Units were the main area targeted through the teaching. However, it was still pleasing to see that progress had been made by the control group through their classroom activities.

Figure 1: Mean Rime Unit Test Score %, Pre and Post Test



Increased automaticity was one area of focus for the teaching sequence.

Figure 2 shows the decrease in time taken for the children when reading the 76 words in the test. For children number 2, 4 and 7, (who were all in grade two) time was not an issue, word reading accuracy and looking beyond the initial letter were areas of focus. However, for the rest of the children in the teaching group, there was a need for improvement in using RAN and in putting together the sound units of a word in a manageable way.

Figure 2: Time Taken for Rime Unit Test (seconds)

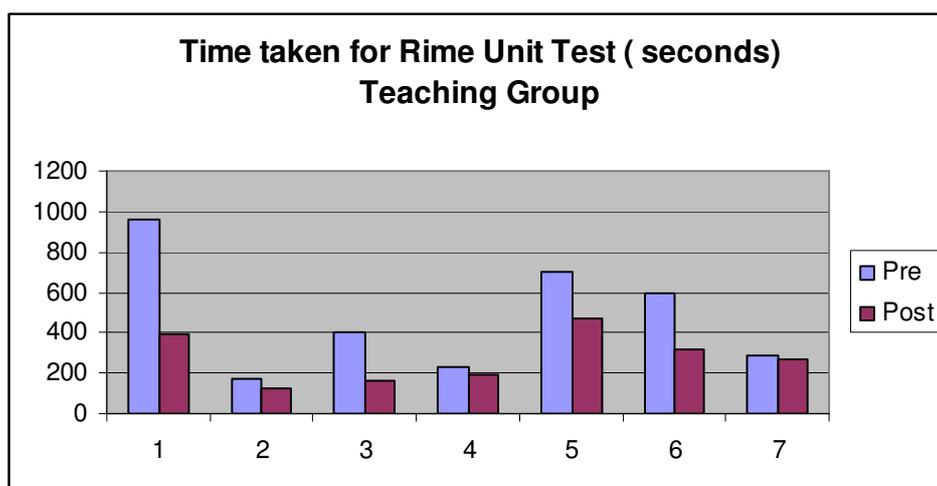


Figure 3: Teaching Group Rime Unit Scores (%)

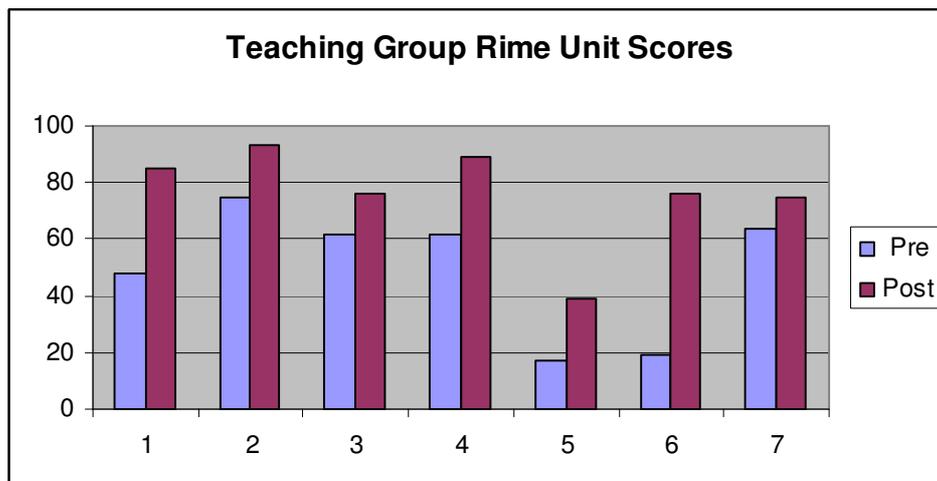
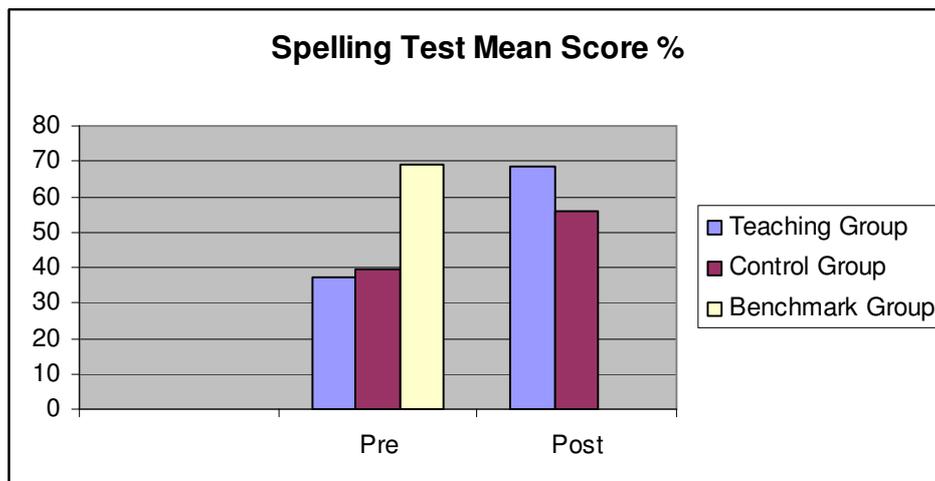


Figure 3 shows that students 1, 3, 5 and 6 were able to substantially increase their word reading score, while reducing the time taken to read the words, demonstrating an increase in the use of letter cluster knowledge and automaticity. Children 2, 4 and 7 also increased their word reading score.

