Explicit whole class teaching of onset and rime units with analogy improves text reading and spelling accuracy when writing in Year 1 / 2 students.

Abstract:

Many students in their early years of school have difficulties with some parts of learning literacy, including their word level knowledge. *"Learning to read is not easy for some students" (Ehri, Satlow & Gaskins. 2009. pg162).* They can often find it difficult to make links between their orthographic, phonological and semantic knowledge (Munro.2008) when attempting to read or write.

The current study has examined the prediction that explicit whole class teaching of onset and rime units with analogy improves text reading and spelling accuracy when writing in Year 1/2 students. The study compared two groups of 10 students in either an intervention or a group control. The intervention group were explicitly taught 26 dependable rime units with analogy using both reading and writing. The control group remained in their regular classroom with regular reading lessons.

The results indicated that all 10 intervention students increased their use of analogy when reading onset and rime words in isolation and when spelling words in writing. There appeared to be little or no evidence to suggest that prose reading or phonological awareness improved as a result of the intervention provided. Results did not support the hypothesis entirely however, indicates the need for other strategies to work in conjunction with learning onset and rime units, in order to support literacy learning.

Introduction

Reading and writing are important components of an individual's ability to be literate and functioning members of society. Teaching literacy in the early years is a very complex task for teachers, as they have to decide what are the best strategies to help children learn. *"The task for the reading/ writing programme is to get the child to learn to use any and all of the strategies or operations that are necessary to read texts of a given level of difficulty" (Marie Clay. pg 19).* Literacy learning is affected by a number of elements. John Munro (2008)

suggests that young students engage in literacy knowledge as they interact with others and a variety of contexts they are exposed to. *"These contexts determine the text to which they are exposed, the ways in which they experience literacy knowledge being used, the oral language they learn, the breadth of meanings and ideas and ways in which they learn to use it to communicate and to solve problems"* (Munro. 2008. *pg 26).* Therefore the way students' respond to different aspects of literacy learning depends on the strategies taught and all other contexts that are influencing learning.

Text processing is an integral part of prose reading and the Multiple Levels of Text Processing (MLOTP) model (Munro. 2008) combines a range of levels that work together to assist individuals when reading. One of the main levels from the model is the 'word knowledge level'. At this level, the reader uses their orthographic, phonological and semantic pathways to assist them with decoding words both in isolation and in prose. Students need to use a combination of these pathways to ensure they are interpreting how the words and letters are written (orthographic), how the letters sound in the word (phonological) and what the word means (semantic). Word decoding by using phonological awareness is an important part of prose reading and writing. Phonological awareness is what we know about the sound properties of words and our language. Students need to use what they know about sounds and letters to decode words and to hear sounds when attempting to write. Word identification is an important part of the reading process. Brown, Sinatra and Wagstaff indicated that, *"an efficient, independent means of word identification is critical for making sense of text. The evidence indicates that readers who cannot identify words quickly and effortlessly encounter ongoing difficulty understanding what they read because they expend their cognitive resources on decoding rather than comprehension"* (Brown, Sinatra & Wagstaff. 1996. pg 81). They also discuss that those students who have difficulty with word reading also experience difficulties with their spelling. *"Poor decoders tend to be poor spellers as well, and when these students compose written text, they experience comparable challengers"* (Brown, Sinatra & Wagstaff. 1996. pg 81). Similarly they suggest that reading and spelling are linked directly as a result of both methods depend on the same orthographic and phonological knowledge *(Brown, Sinatra & Wagstaff. 1996).* Ultimately this is knowledge of spelling patterns and letters clusters and how these relate to sound and about the meaning. These are important skills that assist students to make connections in order to support their literacy learning and therefore, enable them to read and write with confidence.

Once students can associate and match the letter cluster in words with sounds, they then need to move to segmenting words into onset and rime. *"Treiman (1985) found that the most "natural" way to analyse segments in monosyllabic English words is to divide them into onsets and rimes" (*Ehri, Satlow & Gaskins. 2009. pg164). The onset is the part of the word where the consonant or consonant cluster is before the vowel. The rime unit is part of a syllable that includes the vowel and any consonants that come after it (Munro and Dalheim. 2008). By using onset and rime, students are able to segment words for both reading and writing. *"Reading instruction often focuses on items of knowledge, words, letters and sounds. Most children respond to this teaching in active ways. They search for links between items and they relate new discoveries to old knowledge" (Clay.1994. pg 18).* Students who have difficulty making the links with onset and rime can experience difficulties in word level knowledge. Therefore they often need to be taught how to make connections between words when they are reading and writing.

Analogy is a strategy that can be linked between reading and writing, whereby the student can make links between one rime unit and its varying onsets. Therefore using previous knowledge of a rime unit to read or write another word with the same rime unit eg: "If I know pink, I know wink and think". *"Goswami (1986) showed that very young children can use rime cues in known words to read new words. Several studies have shown analogising to be an effective approach to instruction" (*Ehri, Satlow & Gaskins. 2009. pg164*).* By introducing this strategy to students, teachers are providing opportunities for students to use self-talk as a method of teaching themselves. Some students in the early years of schooling have difficulties reading words with onset and rime units in isolation and in prose. They also find it difficult to transfer their knowledge of known rime units into their writing. This is supported by Brown, Sinatra and Wagstaff as *"individuals with underdeveloped rime knowledge, however, use less sophisticated strategies for handling unfamiliar words and, as a result, often experience difficulty as they read and write" (*Brown, Sinatra and Wagstaff. *1996, pg 82).*

The current study aims to investigate if by explicitly teaching onset and rime units to a whole grade of year 1 and 2 students, in correlation with analogy will assist them in reading and spelling accuracy in writing. It also aims to develop their phonological awareness through

using letter sounds. *"The role of early phonological awareness is just as pertinent for spelling as for reading"* (Brown and Deavers. 1997. Pg 340). The teaching of rime units allows students to use their phonological knowledge to apply rime sounds to words they read and write. If this type of instruction can assist students when reading words in prose and when writing then they will gain greater success in their word level knowledge. It aims to see if the earlier studies are accurate in helping students with their reading and writing through teaching them about onset and rime. Brown, Sinatra and Wagstaff suggest, *"an efficient, independent means of word identification is critical for making sense of text. The evidence indicates that readers who cannot identify words quickly and effortlessly encounter ongoing difficulty understanding what they read because they expend their cognitive resources on decoding rather than comprehension"* (1996, pg81). Therefore, through teaching students about rime units and using analogy they can change the onset to create new words. This is an important skill for these students to improve reading and writing. Applying knowledge of words to read and write new words correlates with Marie Clay's notion that we need to provide opportunities for students to go *"searching for relationships which order the complexity of print and therefore simplify it"* (1993, pg 18).

