

Action Research Project

Explicit whole class teaching of segmenting into onset and rime improves prose reading and spelling accuracy of Grade 1 and 2 students.

Abstract

Many students in the early years experience difficulty with decoding and spelling due to having low levels of phonological awareness.

This study investigates the effects of explicit whole class teaching of segmenting into onset and rime in improving prose reading and spelling accuracy of Grade 1 and 2 students. Research on the development of phonological awareness suggests that onset and rime is a vital skill needed to develop phonological awareness assisting in decoding skills and spelling accuracy. “Phonological awareness is highly related to later success in reading and spelling” (Yopp & Yopp 2009, p.13). In this study, students were taught to segment words into onset and rime.

The study compared the results of two groups of students; a control group and an intervention group who were exposed to explicit whole class teaching. Results provide some support for the hypothesis as the intervention group made gains in the ability to decode in both isolated word and prose reading and in spelling accuracy.

Though the direct effects of the study on prose reading remain inconclusive, results suggest that whole class teaching of segmenting into onset and rime is a successful strategy and should be explicitly taught to assist students in reading and spelling accuracy in the early years of schooling.

Introduction

Reading and writing are two major components of Literacy. Contemporary research emphasises the links between the two. De Lemos (2005) states that “while the specific skills underlying the acquisition of reading and writing are different, both share a common denominator, in that both are dependent on the set of spelling-sound correspondence rules of the language” (p.11)

Reading is a complex process. The main purpose of reading is to construct meaning. “In constructing meaning from text, readers combine what they know about the world, the topic of the text, the grammatical structure of the language in which the text is written and the way spoken language relates to the letters, words, visual elements and symbols on the page” (Holliday, Johnston, Ljungdahl, March, Winch, 2004, p.3). The proficient use of decoding strategies, leads students in time, to improved accuracy, speed and fluency of reading, aiding in the ability to comprehend the texts they read. “Decoding unknown words when reading text is a necessary tool of skilled readers” (Lane, Pullen, Eisele & Jordan 2005, p.63).

Spelling is a necessary skill for writing. Gentry and Gillet suggest that “spelling is a tool for writing. The purpose of learning to spell is so that writing, may become easier, more fluent, more expressive and more easily read and understood by others” (Lam & Westwood 2006, p.12). Student’s confidence and success in spelling improves when they are aware of strategies that can be used to segment words into pronounceable parts. (Lam & Westwood, 2006).

Research states that students experiencing difficulties in developing literacy knowledge often demonstrate low levels of phonological awareness. Chard and Dickson (1999) and the National Reading Panel (2000) state that “to benefit from instruction in decoding and spelling, a child must have a fundamental level of phonological awareness.” (cited in Lane et al, 2005, p.102).

Many of the students who experience reading difficulties often rely heavily on visual cues and distinctive visual features (DVF) of words to assist them in reading a text. Treiman (1985) suggests that “using distinctive visual features is least effective in the long term (as cited in Munro, 1998, p. 2). Students often use initial letters to predict words and do not focus on the meaning of the texts being read. Many students who experience difficulty are unable to recode phonological knowledge into orthographic symbols. It is therefore, often a student’s poor phonological awareness that acts a barrier to the successful acquisition of skills in Reading and Writing.

“Phonological awareness can be defined as conscious sensitivity to the sound structure of language” (Lane et al, 2005, p.101). It is widely researched that phonological awareness plays a significant role in reading acquisition in the early years. “Phonological awareness has been shown to be both a reliable predictor of reading achievement and a key to beginning reading acquisition (Smith, Simmons & Kame’enui, 1995 as cited in Lane et al, p.101).

Phonological awareness is a key skill that forms the basis of learning to read. The links between phonological development and word reading are identified by Munro (2009). Phonological awareness is associated with the manipulation of speech sounds

(Lane et al, 2005) and encompasses various components including the manipulation of sounds, rhyming, phoneme deletion, blending and segmentation.

Research shows that;

- phonological awareness is directly related to reading ability.
- early intervention can promote the development of phonological awareness, and;
- improvements in phonological awareness can and usually do result in improvements in reading ability.