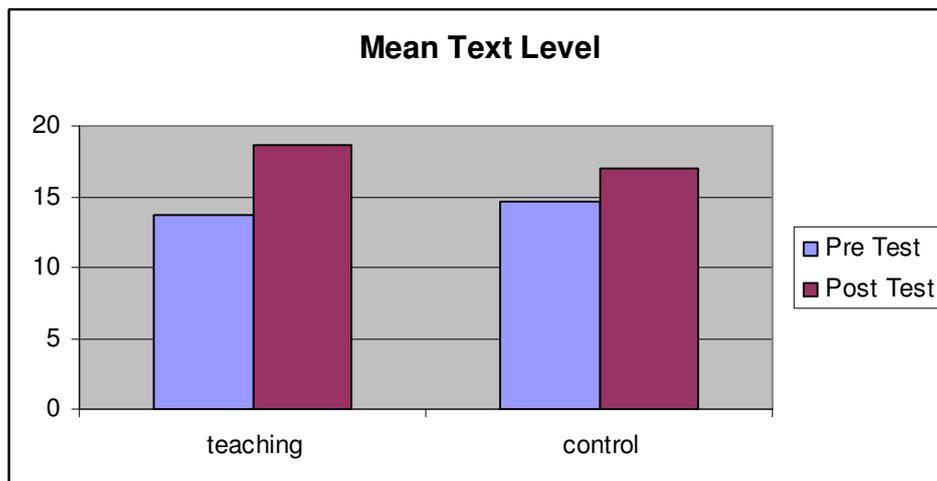
The teaching sessions included work analyzing and writing words, alongside learning to read words. This was to provide opportunities for the children to transfer knowledge from reading to writing and to use analogy to spell words. Again, as seen in figure 4, the larger gain was made by the children in the teaching group; with their mean score almost matching that of the benchmark group.

Figure 4: Mean Spelling Test Score, Pre and Post Test



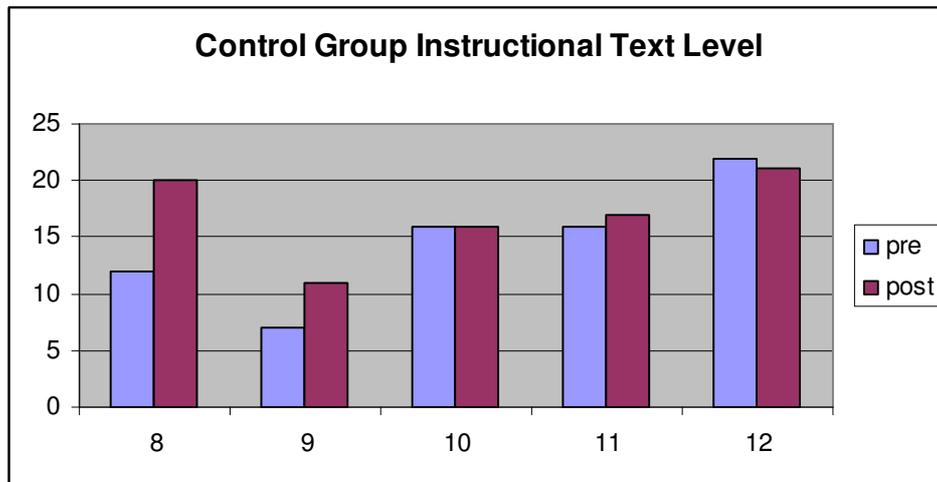
The third area examined through the testing was text level. This would indicate that improvement in word reading had also led to improvement in prose reading. The importance of reading known texts as a way of practicing the strategies that children use when they read is an important component of Reading Recovery. Clay (2001) refers to this as 'orchestrating the process', where children use the strategies and processing in a more efficient way because the text is familiar. Rereading the prose passages was an important part of each teaching session. Once again, the graph (figure 5) shows a trend with the teaching group making more progress than the control group. The mean amount of growth for the teaching group was 4.8 levels, for the control group, it was exactly half, being 2.4 Reading Recovery Levels.

Figure 5: Mean Text Level Score, pre and Post Test



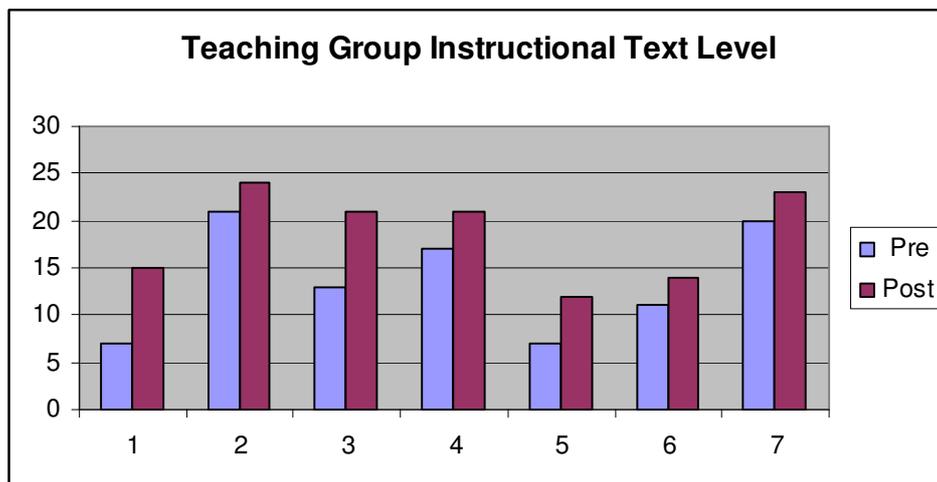
However, closer examination of individual children's growth from both groups confirms a more consistent growth across the teaching group, with the control group having two children showing major progress in text level, one child moving eight levels, the other moving four levels. The child who moved four levels is on the Reading Recovery Tentative List, so this was seen as quite substantial progress for him. One member of the control group moved one level, another remained at the same text level and one child actually went back one text level. The two children, who made the most progress at text level, from the control group, were the only children in the control group from the Prep / One class.

Figure 6: Control Group Instructional Text Level



In the teaching group (figure 7), the growth in text level was more consistent across the teaching group. All children moved forward a minimum of three text levels; with three children moving three text levels each, and one each child moving four, five, seven and eight levels respectively.