Teachers want to be able to encourage their students to use their self management strategies to empower them with skills for solving word decoding and writing problems. Goswami and Mead (1992) have indicated that if children can use their knowledge of spelling and sound patterns to make inferences about the sound of a new word with the same spelling pattern. Then they will be able to use the analogies made for both isolated word reading tasks and in prose reading early in reading development. Goswami states that *"A child who can hear that beak and peak share a sound at the end (rhyming), or who can segment single syllable words into onset- rime units, may be better at making an inference about the pronunciation of a new word like peak on the basis of its shared spelling sequence with beak than a child who cannot (*Goswami & Mead .1992. *Pg153).* It was also found that there was a definite connection between hearing the sounds that the rime makes and making connections with the spelling pattern of the rime units.

The present study aims to teach a variety of onset and rime units with analogy, within the whole class setting. This will be conducted to examine if it improves isolated word reading, text reading and spelling accuracy in writing of a selected number of students in Years 1 and 2.

Method:

Design:

This case study was conducted using the OXO (test, teach, test) design. Gains in reading prose and spelling accuracy, following explicit teaching of some onset and rime units with analogy, were monitored with a group of Year 1 and 2 students. This involved comparing pre and post testing of a group of 10 students from an intervention group and a control group that received none of the intervention lessons.

Participants:

Students chosen to participate in this study were all Year 1 and 2 students from multi-age classrooms. Their ages ranged from the youngest student being 6 years and 1 month old to the eldest being 7 years and 8 months old. These students were selected as a result of their onset and rime units test score in conjunction with their Sutherland Phonological Test and a writing dictation passage score. Four of the selected intervention students were at a reading level below what they should be, for their year level. The results taken from the Sutherland Phonological Awareness test identifies that all of the students had some difficulty hearing and or recording sounds in words. This highlighted the need to choose these students as Siegal and Snowling suggest, *"a major source of difficultly involves learning to decode and spell words. The difficulty centers on the phonological processes that underlie word learning"* (Ehri, Satlow & Gaskins. 2009. pg 162).

Six of the students have had at least two years of schooling, whilst the remaining four students have had at least three years. Seven of the students are classified ESL (English Second Language) and there is an equal balance of 5 male and 5 female students.

Table 1: Background information for the intervention group.

Intervention Group	Age (Years and months)	ESL No=0 Yes=1	Earlier Intevention No=0 RR=1	Gender 0=Male 1= Female	Years of Schooling
A	75 months	0	0	1	2
B	73 months	1	0	1	2
C	75 months	0	0	1	2
D	87 months	1	1	1	3
E	78 months	1	0	1	2
F	76 months	1	0	0	2
G	80 months	1	0	0	2
H	91 months	0	0	0	3
I	83 months	1	0	0	3
J	92 months	1	0	0	3

Teaching Materials:

Over the course of the ten lessons, the resources were consistent by design and sequence of use, changing only to accommodate the new rime unit being taught. After an initial brainstorm of the students' ideas of words containing the rime unit being taught, they were shown a picture and word matching activity on the interactive whiteboard from a selection of words from appendix 4. This was created so that students were able to read words using analogy and match them with a visual representation. Following this whole class activity, students were engaged in a shared reading of a text that contained some words that contained the rime unit. These texts ranged from interactive stories from the Internet, to short phonics poems and teacher created passages (appendix 3). Students then used their own whiteboard and whiteboard marker to write as many words with the taught rime unit as they could. As a record for future reference, students were given a little teacher made booklet called "My Onset and Rime Book" to record rime units learnt and to add any words discovered for the remainder of the year. This was to encourage students to develop ownership of their learning and to use their book as a word reference book in other lessons throughout the year.

Testing materials:

Pre and post testing materials used for included the following:

- Prose reading levels: Alpha Assess levelled texts were used to conduct running records on the students' oral reading (Alpha Assess Benchmark Kit. 2008).
- Onset and Rime: Reading of various rime units using Rime Units test (Dalheim, 2004).
- Phonological awareness: Sutherland Phonological Awareness test (Neilson. 2003).
- Onset and Rime in writing: A teacher created Onset and Rime Dictation passage (appendix 5) was used to assess students abilities to transfer learnt rime units into writing through analogy and phonological awareness.

Procedure:

In the pre-testing for this study, students were assessed using a range of testing materials. The text levels were gained at the beginning of the school year in the Literacy testing period using the Alpha Assess texts. Students' text levels had to be at an instructional level followed by two hard reading levels in order for the text level to be given. These running records were completed in a one on one (student/teacher), isolated room environment. When students were administered the Onset and Rime test and the Sutherland Phonological

Awareness test, this was conducted in a small and quiet withdrawal room with either the classroom teacher or another familiar teacher within the school such as the Literacy co-ordinator or Literacy support teacher. The dictation writing passage was given to the students in a small group setting, outside of the classroom. This consisted of a small passage containing 61 words.   Twelve of these words were taken from the Onset and Rime test, with the addition of another four words that contained some of the same rime units.   These were all administered 4-8 weeks from the beginning of the current school year. The post testing was conducted in a similar way, except for the administration of the Onset and Rime Dictation passage, which was administered within the classroom. This was as a result of time restraints and the availability of additional teaching staff. The students' reading levels were gained using the same levelled texts and they had to get to an instructional level followed by two hard levels.   The Sutherland Phonological Awareness test were also administered in the same way, in a one to one, isolated room environment.