(Smith et al 1995, National Reading Panel 2000 as cited in Lane et al, 2005, p.102). It is therefore evident that “there is an intimate and probably causal relationship between children’s phonological skills and the ease with which they learn to read” (Hulme and Nation, 1997, p.154).

The links between phonological awareness and improved spelling accuracy have not been as widely researched. Few studies have examined the relationship between phonological skills and learning to spell words accurately. Research does identify the link between spelling and phonemic awareness, a subset of phonological awareness that refers to “a child’s ability to manipulate individual sounds (phonemes) in words (Lane et al, 2005, p.102). Munro (1998) states that phonemic awareness “...influences spelling ability in several ways” (p.6).

The development of phonological awareness takes place over a length of time and encompasses a variety of skills. Munro (1998) identifies the developmental stages of phonological awareness. Students begin by accurately saying words. They then learn to recognise and manipulate sound patterns and sounds in words. It is this developmental stage where students learn to segment words into onset and rime. Onset and rime is a subset of phonological awareness that involves the process and skills of segmenting the syllable and phoneme and blending them together to read words. The onset is the initial consonants and the rime refers to the vowel and consonants that follow (Hines, 2009). For example, the word ‘shop’ can be segmented into the onset ‘sh’ and the rime ‘op.’ Explicit teaching of onset and rime involves the specific teaching of rime units. Students are taught to hear the sounds created by rime units and recode these sounds to the orthographic form recognised in the form of print. Research supports that onset and rime is an effective strategy to assist struggling readers. (Hines 2009)

Research has also shown that explicit teaching of any strategy is essential. Some students acquire literacy skills easily while others need explicit teaching. Students need to be exposed to different strategies that can be used for different purposes. It is through explicit teaching that students gain the knowledge and skills that will assist them in their learning. Research states that phonological awareness can be taught and early intervention can support literacy acquisition. “Teachers of young children must recognize the importance of incorporating phonological awareness into programs designed to promote emergent literacy, because these teachers now have a tool for preventing reading problems” (Lane et al, 2005, p.109). Hempenstall (2002) supports the need for explicit teaching in the classroom and states that “there must be systematic, regular, and frequent teaching of phonological awareness, phonics and spelling” (p.4) The present study investigates the effects of explicit whole class teaching of segmenting into onset and rime, to improve prose reading and spelling accuracy for Grade 1 and 2 students.

Method

Design

The study uses a case study OXO design. Gains in prose reading and spelling accuracy, following explicit whole class teaching of segmenting into onset and rime, are monitored in Grade 1 and 2 students. The study involves explicit whole class teaching but compares two groups of students, a control group and an intervention group.

Participants

The students selected to participate in this study are Grade 1 and 2 students, ranging from 5 – 7 years of age. The explicit teaching was administered in a whole class setting, but due to time constraints ten students were selected to be monitored for the purpose of the study. The ten students selected, were viewed as either at risk or as students who could benefit from explicit teaching of segmenting into onset and rime to assist in their prose reading and attempts at writing unfamiliar vocabulary. The students selected have demonstrated low phonological awareness and often use distinctive visual features when decoding unfamiliar words in texts. These students also have difficulty in making plausible attempts at writing unfamiliar words and do not use consistent spelling patterns. As this research was conducted in a whole class setting, ten students were selected from another Grade 1/2 class to act as the control group for the purposes of the project. The control group was randomly selected.

Students' demographics are shown in Table 1.

Name	Control = 0 Teaching=1	Age in MONTHS	Gender 0=Male 1=Female	Years of Schooling	ESL No=0 Yes=1	Earlier Intervention No=0 RR=1 Bridges=2 ERIK=3...
A	1	75 months	1	2	1	0
B	1	68 months	0	2	0	0
C	1	76 months	1	2	1	0
D	1	77 months	0	2	0	0
E	1	72 months	0	2	1	0
F	1	90 months	1	3	1	1
G	1	84 months	0	3	1	1
H	1	88 months	0	3	1	1
I	1	80 months	1	3	0	0
J	1	87 months	1	3	1	0
AA	0	75 months	1	2	1	0
BB	0	78 months	1	2	0	0
CC	0	78 months	1	2	1	0
DD	0	84 months	0	2	0	0
EE	0	79 months	0	2	1	0
FF	0	85 months	0	3	1	1
GG	0	83 months	0	3	0	1
HH	0	75 months	0	2	1	0
II	0	75 months	1	2	0	0
JJ	0	77 months	1	3	0	0