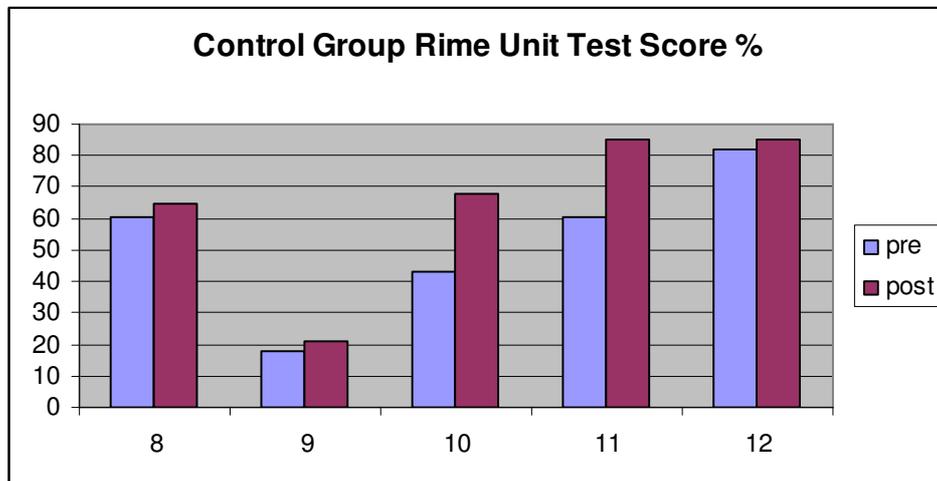
Figure 7: Teaching Group Instructional Text Levels



Comparing individual children's progress also supports the prediction that growth in the areas of word reading, spelling and prose reading could occur concurrently

as a result of the teaching sessions. Looking at Figure 8, which shows individual progress in the rime unit test, it can be seen that child 8 and child 9 from the control group, who had made the most progress in their text level, had not been able to make similar gains in the rime unit test. The most progress had been made by child 10, who had not moved in text level, and by child 11, who had moved one text level.

Figure 8: Control Group Rime Unit Score



Group Trends

To look at group trends I have grouped the children according to their Pre Test Instructional Text Level, this is to enable comparisons to be made between children of like attainment. The first group consisted of the three children whose Pre Test Instructional Text Level was below level 10. All are Grade One children, in The Prep /One class, the lowest three children in the Grade One Cohort.

Table 2: Testing Results for children below Text Level 10.

child	0 = Teaching 1 = Control 2 = Benchmark Group	Gender 0= Female 1=Male	Age in MONTHS	Text Level in CEOM Pre Testing	Rime Unit PRE %	Rime Unit Pre Time (sec)	Rime Unit POST %	Rime Unit Post Time (sec)	Spelling PRE %	Spelling POST %	Text level PRE	Text level POST
1	0	1	80	7	48	962	85	395	24	56	7	15
5	0	1	76	6	17.1	705	39	469	16	32	7	12
9	1	1	78	6	18	388	21	408	0	16	7	11

### Child 1

This child had not moved in text level from the CEOM Pre Test to this study's Pre Test. He also invested the longest amount of time on the Rime Unit test of all the children in the study. This was reduced by more than half after the study. Child 1 showed significant improvement in all three tests. After the sessions he was able to blend sounds into words more efficiently, vocalizing showed onset rime use, even on incorrect attempts, where previously words had been broken into individual, sometimes unusable sounds, for example, 'sh – ock, shock' was said in the Post Test, rather than 's-h-o-c-k' as in the Pre Test. He still sometimes confused lower case letters b and d. He was able to use the 'ch', 'sh' and 'th' digraphs now and could read most four and five phoneme words.

The less successful Rime Units in the words reading and spelling tests were those that had been covered in the last few sessions, and therefore had received less practice. Not all words had yet been transferred from being read to being written, for example, pump and tank. This child became more confident and 'on task' throughout the course of the sessions. Child 1 was able to talk about what he needed to do to write and read words.

## **Child 5**

This child had moved one level after the CEOM Pre Testing. He had a history of difficulty when using letter / sound knowledge to segment or blend words. His reading relied heavily on meaning, picture cues and beginning sounds, his high oral language usually supporting his guesses. In the Pre Test he broke words into individual sounds, which he had difficulty blending to make words. In the Post Test, he showed proficiency with words with a CVC pattern, but still struggled with words containing four phonemes. However, his incorrect attempts showed some development, in that he was using letter clusters rather than individual letters. He was absent for one of the later sessions. His spelling also showed that he was successful with CVC words, but not words with four phonemes.

Child 5 needed more time to review, practice, transfer, use and revisit the CVC words he had begun to master; then to move steadily through the short vowel rimes with four phonemes.

## **Child 9**

This child showed very little self efficacy with regard to use of letter / sound knowledge when reading and writing words. He operated in a very similar way to child 5, which allowed for comparisons of progress to be made. In the spelling test, he was reluctant to attempt any words. The only words this child could write independently in the classroom were words he knew as a whole, such as names or high frequency words. In the classroom the focus had been on getting him to 'have a go' at words. There was some evidence of improvement – his scores did

improve, although not at the rate of children 1 and 5. Also he took longer to read the words in the rime unit test – this being more of the CVC words were being made, rather than saying “don’t know’. This child would benefit from explicit teaching of rime units with a similar structure to the teaching sessions.

The second grouping shows results for children working between Text Levels 10 and 20. All are Grade One children. Child 8 is the only child in the Prep / One class. Differences can be seen between the growth in text level and that in word reading and spelling between the two classes with the children in the control group. Some children in the control group were seen to make a lot of progress in one area and whilst showing little or no progress in another.

Table 3: Results for children between Text Levels 10 and 20

child	0 = Teaching 1 = Control 2 = Benchmark Group	Gender 0= Female 1=Male	Age in MONTHS	Text Level in CEOM Pre Testing	Rime Unit PRE %	Rime Unit Pre Time ( sec)	Rime Unit POST %	Rime Unit Post Time (sec)	Spelling PRE %	Spelling POST %	Text level PRE	Text level POST
6	0	0	74	10	19	594	76	316	32	80	11	14
3	0	0	75	14	61.8	405	76	166	28	72	13	21
8	1	1	80	9	60.5	494	65	344	40	44	12	20
10	1	0	81	14	43	298	68	242	52	68	16	16
11	1	0	74	12	60.5	329	85	155	40	76	16	17

Child 8 moved eight text levels, but could only spell one more word than he did in the Pre Test. His time for the rime unit test indicated an improvement in fluency.

Children 10 and child 11 (control group) both showed interesting results, with major growth in rime units and spelling, but little or no movement in text level.

The 1 /2 class had been doing a lot of work at a word level over the time of the

study; however the words had not been used in prose as part of the teaching.

Whereas, child 3 (teaching group) who started with a similar score in the Rime Unit Test, a lower Text Level and lower Spelling score, had been able to apply this knowledge to prose reading more successfully.

Child 6, from the teaching group, made considerable progress with word reading and writing yet moved only three text levels. This child was interesting in that she struggled in the discussion of the prose passages, for example, when asked to say a sentence about the passage, she would pick out a minor detail, rather than state the main idea. Her spoken sentences were usually short and did not have complex structure.