Teaching:

The intervention lessons focused on teaching a whole class of twenty-three students, 26 of the various onset and rime units from Dalheim's rime unit test (2004). These included the two letter – two sounds, three letter- two sounds, three letters-three sounds, vowel diagraphs, VV and VC rime units. The teaching sessions were performed by the classroom teacher and each of the ten sessions were conducted every morning for duration of 40 minutes each. The intervention lasted for a two week period whereby each of the lessons were administered to a class of twenty-three students, in their everyday classroom**.** The teaching procedure was designed to teach all 26 new rime units and for the students to use analogy to brainstorm and create new words.   Students from the intervention group were able to learn from other students within the class through peer and collaborative learning. The 26 rime units selected for teaching, resulted from analysis of the intervention groups' results from the Rime Units test in the pre testing. Words used were not the same words from this test however, students may have suggested these words when they were contributing to the class brainstorm or when they were using analogy to write their own list of words about the rime unit. Initially the lessons were very structured to ensure students understood what onset and rime was and how they could use analogy as a strategy to be applied in reading similar words or to assist them when reading prose. The students' ability in analogy was established by the 6th lesson as they were independently using the statement "If I know… I also know …". This use of analogy became a regular part of the lesson and was established to determine whether or not

it could be transferred to the writing context. The participants verbalised through analogy how they could change different onsets for a particular rime unit. This was then to be assessed in the post test dictation passage, to determine whether or not by improving onset and rime with analogy, writing, in turn would improve. The students' text reading ability was retested to determine whether or not improving onset and rime knowledge, improved prose reading. The control group was from another year 1/ 2 multi-age classroom with 24 students. This group received its regular classroom one hour reading lessons over the same period of time which consists of a shared reading text, independent activities, guided teacher groups and share time.
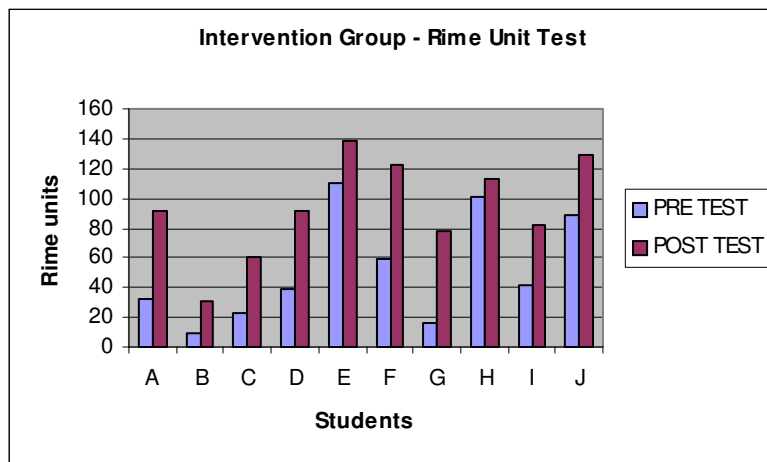
Results:

Results indicate some support for the hypothesis that explicit whole class teaching of onset and rime units with analogy improves text reading and spelling accuracy when writing in Year 1 / 2 students. Full lists of results are contained in appendix 1. All students were given and pre and post test to assess knowledge of rime units, phonological awareness, text level and spelling in a dictation passage. The onset and rime units test scores of all students from the intervention group indicate improvement with the number of words read correctly in isolation. The difference in the mean increased by 41.7 from the pre to the post testing (Figure 1). The control group showed improvement with a difference in word reading mean increase of 16.6. The reading of rime increased from the pre and post testing results, however these were not as substantial as the intervention group. The total number of onset and rime words in the test is 150. When observing the results, neither group's average was able to reach over 100 words.
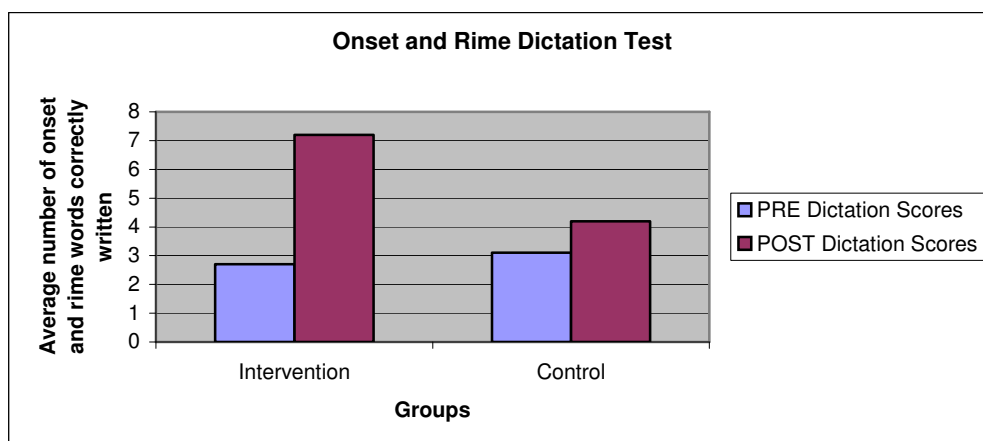
Figure 1:
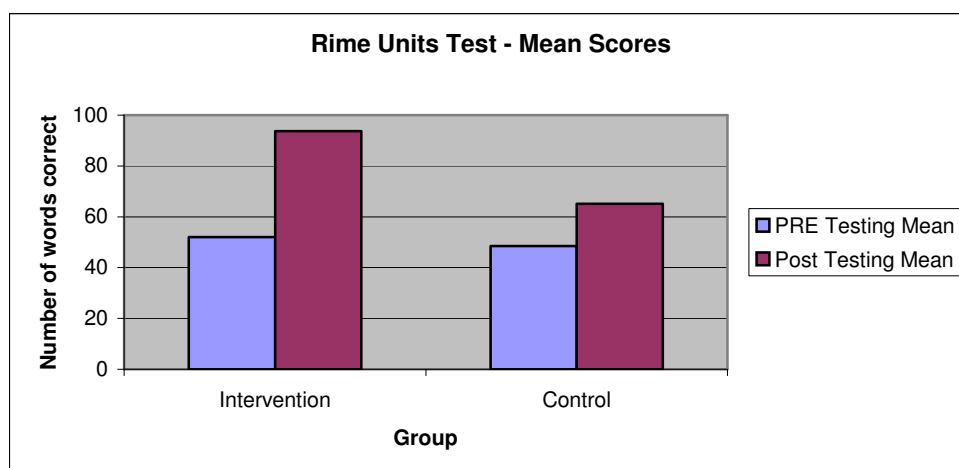
Some students from the intervention group were able to read a greater amount of words when the pre and post Rime Unit test was conducted. Figure 2 illustrates that students A, F and G all read approximately 60 more words accurately after the teaching period, which is indicative of a 50% improvement in isolated word reading.