Table 1

Materials

Pre and Post Test materials include the following:

- Sutherland Phonological Test
- Rime Units Test
- Alpha Assess Benchmark Kit
- Onset and Rime Dictation (Appendix 2)

Task materials used include the following:

- Onset and Rime segmenting template

This was created using ActivInspire for the purposes of this study. The template was used on an Interactive Whiteboard.

- Texts (Appendix 3)

For the purpose of this study, a text was chosen every lesson that contained the rime units being taught that day. The purpose of this was to expose students to rime units within prose. This allowed them to put their new learning into practise and therefore to gain some insight of how their learning translates to their everyday reading. The texts were retrieved from a variety of sources including the Smart Phonics Pack (Pack 3), websites, big books from the school library. Some of the texts were created for the purpose of particular lessons.

- Onset and rime bingo cards (Appendix 4)

Procedure

The assessment tasks were administered to all students in the following order:

- *Alpha Assess texts*: The texts were used to take running records of the students at both the pre and post testing stages. The running records determined the instructional level of students. Instructional texts were determined when students achieved an accuracy score between 90% and 95% which was then followed by two difficult texts (students achieving an accuracy score of below 90%). Annotated results from the running records were used to determine if the explicit teaching of segmenting and blending into onset and rime units had assisted in individual prose reading ability.
- *Sutherland Phonological Awareness Test (SPAT)*: Used to assess students' phonological awareness.
- *Rime Units test*: The Rime Units Test assesses students' ability to read isolated words containing specific rime units.
- *Onset and Rime Dictation* (See Appendix 2): This was created using 15 of the dependable rime units. The dictation was used to assess the students' ability to use their knowledge of rime units to accurately spell words in prose. The dictation was administered at the pre and post testing periods and students were given a score out of 16 (the 'at' rime appeared twice). Out of the 15 dependable rimes selected, 9 were taught within the explicit teaching and learning sequence.

The assessment tasks used for both pre and post testing were administered to students over a 2 – 3 week period prior to and immediately after, the conclusion of the ten day teaching period. Due to the nature of the tests, the running records, SPAT and Rime Units test had to be administered individually in a one to one setting. Due to time constraints, the running records were administered first. As a result, some students

experienced a greater lapse of time between their initial running record and the other three administered tests.

The explicit whole class teaching took place over a two week period. Ten lessons were taught consecutively. The lessons were 45 minutes – 1 hour in duration and were administered during the morning Reading block. Though the content was taught to the entire class each morning, progress was tracked of the 10 students in the intervention group.

The teaching tasks were administered in a whole class setting in the following order:

- Revision of previous learning – Student revised the skills and rime units previously taught, During lessons 5 and 10, students played ‘onset and rime bingo’ to consolidate the rime units they had previously learnt.
- Introduction of new rimes
- Phonological awareness tasks
 - Oral rhyming activities
 - Segmenting into onset and rime
 - Manipulation of sounds
 - Isolated word writing using rime units
- Prose reading and writing
 - Students participated in the shared reading of prose
 - Students wrote a sentence using a new word learnt in the session
- Reflection of the lesson – Students were prompted to articulate what they had learnt, how this could help them in their reading and writing and how they will use the skills in the future.

This explicit teaching format was used for all 10 teaching sessions. The initial lessons required high levels of teacher modelling and scaffolding. This was reduced as the lessons progressed. A record of the lessons is included in Appendix 5.

Results

Results support that explicit whole class teaching of segmenting into onset and rime improves prose reading and spelling accuracy. The Pre and Post testing results show that gains made by the intervention group and indicate the benefits of explicit whole class teaching.