These results would indicate that a balanced range of learning strategies can lead to concurrent growth in the areas of word reading, spelling and prose reading, as set out in the prediction. The results in table 3 also provide evidence that children reading between Levels 10 and 20 are at a stage of learning where they are able to consolidate and transfer their knowledge about CVC Rime Units, to build onto these words, and to extend their knowledge to words with four phonemes. Again, the words that were not yet consolidated by the teaching group, as shown by all the words in the one rime group being read correctly were in the last three sets of rime units taught, being: unk, ank, and ink, showing the need to review and practice rime units in ongoing way.

Table 4: Results of the Grade Two Children, Text Level 20+

child	0 = Teaching 1 = Control 2 = Benchmark Group	Gender 0= Female 1=Male	Age in MONTHS	Text Level in CEOM Pre Testing	Rime Unit PRE %	Rime Unit Pre Time (sec)	Rime Unit POST %	Rime Unit Post Time (sec)	Spelling PRE %	Spelling POST %	Text level PRE	Text level POST
2	0	0	88	21	75	174	93	125	52	84	21	24
4	0	0	95	21	61.8	231	89	196	64	88	17	21
7	0	1	93	26	64	289	75	273	48	68	20	23
12	1	1	95	23	82	110	85	199	64	76	22	21

This group represented the lowest four children in the Grade Two cohort. They all showed excessive use of Distinctive Visual Features in their word reading, in both the Rime nit Test and Text Level. This was characterized by guessing from the initial letter or some of the letters, and in the case of prose, the meaning. The time this group took on the Rime Unit Pre Test was considerably less than that taken by the Grade One children. The mean time for all the Grade one children being 553.8 seconds and for all the Grade Two children being 210 seconds. This group's teaching focus lay with accuracy of reading, reading practice for fluency, word building and self scripts.

One Grade 2 child was in the control group. This child is the fraternal twin of child 4. His results are a case in favour of the explicit teaching Rime Units, using prose as a key strategy, as his text level decreased over the time of the study. The other children in the group moved three or four text levels. They had begun to make statements about their reading such as 'I need to look all the way along the word' or 'I should use my eyes to check my guesses. However, as with the Grade One children, their test results indicated that they were still in need of consolidation of the last groups of Rime Units, especially in spelling.

## **Discussion**

The data collected supported the prediction that explicit teaching of dependable rime units to year 1 and 2 students, who are at risk, will concurrently improve word reading, prose reading and spelling. All of the children showed improvement in all three areas. Improvement was also evident in the control group, however this growth was not as consistent, as growth seen in text level was not generally seen in spelling or inversely, growth seen in word reading and writing was not transferred to prose reading.

The mean scores for the three testing areas were all higher for the control group than the teaching group in the Pre Testing. However, the Post Test mean scores were higher for the teaching group. This also indicated more consistent growth.

Bowey, Storey, and Ferguson, (2004) talked about the connection between naming speed and processing difficulties, stating that children with reading difficulties often have phonological processing difficulties. Their research suggested that there are phonological processes essential to word naming speed tasks. This was supported in the study by the progress made by children when given explicit teaching using phonological processes, breaking words into onset rime units, and segmenting and blending words into sounds.

Munro, (2004) wrote about how children need to phonologically decode words, recognize letter patterns, match them to sounds the sounds they make and then they must remember them long enough to blend into a word. The Number of sounds in a word affects successful task completion, as stated in connectionist

model this means younger children can only work with less sounds and shorter words

Stahl (2001) also looked at the relationship between phonological awareness, reading and spelling, saying that some phonological awareness tasks, such as blending and segmenting related to measures of reading achievement. He also stated that phonological awareness and decoding skill developed in what he called a 'reciprocal relationship'.

Stahl referred to the work of Ehri (1995, 1998) who identified phases that showed the development of word recognition. In the last of these phases, a child has consolidated what they know about words, enabling them to read even novel words automatically, through the knowledge they have of orthographic patterns. The Victorian Essential Learning Standards (VELS) also acknowledge trends in development in word reading and word writing. Onset rime units are referred to in both the Reading and Writing continuums, which points to the reciprocal relationship of both Domains. It also reinforces the developmental nature of the acquisition of literacy knowledge; again, this was evident in the study in the types of words the children could read and spell in relationship to their age and the level of text they could read at an instructional level.

The level of success of the participants in word reading and word writing, was also linked to their 'phonemic awareness span', which Munro (2000) talked about being the number of phonemes that children can use (blending or separating) at one time. This influences word reading ability. There was certainly evidence in

the study of differences in the range of phonemic awareness span. Some of the participants were still working comfortably with three sounds ( tap, back); others had moved onto words with four sounds (bank, pump); and some were able to work with words with five sounds ( splat, trots) as well as two syllable words when word building. Differentiating the teaching through word building and the levels of prose passages supported the range of ability in word reading that was evident in the group. This differentiation also supports the view that onset rime units can be taught to a whole class group through differentiation of words containing a given rime unit, providing opportunities for word building and through the provision of a range of prose passages.

Repeated reading of the prose passages were seen to support the development of fluent, accurate prose reading.

Vadasy and Sanders (2008) put forward that fluent reading is a result of the use and consolidation of the subskills needed to build text meaning. They referred to Perfetti's (1985, 1987) verbal efficiency theory, whereby inefficient word and text reading creates a bottleneck, using attention that should be directed at comprehension. Their research showed that improvement in RAN led to gains in fluency of reading.

Yopp, and Yopp (2000), recommended varying the use of cues when teaching, such as clapping or jumping sounds or syllables (kinesthetic cues). The inclusion of word bags and magnetic letters were seen as an opportunity for the children to physically move things as part of their learning.

The word bags were seen as an integral part of improving the RAN of the participants. The children physically moved and sorted the words into easy or hard piles and in the later sessions, into groups of like rime units. The bags were continually evolving and changing, particularly with the children reading over level 10, who found the target words easy.

Although not part of the original planning of the sessions, discussion of the meaning and context of the prose passages became an integral part of each session. It provided a further link from oral language to text.

The provision of obvious links was an important aspect of the study. The teaching sequence had that intention, through the language used and the routines in place. The establishment of routines, such as individual and paired practice of words and prose passages, enabled the teacher to work individually. A surprising aspect, was the genuine enjoyment shown by the children while they practiced.