Figure 2: Results of individual children from the onset and rime test.

Gains made by the intervention group can be clearly identified through the comparison of the mean results of the pre and post testing (Figures 1 and 3). The control group also made some improvement, which may have resulted from natural progression within the classroom.

Figure 3: Dictation test (teacher generated):

The results of the teacher generated dictation test, showed slight improvements with both groups. However, the intervention group showed a greater increase (Figure 3). The mean scores for the intervention group increased from 2.7 to 7.2 in comparison to the control

groups mean of 3.1 to 4.2. The control's group pre test average was higher than that of the intervention group, however, a greater improvement was made after the whole class explicit teaching.

Figure 4: Post dictation test (teacher generated) of individual students:
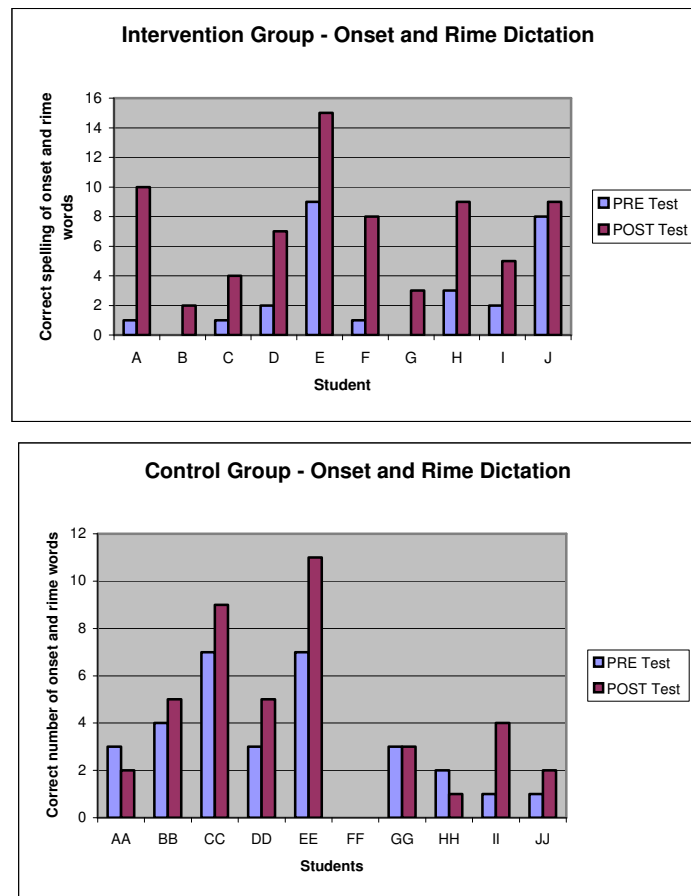
Students from the intervention group made some gains in improving the spelling of the onset and rime words within the dictation task by using analogy. The onset and rime words from the dictation test did have 13 of the rime units taught in the lessons, however the onsets were different. Twelve of the words from the dictation were from the Rime Units Test (Dalheim. 2004) whilst the remaining four had a rime unit from the test but a different onset. With the 13 rime units included in the dictation, this proved to be useful for the intervention students in making analogies when they were writing. Students A, D, E, F and H all improved their spelling of onset and rime words by 5 or more words. The greatest individual gain made in the control group was by Student EE who increased his spelling of onset and rime words by 4.

Table 2: Sutherland Phonological Awareness Test – Intervention and Control Group

| Name	Standard Score (childs/ sdev) PRE	Mean pre	Standardised score against the mean.
A	-1.2	36.8	35.6
B	-1.1	36.8	35.7
C	-0.3	36.8	36.5
D	0.8	36.8	37.6
E	1.7	36.8	38.5
F	-0.3	36.8	36.5
G	0.4	36.8	37
H	0.9	36.8	37.6
I	-1.1	36.8	35.7
J	0.1	36.8	36.9

Figure 5:
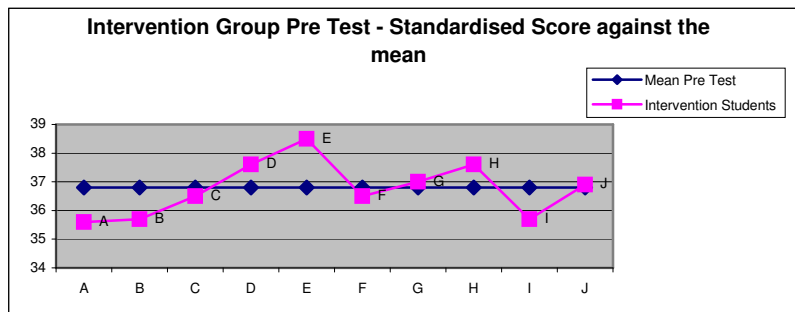
Name	Standard Score (childs/ sdev) PRE	Mean pre	Standardised score against the mean.
AA	3.5	33.8	37.3
BB	3.5	33.8	37.3
CC	1.5	33.8	35.3
DD	-0.4	33.8	33.4
EE	1.1	33.8	34.9
FF	0.02	33.8	33.82
GG	0.4	33.8	34.2
HH	-0.3	33.8	33.5
II	-1.1	33.8	32.7
JJ	-1.7	33.8	32.1

Figure 6:
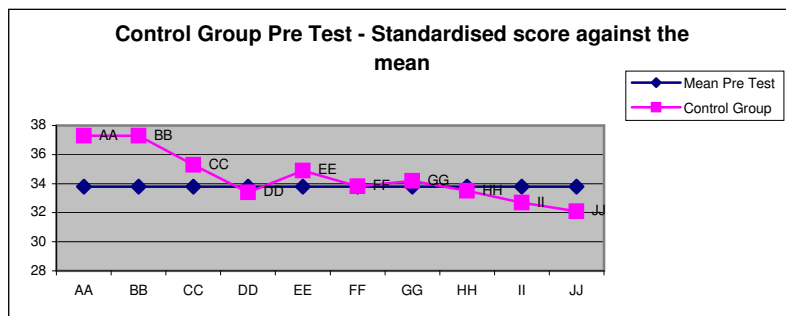
By using the student's standard score and mean, individual students variation from determined their standard deviation (appendix 2). Figure 5 highlights each of the intervention students' standard deviation in comparison to the mean for the pre test of the Sutherland Phonological Awareness Test, which is marked out of 47. The mean in this initial test was 36.8. From Figure 5, it is clear that this group of students standard deviation score was low as their scores tended to be close to the mean. In comparison to the control group (Figure 6), the pre results show that more of these results were closer to the mean of 33.8. There seems to be a greater spread of results from the mean in the intervention group's pre results than the control's. The control group's mean was also lower in this test.

Table 3: Sutherland Phonological Awareness Test – Intervention and Control Group

| Name	Standard Score (childs/ sdev) POST	Mean Post	Standardised score against the mean.
A	-1.2	45.1	43.9
B	-1	45.1	44.1
C	-0.3	45.1	44.8
D	1.5	45.1	46.6
E	1.5	45.1	46.6
F	-0.5	45.1	44.6
G	0.3	45.1	45.4
H	0.3	45.1	45.4
I	-0.8	45.1	44.3
J	0.3	45.1	45.4

Figure 7:
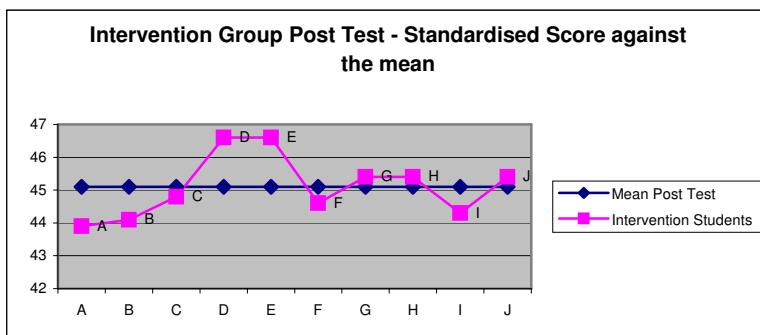
Name	Standard Score (childs/ sdev) POST	Mean Post	Standardised score against the mean.
AA	0.5	39.7	40.2
BB	0.3	39.7	40
CC	1	39.7	40.7
DD	-0.7	39.7	39
EE	1.1	39.7	40.8
FF	-0.3	39.7	39.4
GG	-0.09	39.7	38.8
HH	-0.6	39.7	39.1
II	-0.7	39.7	39
JJ	-2	39.7	37.7

Figure 8:
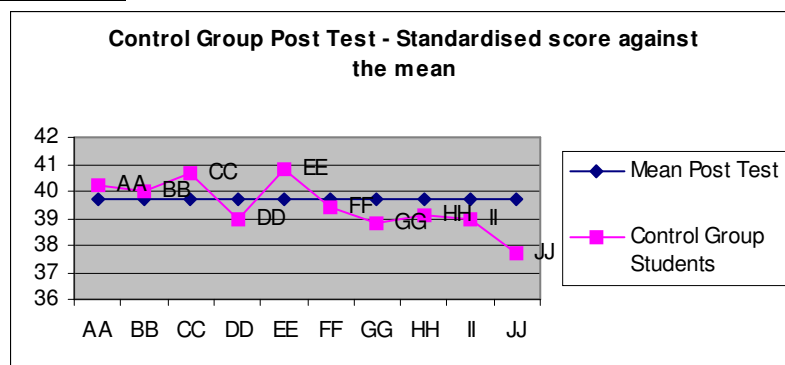
The results from the Sutherland phonological awareness post tests again show an increase of the mean in both groups (Figure 7 and 8). However, when the individual students' scores were standardised, it showed that the control groups scores were a lot closer to the mean than the intervention group. The intervention group had a greater a range of students moving away from the mean indicating a higher standard deviation. This shows that both groups had made improvements however, the spread of students results were greater in the intervention group.

Figure 9: Text level results of both the intervention and control group.
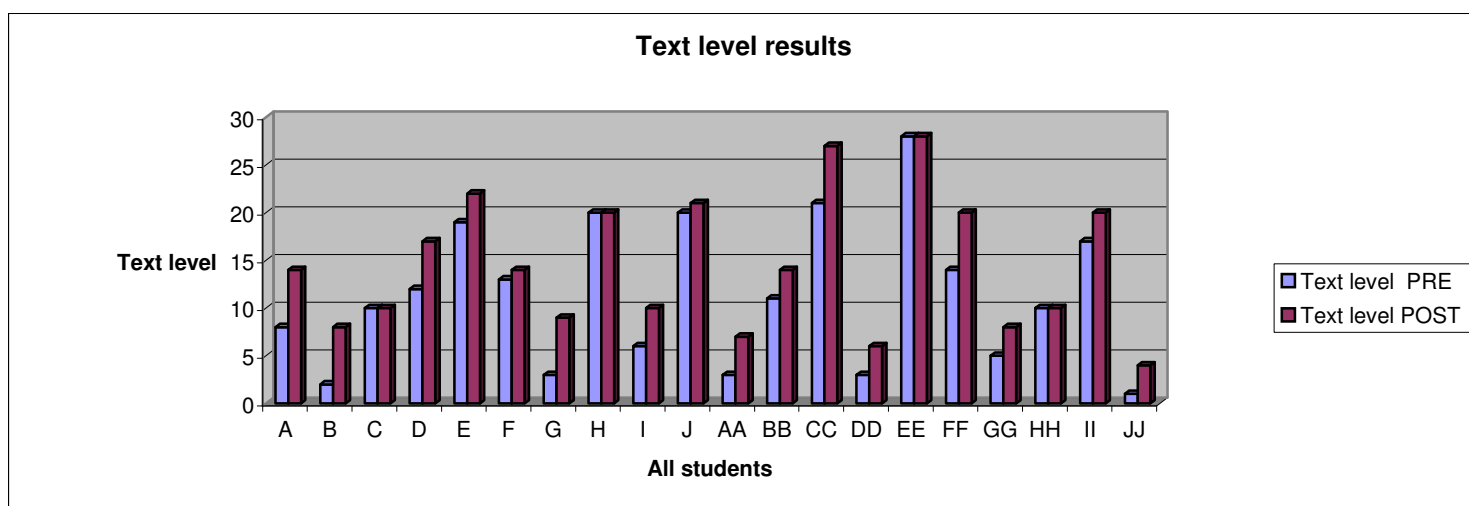
The text level results have been compared with both groups of students for individual's pre and post testing. Figure 9 highlights that with the majority of students tested; there was little or no increase in prose reading ability. Students C, H, EE, and HH remained at the same text level from when the running records were conducted for the pre test to when they were conducted for the post test. There were two students from each group that made increases in text level by 6. In the intervention group, Student B moved from level 2 –8 and student G moved from 3-9. In the control group, student CC moved from 21 – 27 and student FF moved from 14 – 20.