For future teaching, having a routine that links word reading, word writing and prose writing, would be possible in a junior class. Established routines would support more independent learning. Different ability levels can be catered for through differentiation of the words bags, word building and prose passages. Using rime units also proved to be an efficient way to cover letter clusters such as cl, tr, dr, rather than spending a week on 'cl' words and a week on 'tr' words that can be easily and more efficiently taught through onset rime work.

The metacognitive component worked well, and the children made statements that reflected their own learning and they used the language taught. They all felt they had made progress as a result of the teaching and would have liked to have continued with the sessions.

A future area of interest for the writer, as a result of this study, would be examining ways to actually increase a student's phonemic awareness span. Do we just wait for them to be older or more ready or are there ways we can proactively increase this span? Evidence in the testing shows that most of the children could read most words with four phonemes, but not necessarily write all the words they could read. Is this because the words were not in their long term memory, or do they need to be able to read them for a period of time before they spell them? This highlights the need to regularly revisit and review work covered, as was seen in the study, the children scored better on the words they had reviewed more.

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## Appendices

### Appendix 1 Rime Unit Test (Adapted from Munro)

#### Rime Unit Test (adapted from John Munro's)

bin	pin	spin	thin
can	man	plan	than
cap	tap	clap	
cab	tab	crab	
rug	bug	plug	
hot	not	spot	shot
fat	pat		chat
hop	top	stop	shop
lip	zip	skip	ship
hit	pit	spit	
rock	sock	clock	shock
well	tell	spell	shell
back	sack	black	
ring	wing	bring	thing
duck	luck	truck	
sick	pick	brick	thick
bank	tank	drank	thank
junk	bunk	trunk	chunk
pink	wink	stink	think
jump	pump	stump	thump
test	rest		chest

## Appendix 2

### Spelling Test

List of 25 words from Rime Unit Test

Bin top cab rug pat hot lip tap man pit sock tell sack wing tank

Bunk wink pump spot truck brick ship thing chest

## Appendix 3

Sample of word cards, which were laminated and cut up. Each child's selection varied according to which words they could read automatically. For example, one child may have sing, king, wing and ring to practice, while another child might be practicing sting and thing as well.

sing	wing	thing	bring
sting	sings	ring	king

#### Appendix 4

Sample of prose reading. This sample uses the 'ell' rime & has three levels of difficulty.

One day, I went to see the fellow who

rings the bells at the church on

Sundays. He didn't look very well.

I said "Tell me, what is the matter?"

He said there was a bad smell in the

church. I went in. Well, it was very

smelly. Someone had left some shells

there, so it smelt a bit fishy. We got

rid of the shells, so now it doesn't

smell near the bells.

(Readability1.2)

One day, I went to see that fellow who rings the bells at the church on Sundays. When I saw him, I thought that he didn't look very well. I said, "You must tell me what the problem is."

He told me that he had a problem because there was a very bad smell in the church. I went in. Well, it was very smelly. Someone had left some shells in there, so it smelt a bit fishy. We got rid of the shells, so now it doesn't smell near the bells.

(Readability 2.2 92 words )

Last week, I went to see that fellow who rings the bells at the church on Sundays. I like to hear those bells every week. When I saw him, I thought that he didn't look very well at all. So I said to him: "You must tell me what the problem is."

He told me that he had a terrible problem because there was a very nasty smell in the church. I went in. Well, it was very smelly. Someone had left some shells in there, so it smelt a bit fishy. We got rid of the shells, and opened a few windows, so now it doesn't smell near the bells.

(readability 3.0 111 words)

## Appendix 5

### Sequence of Lessons

#### Teaching Sequence

Year Levels: Grades 1 & 2

Number of Children: Seven

#### **Rime Units teaching pairs:**

Session	Rime Unit
1	At / ack
2	Ab/ot
3	Ell/ ap
4	In /an
5	ick/it
6	Ing/ ang
7	ock/ op
8	Unk / ump
9	Ank/ ink
10	Ug/uck

#### **Session One at and ack**

This session is designed to teach the lesson routines, as well as the content, familiarizing the children with terms that will be used ( onset; rime; sentence; sounds; words; non words; blend; segment).

The rimes chosen for this session, as a starting point, would be less challenging than other rimes, therefore building up the children's confidence with both the content and procedures.

*\* Teacher's scaffolding actions in italics.*

Materials:

- Paper and textas for recording words
- Laminated word cards
- Storage bags for words
- Sound boxes, counters
- Magnetic letters
- Whiteboard
- Prose passages

Time	Activity	Description
6 mins	Oral work in rhyming, then breaking words into onset / rime units.	'odd man out' i.e. hat can mat 'do these words rhyme' i.e. can man what rhymes with ... man, cat, bag blend / segment orally : c – at; n –ap <i>Teacher leads children orally through these tasks, noting any children having difficulty with the oral tasks.</i>

4 mins	Introduce 'at' rime Build target words: Mat; sat; pat; flat; brat; chat	use letter cards to build the target words Introduce the words onset and rime, and vowel, to describe the parts of the words, i.e. the letters a and t make the rime at. Rimes begin with a vowel. Use magnetic letters to build target words. <i>Teacher models building target words, children then use own letters.</i>
4 mins	Using phonological structure	suggest other words that rhyme or alliterate with the pattern, to transfer knowledge Make up rhymes based on the pattern. Say the words in sentences. <i>Teacher notes whether children can say sentences, and make rhymes.</i>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>Segment into sounds, look at how flat and chat vary in number of sounds, even though they both have four letters. Talk about how ch says 'ch'</li> </ul> <i>Can children blend and segment words? Use counters and sound boxes to help break down words.</i>
6 mins	Making orthographic – phonemic links	<ul style="list-style-type: none"> <li>discuss how the words are similar, both in their shared letter clusters and shared sounds</li> <li>visualize each word</li> <li>Transfer the letter-sound rime unit to other words, using magnetic letters.</li> </ul> <i>Teacher scaffolds this task, by modeling, building words gradually, i.e. begin by adding single consonants, then building onto ends of words, such as 'mats'; extend to 'fatter' or 'splat' the children who can work with more than three sounds, and two syllable words. Talk about words and non-words.</i> <ul style="list-style-type: none"> <li>read and identify the letter cluster in prose <i>Teacher has three levels of prose text ready, to ascertain level of text individual children can successfully access.</i></li> <li>Talk about ways they would remember how to spell the words.</li> <li>Spell the words – look – cover- write –check into books.</li> </ul> <i>Give children choice of adding to list some of the other words they built. Talk about ways to remember and use what they know.</i>