Discussion:

In reflecting on the results of this current study there is some support for the hypothesis and research, which suggests that explicit whole class teaching of onset and rime units with analogy improves text reading and spelling accuracy when writing in Year 1 / 2 students. All students who were involved in the intervention group made improvements in reading onset and rime words. Students were able to use analogy with their knowledge of rime units to make connections with words with a different onset but the same rime unit. There were some text level increases for some students, however these improvements may be due to the consistent classroom reading lessons for period of approximately 2 months. It was difficult to assess whether or not text level improved due to the students ability to use analogy with onset and rime. Students may have used analogy in reading other words within the texts, however evidence of this would not be located in the current tests taken. Phonological

awareness appeared to make some increase in the mean, however the spread of students on figure 6 was greater than the control group on figure 7. This improvement with the control group again may have resulted from the teaching in the control group's class where a focus on hearing sounds was taught. In the current study, this was discussed in the teaching, although not a major focus. Students from the intervention group generally made more gains in spelling onset and rime words correctly in the dictation task. Students were able to use their knowledge of hearing a rime unit and applying the strategy of analogy to change the onset. In comparison to the control group, this was not as clear. Students from this group had more difficultly hearing and identifying the rime unit and using their knowledge to transfer it with an appropriate onset.

The ten lessons were taught to the whole class, with only two students from the intervention group missing one to three lessons. Students A and Student C were absent for some of the lessons and this may have resulted in lower achievement. Student A had missed three lessons, yet moved 6 levels. Whereas Student C who only missed one lesson did not move text levels at all. Therefore, absence from the lessons does not appear to have influenced text reading. Both students, in spite of missed lessons, made improvements in their rime units test and the dictation.

The results of text reading in the current study supports the work of Brown and Deavers (1997) who suggest that younger children are unable to produce as many analogies when reading prose because they are unfamiliar with the spelling new words that they come across. *"Children may not easily be able to apply their knowledge of onsets and rimes to the task of reading" (Brown and Deavers.1997.pg 340).* This may be a consideration with the age of the students as Marsh et al. (1980) states that they *"found no evidence of analogy in the spellings produced by children aged 7 years" (Brown and Deavers.1997.pg 340).*

In contrast, the work by Goswami (1994) in Johnstone and Watson (2004) suggests that students who are weak in their phonological awareness skills should be taught how to use rime as this assists and prepares them for using analogy. It also suggested *"children in the second and third year of formal schooling can make analogies in order to read unfamiliar words, especially where rime is involved" (Johnstone and Watson. 2004. pg 328).* Students from the current student may need to be taught these reading strategies for a longer period of time in order for there to be a greater difference in text level reading. However, it has

improved isolated word reading skills, which in turn has assisted the students spelling of these words. It is with this new knowledge that we hope that the students will be able to use analogy for many other unfamiliar words when engaging in prose reading. *"A child's ability to categorise words by onset – rime units may be related to that child's awareness of spelling sequences in words and this may facilitate the development of reading" (Goswami and Mead. 1992. pg 153).* Student G was really able to make connections with analogy and was eager to share his understandings. Even though his text level increased by 6, he has continually identified words in texts with rime units he had learnt. He was able to independently state what the word was by changing the rime unit. Ideally, this enthusiasm will continue as his texts levels increase and he will still be able to make connections using onset and rime with analogy.

The results suggest that explicit whole class teaching of onset and rime with analogy is one useful strategy for beginning readers. Some students were able to apply what they had learnt about rime units to help them read and write new words with the known rime units using the strategy of analogy. Students in the early years of schooling need a variety of strategies to assist them with their literacy knowledge. This includes how they read words in isolation, prose reading and writing words correctly following a particular spelling pattern. These aspects of literacy are vital in achieving literacy success. Students who can find patterns in words through their orthographic and phonological understandings are able to make connections when reading and writing these words. By teaching onset and rime with analogy, students are able to make connections with either the orthographic or phonological aspects of the words. Or in some cases, they can make connections with both. Further research would need to be conducted in order to identify if by improving phonological awareness over a longer period of time would assist with prose reading. Also the results suggested that there was not a great change in text level reading. Therefore another area of possible study would be the explicit teaching of word meanings to assist with semantic knowledge and comprehension when engaged in prose reading. The semantic or contextual knowledge would then encompass all three levels of an individual's word bank or lexicon. Thus allowing them to use all three pathways (orthographic, phonological and semantic) to assist reading and writing.

References:

Alpha Assess Benchmark Kit (2008). *Assessing and Developing Early Literacy.* Eleanor Curtain Publishing: Australia.

Brown, G.D.A. & Deavers, R.P (1997). Rules versus analogies in children's spelling: evidence for task dependence. *Reading and Writing: An Interdisciplinary Journal, 9, 339-361.*

Brown, K.J, Sinatra, G.M. & Wagstaff, J.M. (1996). Exploring the potential of analogy instruction to support students' spelling development. *The Elementary School Journal, 97, 1, 81-99.*

Clay, M. (1993). *An Observation Survey: Of Early Literacy Achievement.* New Zealand: Heinemann.

Dalheim, B. (2004). *Rime Units Test.*

Ehri L.C, Satlow, E. & Gaskins, I. (2009). Grapho-Phonemic Enrichment Strengthens Keyword Analogy Instruction for Struggling Young Readers. *Reading and Writing Quarterly, 25, 162-191.*

Goswami, U. & Mead, F. (1992). Onset and Rime Awareness and Analogies in Reading. *Reading Research Quarterly, 27, 2, 152-162.*

Johnstone, R.S. & Watson, J.E (2004). Accelerating the development of reading, spelling and phonemic awareness skills in initial reader. *Reading and Writing: An Interdisciplinary Journal, 17, 327 – 357.*

Munro, J. K. (2008). *Literacy Intervention Strategies, 472697.* Lecture notes. 2008.