4 mins	Introduce 'ack' rime Build target words: Pack sack black Rack crack shack	<ul style="list-style-type: none"> <li>• use magnetic letters to build the target words</li> <li>• Revisit the words onset and rime, and vowel, to describe the parts of the words, i.e. the letters a and ck make the rime ack. Rimes begin with a vowel.</li> <li>• Children use own letters to build target words.</li> </ul> <p><i>Teacher models use of letters to build target words, as children say the onset rime segments.</i></p>
4 mins	Using phonological structure	<ul style="list-style-type: none"> <li>• think of other words that rhyme or alliterate with the pattern</li> <li>• make up rhymes based on the pattern.</li> <li>• say the words in sentences.</li> </ul> <p><i>Teacher notes whether children can say sentences, and make rhymes. Write down some of the rhymes/sentences, reread as a group.</i></p>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>• segment into sounds, using sound boxes and counters; look at how 'crack' has four sounds.</li> </ul> <p><i>Can children blend and segment words? Are they successful using counters and sound boxes to help break down words?</i></p>
6 mins	Making orthographic – phonemic links	<ul style="list-style-type: none"> <li>• discuss how the words are similar, both in their shared letter clusters and shared sounds</li> <li>• visualise each word</li> <li>• transfer the letter-sound rime unit to other words, using magnetic letters.</li> </ul> <p><i>Teacher scaffolds this task, by building words gradually, i.e. begin by adding single consonants, then building onto ends of words, such as 'pack'; extend to 'packs' or 'packed' for the children who can work with more than three sounds, and two syllable words. Talk about words and non-words.</i></p> <ul style="list-style-type: none"> <li>• Read the sentences and rhymes composed together earlier.</li> <li>• spell the words – look – cover- write –check into books.</li> </ul> <p><i>Give children choice of adding to list some of the other words that were built. Talk about ways to remember and use what they know. While children are writing words, the teacher can hear</i></p>



### Session two ot and ab

This session is designed to reinforce the lesson routines, as well as the content, continuing to familiarize the children with terms that will be used (onset; rime; sentence; sounds; words; non words; blend; segment)

Materials:

paper and textas for recording words  
 Word cards for bags  
 Sound boxes, counters  
 Magnetic letters  
 Whiteboard  
 Prose passages

Time	Activity	Description
3 mins	Oral work in rhyming, then breaking words into onset / rime units.	<ul style="list-style-type: none"> <li>• what rhymes with ... man, cat, bag, tap</li> <li>• blend / segment orally words from last session – c – at; crack; shack</li> <li>• clap out some two syllable words that were built in the last session</li> </ul> <p><i>Teacher leads children orally through these tasks, with a focus on yesterday's words.</i></p>
5mins	Review words and prose from last sessions	<ul style="list-style-type: none"> <li>• children work with partner, taking turns saying words in word bag. <i>Talk about aiming for speed.</i> Game 'goodies and baddies'. Children put words they know automatically into goodies pile, other words go into baddies pile. <i>While children are practicing words, teacher takes running record of individual children reading yesterday's prose.</i></li> <li>• Reread last session's prose as a group. <i>Talk about reasons for practicing things e have read before, using punctuation, making reading 'sound like taking'</i></li> </ul>
4 mins	Introduce 'ot' rime. Target words: hot, lot, shot, trot	<ul style="list-style-type: none"> <li>• use magnetic letters to build the target words</li> <li>• revisit the terms onset and rime, and vowel, to describe the parts of the words, i.e. the letters o and t make the rime ot. Rimes begin with a vowel.</li> </ul> <p><i>Teacher models use of letters to build target words, children take turns to make a word with the 'ot' rime.</i></p>
4 mins	Using phonological structure	<ul style="list-style-type: none"> <li>• suggest other words that rhyme or alliterate with the pattern, to transfer knowledge</li> <li>• make up rhymes based on the pattern.</li> </ul>

		<ul style="list-style-type: none"> <li>say the words in sentences.</li> </ul> <p><i>Teacher notes whether children can say sentences, and make rhymes.</i></p>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>segment into sounds, look at how trot and shot vary in number of sounds. Talk about how sh says 'sh'</li> </ul> <p><i>Can children blend and segment words? Use counters and sound boxes to help break down words.</i></p>
5 mins	Making orthographic – phonemic links	<ul style="list-style-type: none"> <li>discuss how the words are similar, both in their shared letter clusters and shared sounds</li> <li>visualize each word (close eyes, make picture in head)</li> <li>transfer the letter-sound rime unit to other words</li> </ul> <p><i>Teacher scaffolds this task, by modeling ways to build words, such as 'trot'; extend to 'trots', 'trotted' or 'trotting' for the children who can work with more than three sounds, and two syllable words. Talk about words and non-words. Draw attention to what happens when 'ed' or 'ing' are added.</i></p> <ul style="list-style-type: none"> <li>read and identify the letter cluster in prose. Begin as whole group with easiest text.</li> <li>Children practice text individually, while teacher hears individual children read words and prose. Some children are given harder words and text.</li> </ul> <p><i>Teacher has three levels of prose text ready, to ascertain level of text individual children can successfully access.</i></p> <ul style="list-style-type: none"> <li>spell the words – look – cover- write –check into books.</li> </ul> <p><i>Give children choice of adding to list some of the other words they built. Talk about ways to remember and use what they know.</i></p>
4 mins	Introduce 'ab' rime Build target words: Cab, dab, lab, grab, crab	<ul style="list-style-type: none"> <li>use letter cards to build the target words</li> <li>use the words onset and rime, and vowel, to describe the parts of the words, i.e. the letters a and b make the rime ab. Rimes begin with a vowel.</li> </ul> <p><i>Teacher models use of magnetic letters to build target words.</i></p>

4 mins	Using phonological structure	<ul style="list-style-type: none"> <li>• think of other words that rhyme or alliterate with the pattern</li> <li>• make up rhymes based on the pattern.</li> <li>• say the words in sentences.</li> </ul> <p><i>Teacher notes whether children can say sentences, and make rhymes. Write down some of the rhymes/sentences, reread as a group.</i></p>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>• segment into sounds, look at how 'crab' has four sounds</li> </ul> <p><i>Can children blend and segment words? Use counters and sound boxes to help break down words. Check all children can map 'crab' and 'grab'. (4 sounds).</i></p>
5 mins	Making orthographic – phonemic links	<p>discuss how the words are similar, both in their shared letter clusters and shared sounds</p> <p>visualise each word</p> <p>transfer the letter-sound rime unit to other words, using magnetic letters.</p> <p><i>Teacher scaffolds this task, modeling how to build words gradually, i.e. begin by adding single consonants, then building onto ends of words, such as 'cabs'; extend to 'grabs' or 'grabbed' for the children who can work with more than three sounds, and two syllable words .Talk about words and non-words. Reread the sentences and rhymes composed together earlier.</i></p> <p>spell the words – look – cover- write –check into books.</p> <p><i>Give children choice of adding to list some of the other words they built. Talk about ways to remember and use what they know. While children are writing words, the teacher can hear individual children read the prose from the 'ot' words. Continue to put together individual word bags, of words they can read to promote automaticity.</i></p>
5 mins	Review of learning Metaphonemic knowledge – model to children	<p>Need to reinforce metacognitive knowledge – so they can move on from being passive learners to strategic learners.</p> <p>Teacher continues to provide sentence starters, such as :</p>

	how they could articulate of what they know about the rime; how they transfer this to new words; what they can do now, that they couldn't before; review what they learnt	I can now... I'm good at.... Rime units help me to...
Total: 45 minutes		
<p>Reflection:</p> <ul style="list-style-type: none"> <li>• The children enjoyed going through their word bags and rereading their passages, will make reviewing previous words and passages part of the regular routine for the future sessions.</li> <li>• Children are becoming more familiar with routines.</li> <li>• Children enjoy making up sentences and rhymes.</li> <li>• As part of word reviewing, get children to sort words according to rime unit.</li> <li>• Get children to say a sentence describing what they think the passage is about as part of future sessions – to support development of comprehension at a sentence and topic level.</li> </ul>		

<p><b>Sessions Three – Ten</b> Continuing routines. Review and revisit words, rhymes, sentences and passages. Focus on manipulating words to sort them. Incorporate saying sentences about passages, encourage more complex sentences. Continue to differentiate by using prose at different readability levels and by variance of words in word bag and through word building. Materials: paper for recording words Word cards for bags Sound boxes, counters Whiteboard Prose passages</p>		
Time	Activity	Description
8mins	Review words and prose from last sessions	<ul style="list-style-type: none"> <li>• children work with partner, taking turns saying words in word bag.</li> <li>• Children sort words as they go, into rime unit groups.</li> <li>• Children practice their prose passages from the previous sessions.</li> </ul> <p><i>While children are practicing words, teacher</i></p>

		<p><i>takes running record of individual children reading previous day's prose. Some children will read harder texts.</i></p> <ul style="list-style-type: none"> <li>• Group read together easiest of previous day's passages.</li> <li>• Practice writing some words from previous sessions, for example, how many words can you write in a minute?</li> </ul>
4 mins	Introduce rime Build target words:	<ul style="list-style-type: none"> <li>• Use magnetic letters to build first group of words.</li> </ul>
4 mins	Using phonological structure	<ul style="list-style-type: none"> <li>• children suggest other words that rhyme or alliterate with the pattern</li> <li>• children suggest ways they could build on those words.</li> <li>• say the words in sentences.</li> </ul> <p><i>Teacher continues to model and encourages more complex sentences.</i></p>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>• segment into sounds, look at variations in number of sounds.</li> <li>• Talk about syllables with children who are making longer words.</li> </ul> <p><i>Can children blend and segment words? Use counters and sound boxes to help break down words.</i></p>
7 mins	Making orthographic – phonemic links	<ul style="list-style-type: none"> <li>• discuss how the words are similar, both in their shared letter clusters and shared sounds</li> <li>• visualise each word ( close eyes, make picture in head)</li> <li>• transfer the letter-sound rime unit to other words,</li> <li>• read and identify the letter cluster in prose</li> </ul> <p><i>Teacher has three levels of prose text ready, to ascertain level of text individual children can successfully access. However, begin with whole group on easy prose.</i></p> <ul style="list-style-type: none"> <li>• Children suggest sentences that tell what the prose is about.</li> <li>• Read the prose as a group.</li> <li>• spell the words – look – cover- write – check into books.</li> </ul> <p><i>Give children choice of adding to list some of</i></p>

		<i>the other words they built. Talk about ways to remember and use what they know.</i>
4 mins	Introduce second rime unit. Build target words	<ul style="list-style-type: none"> <li>• use magnetic letters to build the target words</li> </ul>
4 mins	Using phonological structure	<ul style="list-style-type: none"> <li>• think of other words that rhyme or alliterate with the pattern</li> <li>• make up rhymes based on the pattern.</li> <li>• say the words in sentences.</li> </ul> <p><i>Teacher notes whether children can say sentences, and make rhymes. Write down some of the rhymes/sentences, reread as a group.</i></p>
3 mins	Using phonemic structure	<ul style="list-style-type: none"> <li>• segment into sounds.</li> </ul> <p><i>Can children blend and segment words? Use counters and sound boxes to help break down words. Extend some with the word 'strap';</i></p>
3 mins	Making orthographic – phonemic links	<ul style="list-style-type: none"> <li>• discuss how the words are similar, both in their shared letter clusters and shared sounds</li> <li>• visualise each word</li> <li>• talk about words we could build using these rimes.</li> <li>• read and identify the letter cluster in the sentences from earlier.</li> <li>• spell the words – look – cover- write – check into books.</li> </ul> <p><i>Give children choice of adding to list some of the other words they built. Talk about ways to remember and use what they know. While children are writing words, the teacher can hear individual children read the session's prose. Continue to put together individual word bags, of words they can read to promote automaticity.</i></p>
5 mins	Review of learning Metaphonemic knowledge – model to children how they could articulate of what they know about the rime; how	<p>Need to reinforce metacognitive knowledge – so they can move on from being passive learners to strategic learners. Teacher continues to provide sentence starters, such as :</p> <p>I can now... I'm good at.... Rime units help me to...</p>