Munro, J. & Dalheim, B. (2008) *Literacy Intervention Strategies.* http://online.edfac.unimelb.edu.au/LiteracyIntervention/472697web/pub/Glossary.htm Downloaded 12th April, 2010.

Neilson, R. (2003) *Sutherland Phonological Awareness Test.* ACER Publishing.

Pike, K. (2007) *Funny Photo Phonics.* Clayton South, Victoria: Blake Education.

Smart Kids. (2002). *Smart Phonics pack 3 and 2.* New Zealand.

Starfall Education. (2007). *Learn to read.* http://www.starfall.com/n/level-a/learn-to-read/load.htm?f Download 5th April, 2010.

Walton, P.D, Walton, L.M. & Felton, K. (2001). Teaching rime analogy or letter recoding reading strategies to prereaders: effects on prereading skills and word reading. *Journal of Educational Psychology, 93, 1, 160-180.*

Appendices:

Appendix 1: Full set of results for the intervention and control groups.

Name	Control = 0 Teaching =1	Age in MONTHS	Gender 0=Male 1= Female	Years of Schooling	ESL No=0 Yes=1	Earlier Intevention No=0 RR=1 Bridges=2 ERIK=3…	Attendance No. of sessions	Onset and Rime PRE	Onset and Rime POST	SPAT raw (max 58) PRE	SPAT raw (max 58) POST	SPAT Standard deviation score PRE	SPAT Standard deviation score POST	Text level PRE	Text level POST	Dictation (max 16) PRE	Dictation POST
A	1	75 months	1	2	0	0	7	32	91	27	38	-9.8	-7.1	8	14	1	10
B	1	73 months	1	2	1	0	10	9	31	28	39	-8.8	-6.1	2	8	0	2
C	1	75 months	1	2	0	0	9	23	60	34	43	-2.8	-2.1	10	10	1	4
D	1	87 months	1	3	1	1	10	39	91	43	54	6.2	8.9	12	17	2	7
E	1	78 months	1	2	1	0	10	110	139	50	54	13.2	8.9	19	22	9	15
F	1	76 months	0	2	1	0	10	59	123	34	42	-2.8	-3.1	13	14	1	8
G	1	80 months	0	2	1	0	10	16	78	40	47	3.2	1.9	3	9	0	3
H	1	91 months	0	3	0	0	10	101	113	44	47	7.2	1.9	20	20	3	9
I	1	83 months	0	3	1	0	10	42	82	30	40	-6.8	-5.1	6	10	2	5
J	1	92 months	0	3	1	0	10	89	129	38	47	1.2	1.9	20	21	8	9
AA	0	75 months	1	2	1	0	0	9	44	36	44	2.2	4.3	3	7	3	2
BB	0	78 months	1	2	0	0	0	28	72	36	42	2.2	2.3	11	14	4	5
CC	0	78 months	1	2	1	0	0	117	129	46	48	12.2	8.3	21	27	7	9
DD	0	75 months	1	2	0	0	0	35	17	30	45	-3.8	-5.3	3	6	3	5
EE	0	89 months	1	3	0	0	0	121	126	43	48	9.2	8.3	28	28	7	11
FF	0	84 months	0	2	0	0	0	53	92	34	37	0.2	-2.7	14	20	0	0
GG	0	79 months	0	2	1	0	0	31	53	37	39	3.2	-0.7	5	8	3	3
HH	0	85 months	0	3	1	1	0	36	45	31	35	-2.8	-4.7	10	10	2	1
II	0	83 months	0	3	0	1	0	46	61	25	34	-8.8	-5.7	17	20	1	4
JJ	0	75 months	0	2	1	0	0	9	12	20	25	-13.8	-14.7	1	4	1	2

Appendix 2: Standardised Scores for the Sutherland Phonological Awareness Test

Standard deviation Intervention Group

PRE	POST
7.60955079	5.74359547

Standard deviation Control Group

PRE	POST
7.77174369	7.21187293

Name	SPAT Standard deviation score PRE	SPAT Standard deviation score POST	Standard Score (childs/ sdev) PRE	Mean pre	Standard Deviation against the mean	Standard Score (childs/ sdev) POST	Mean Post	Standard Deviation against the mean
A	-9.8	-7.1	-1.2	36.8	35.6	-1.2	45.1	43.9
B	-8.8	-6.1	-1.1	36.8	35.7	-1	45.1	44.1
C	-2.8	-2.1	-0.3	36.8	36.5	-0.3	45.1	44.8
D	6.2	8.9	0.8	36.8	37.6	1.5	45.1	46.6
E	13.2	8.9	1.7	36.8	38.5	1.5	45.1	46.6
F	-2.8	-3.1	-0.3	36.8	36.5	-0.5	45.1	44.6
G	3.2	1.9	0.4	36.8	37	0.3	45.1	45.4
H	7.2	1.9	0.9	36.8	37.6	0.3	45.1	45.4
I	-6.8	-5.1	-1.1	36.8	35.7	-0.8	45.1	44.3
J	1.2	1.9	0.1	36.8	36.9	0.3	45.1	45.4
AA	2.2	4.3	3.5	33.8	37.3	0.5	39.7	40.2
BB	2.2	2.3	3.5	33.8	37.3	0.3	39.7	40
CC	12.2	8.3	1.5	33.8	35.3	1	39.7	40.7
DD	-3.8	-5.3	-0.4	33.8	33.4	-0.7	39.7	39
EE	9.2	8.3	1.1	33.8	34.9	1.1	39.7	40.8
FF	0.2	-2.7	0.02	33.8	33.82	-0.3	39.7	39.4
GG	3.2	-0.7	0.4	33.8	34.2	-0.09	39.7	38.8
HH	-2.8	-4.7	-0.3	33.8	33.5	-0.6	39.7	39.1
II	-8.8	-5.7	-1.1	33.8	32.7	-0.7	39.7	39
JJ	-13.8	-14.7	-1.7	33.8	32.1	-2	39.7	37.7

Appendix 3:

Lesson plan foci

Lesson plan1
Focus: Two letter – two sound rime units (an, at, ap)
Shared Reading text:
"Zac the Rat" http://www.starfall.com/n/short-a/sa/load.htm?f

Lesson plan 2
Focus: Two letter – two sound rime units (it, ip, in, ot)
Shared Reading text:
"The big hit" http://www.starfall.com/n/short-i/si/load.htm?f

Lesson plan 3
Focus: Vowel diagraphs - aw, ay
Shared Reading text:
Paul's awful cold (Smart Kids, pack 3. 2002).

Lesson plan 4
Focus: 3 letter-2 sound rime units (ock, ack, uck)
Shared Reading text:
"Gus the Duck" http://www.starfall.com/n/short-u/su/load.htm?f

Lesson plan 5
Focus: 3 letter-2 sound rime units (ick, ing)
Shared Reading text:
Bang and Clang (Smart Kids, pack 2. 2002)

Lesson plan 6
Focus: 3 letter-2 sound rime units (ill, ell)
Shared Reading text:
The king and the bells (Pike. 2007. Pg 24)

Lesson plan 7
Focus: 3 letter- 3 sound rime units (unk, ink, ank, ump)
Shared Reading text:
Frank the skunk (Pike. 2007. Pg 8)

Lesson plan 8
Focus: VV rimes (ail, ain)
Shared Reading text:
The stray, gray dog (Smart phonics, pack 3. 2002)

Lesson plan 9
Focus: VV rimes (oke, ale, eat)
Shared Reading text:
A male whale is called a bull and the female is called a cow. When Sleeping Beauty woke up in the fairytale she saw the Prince. Dale does not like to eat stale bread.   She has a pale face. I love to stroke my dog's head. Do you laugh at funny jokes? The lost lamb was bleating for its mother. Flour can be made from wheat. As I sat on the seat I heard a funny squeak! Can you feel your heart beat? When I won the race I was given a treat for running so well in the heat.

Lesson plan 10
Focus: -Vc rimes (ide)
Shared Reading text:
'I' meets magic 'e' (Smart Phonics, pack 3. 2002)

Each of the 10 lessons will follow the following structure except focusing on a different onset and rime units.

Activity	Task Description	Duration
Revisiting of previous lesson and lesson focus.	Each lesson will involve a short revisit of the previous day's lesson (except for the first day) and then a discussion about the focus for the current lesson.	*5 minutes*
Introducing the new Rime unit using phonological awareness.	The teacher will put the new Rime unit on the interactive whiteboard. As a class, brain storm and discuss words that have that rime unit in it. Students will listen to how the teacher says a few of the brainstormed words. Eg: "Listen to how I say…tap..or count the sounds in this word. Block – bl-ock… b-l-o-c-k". The students then have a go at hearing and saying the sounds in the words.	*5 minutes*
Using analogy to match onset and rime units with pictures.	Teacher will reveal various onsets to match the rime unit, which have been already prepared. Students will use the interactive whiteboard to match the onset and rime using the sentence starter "If I know… I will also know…" They will then match their new word with a corresponding picture.	*10 minutes*
Reading in prose	Student engage in a short shared reading text that includes words from the day's focus.	*5 minutes*
Writing words using analogy and onset and rime units	Students will then use their individual whiteboard and a whiteboard marker to write as many onset and rime words as using analogy and breaking up each word to hear or tap out the sounds they need.	*10 minutes*
Reflection	Reflect on the what has been learnt encouraging students to articulate hearing the sounds in words, the onset and rime units learnt and how they can use analogy to help them identify similar words in both reading and writing.	*5 minutes*

Appendix 4:

RIME UNITS – Words for the teaching focus

Two letter – two sound rime units	Three letter words	Four letter words	Five letter words
at	Bat, cat, hat, mat, Nat, rat, sat	brat, chat, drat, flat, that, spat	
ap	gap, lap, map, nap, rap, sap, zap	flap, crap, chap, slap, wrap,	
ab	dab, fab, gab, lab,	blab, drab, flab, slab,	
it	bit, fit, git, lit, mit, nit, sit, kit	slit,	
ip	bip, dip, hip, Kip, nip, pip, rip, sip, tip,	flip, whip, clip, chip, grip, slip, trip, snip	strip
in	tin, sin, fin, gin, Vin,	Chin,	
ot	cot, dot, got, lot, pot, rot, tot,	Blot, clot, grot, plot, slot, trot	
3 letter- 2 sound rime units	**4 letter words**	**5 letter words**	**6 letter words**
ock	cock, dock, hock, lock, mock, tock,	flock, frock, shock, stock	
ack	hack, Jack, lack, rack, sack, tack,	whack, crack, flack, slack, snack, stack	
uck	buck, muck, puck, ruck, suck, tuck,	cluck, chuck, pluck, snuck,	struck
ick	Dick, lick, Mick, Nick, Rick, tick, wick	click, chick, flick, prick, slick, trick, stick, 'spick'	
ing	ding, king, ping, sing,	cling, fling, sling, sting	string
ill	bill, dill, gill, Jill, kill, mill, pill, sill, till, will	drill, frill, grill, still,	shrill, thrill
ell	dell, fell, Nell, sell, tell,		
3 letter- 3 sound rime units	**4 letter words**	**5 letter words**	**6 letter words**
unk	Dunk, sunk	skunk	
ink	dink, fink, mink, rink, sink,	blink, brink, clink, drink,	shrink
ank	sank	blank, shank, plank	
ump	bump, dump, hump, lump, rump, sump	clump, chump, grump, plump, slump, trump,	
VV rimes	**4 letter words**	**5 letter words**	**6 letter words**
ail	hail, rail, nail, wail	frail	
ain	cain, gain, lain, pain, vain,	drain, plain, slain, train, stain	strain
eat	heat, neat, peat, seat,	bleat, pleat, wheat	
oke	joke, Coke	choke	stroke
ale	pale, tale		
Other			
aw	dawn, hawk	straw, crawl	prawn
ay	May, bay, gay, hay, Jay, lay, pay, ray,	tray, pray	spray
-Vc rimes			
ide	Side, wide	glide, pride, slide	

Onset and Rime Dictation Passage

The <u>bride</u> took a *sip* from her <u>flask</u> and was careful <u>not</u> to <u>drip</u> her

drink. A <u>spot</u> of water *fell* on her dress and it could be seen in the

<u>light</u>. She had to <u>grab</u> a piece of <u>stale</u> bread to <u>hide</u> the <u>spill</u>. As

she looked outside in the <u>rain</u>, she could see a <u>duck</u> waddling to

the *lake*.

12 onset and rime from the Rime units test (Dalheim. 2004)
4 words different from the test but same rime.

16 words in total