Total: 45 minutes	they transfer this to new words; what they can do now, that they couldn't before; review what they learnt	
Session / Rime Unit		Reflection on sessions
3 Ell/ ap		<ul style="list-style-type: none"> <li>• the 'ell' rime was probably the most challenging, so far, for the two lowest operating students.</li> <li>• The level 15+ children coped well with the passage, reading words like fellow and smelly quite easily.</li> <li>• Continue to update word bags – swap easy words like cot or dot for more challenging words like spotty or trotted.</li> </ul>
4 In /an		<ul style="list-style-type: none"> <li>• These were more user friendly for the two below level 10 children, but it was still possible to extend for the other children.</li> <li>• Children now independently attempt to build on words while we are doing the word writing section of the session. For example we wrote 'pin' one child then asked to add an s to make it 'spin', then a couple wrote 'spins'. Another then articulated that it needed to be a double n to make 'spinning'.</li> <li>• Children suggested good 'an' word sentences.</li> </ul>
5 ick/it		<ul style="list-style-type: none"> <li>• 'ck' is tricky for some</li> <li>• Quality of passages is improving – learning not to compromise meaning for token use of target words. Better to have fewer words with the rime, and possibly include a couple of target words from previous sessions.</li> <li>• This passage led to a lengthy discussion on what a good sentence summarizing it would say. There was much discussion about clues that would point to the gender of the main character. This time spent pulling apart a piece of writing of about 100 words has been valuable, especially for the children who read at level 15+, who read longer texts without really stopping to think about what they read.</li> </ul>
6 ing/ ang		<ul style="list-style-type: none"> <li>• These two rimes seemed too similar for the</li> </ul>

	<p>two below level 10 students. Teacher need to sort before they said them – if they were mixed up they got confused. Then played “find me” with all the words out. Repeat in review time next session. The other children could sort and say them with ease.</p> <ul style="list-style-type: none"> <li>• Good articulation of what they need to do when they read, they are saying things like “ look at properly at all of the word”, “don’t just guess from the first letter”, and “ I’m using my eyes better”</li> </ul>
7 ock/ op	<ul style="list-style-type: none"> <li>• Revisiting last session’s reflections proved to be useful for tuning children into reading their prose passages. They really enjoy rereading these, and see value in practicing them.</li> <li>• Improvement seen in ing and ang, with less confusion evident.</li> <li>• Aim for running records for half the children every session, not always time for all. Running records show easy texts are instruction for the children below level 10, easy for the others, who are happy to read harder versions which are instructional for them.</li> <li>• Definite difference emerging between the children reading below level 10 and the rest of the group. Those reading below level ten work best with words with three phonemes, such as pit, cot or man; they still invest attention to some of these words and need much more practice and review of words. They are beginning to use ch, sh and th when reading words, but not always when writing words. The other children master the three phoneme words quickly, and can build onto these. Some can add letter clusters, such as in trot or flat, and some endings to make two syllable words, such as trotted or flatter.</li> </ul>
8 Ug/uck	<ul style="list-style-type: none"> <li>• Short u sound is still tricky for some. More with writing than reading. Will be revisited in session 10.</li> </ul>
9 Ank/ ink	<ul style="list-style-type: none"> <li>• This rime was very tricky – four phonemes, with two consonant sounds at the end of the word.</li> <li>• Less word building encouraged here, felt</li> </ul>

	they needed to automatise before extending.
10 Unk / ump	<ul style="list-style-type: none"> <li>• Again, quite tricky, four phonemes and short u sound together.</li> <li>• The last two sessions had what were the most challenging words of the study; unfortunately they were the words the children had the least chance to practice. Do not expect all to know these in post test.</li> <li>• After being told this was their last session, children were able to say things they could do better now, for example, “ say words quickly”, “ read what is written better” or “spell more words”</li> </ul>
Final Reflection	<ul style="list-style-type: none"> <li>• All children wanted to keep their folders with word bags and passages. Parents later reported that these were practiced at home, independently and without prompting. This would indicate that the sessions had positive effect on the students’ self efficacy.</li> <li>• In retrospect, I would have liked to have taught eight pairs of rimes, with four sessions and then a review session every fifth session. Some of the children needed time to review, practice and consolidate before moving on. Would have liked to have spent more time mastering the three phoneme target words, before moving rimes such as unk or ank.</li> <li>• Was generally happy with being able to differentiate within the group. The two children between levels 10 and 15 ended up working at the same rate as the three level 15+ children.</li> </ul>

### Appendix 6 Student Demographics

child	0 = Teaching 1= Control 2= Benchmark Group	Age in MONTHS	Gender 0= Female 1=Male	Years of Schooling	Class group Prep /One =0 1/2 =1	Intervention No=0 RR 2008=1 RR2009 (tentative list) = 2	Burt Word Score in CEOM Pre- Testing	Text Level in CEOM Pre Testing
1	0	80	1	1	0	0	19	7
2	0	88	0	2	1	0	41	21
3	0	75	0	1	1	0	30	14
4	0	95	0	2	1	1	32	21
5	0	76	1	1	0	2	12	6
6	0	74	0	1	1	0	24	10
7	0	93	1	2	1	0	34	26
8	1	80	1	1	0	0	25	9
9	1	78	1	1	0	2	17	6
10	1	81	0	1	1	0	27	14
11	1	74	0	1	1	0	29	12
12	1	95	1	2	1	0	39	23
13	2	81	0	1	0	0	41	27
14	2	88	1	1	1	0	44	27
15	2	83	1	1	1	0	77	28

### Appendix 7 Pre and Post Test Results

Name	0 Teaching or 1 Control or 2 Benchmark Group	Attendance No. of sessions	Rime Unit PRE %	Rime Unit Pre Time ( sec)	Rime Unit POST %	Rime Unit Post Time (sec)	Spelling PRE %	Spelling POST %	Text level PRE	Text level POST
1	0	10	48	962	85	395	24	56	7	15
2	0	10	75	174	93	125	52	84	21	24
3	0	10	61.8	405	76	166	28	72	13	21
4	0	9	61.8	231	89	196	64	88	17	21
5	0	9	17.1	705	39	469	16	32	7	12
6	0	10	19	594	76	316	32	80	11	14
7	0	9	64	289	75	273	48	68	20	23
8	1		60.5	494	65	344	40	44	12	20
9	1		18	388	21	408	0	16	7	11
10	1		43	298	68	242	52	68	16	16
11	1		60.5	329	85	155	40	76	16	17
12	1		82	110	85	199	64	76	22	21
13	2		86	157			68			
14	2		84	125			40			
15	2		100	142			100			