The assessment results for all students are shown below:

Name	Attendance No. of sessions	Onset and Rime PRE	Onset and Rime POST	SPAT raw (max 58) PRE	SPAT raw (max 58) POST	SPAT Standardised Score PRE	SPAT Standardised score POST	Text level PRE	Text level POST	Dictation (max 16) PRE	Dictation POST
A	10	88	102	36	52	1.2	1.94	13	20	4	10
B	10	9	23	21	29	-1.27	-1.71	1	3	1	3
C	10	5	56	25	37	0.71	-0.44	2	5	2	8
D	10	50	85	33	43	0.71	0.51	8	13	4	7
E	10	9	25	21	34	-1.27	-0.92	2	8	2	4
F	10	54	97	25	43	-0.61	0.51	8	11	1	5
G	10	41	66	27	42	-0.28	0.35	10	12	3	11
H	10	108	114	37	43	1.37	0.51	21	27	7	11
I	10	86	132	27	36	-0.28	-0.61	15	27	2	9
J	10	112	134	35	39	1.04	0.13	27	28	3	11
AA	0	9	44	36	44	0.28	0.6	3	7	3	4
BB	0	28	72	36	42	0.28	0.32	11	14	7	7
CC	0	117	129	46	48	1.57	1.15	21	27	7	9
DD	0	53	92	34	37	0.03	-0.37	14	20	1	1
EE	0	31	53	37	39	0.41	-0.1	5	8	3	9
FF	0	36	45	31	35	-0.36	-0.65	10	10	2	3
GG	0	46	61	25	34	-1.14	-0.8	17	20	0	2
HH	0	9	12	20	25	-1.78	-2.03	1	4	0	2
II	0	35	17	30	45	-0.49	0.73	3	6	3	3
JJ	0	121	126	43	48	1.18	1.15	27	28	9	10

Table 2

Rime Units Test

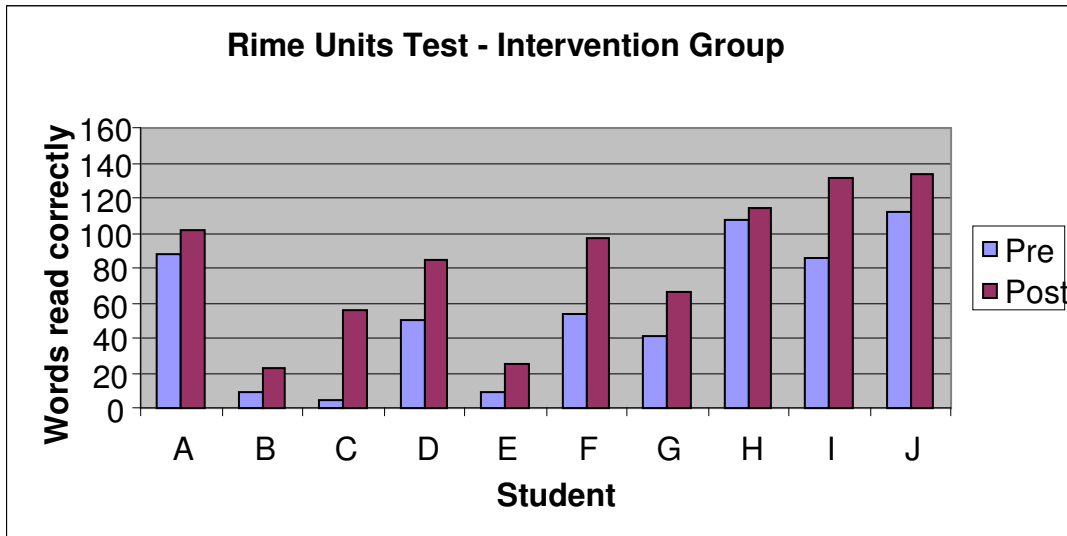


Figure 1

Figure 1 shows the intervention group’s pre and post testing scores for the Rime Units test. Trends for the group show that all students in the intervention group made gains in their Rime Units post tests. Student C has made considerable gains, having started with the lowest pre test score amongst the other participants. Students B, C, D, E and G were all below the mean (56.2) in the pre test scores. Post test scores indicated that Student D made gains that resulted in a score above them mean (83.4), leaving students B, C, E and G below the mean. Student H, who had the highest pre test score amongst the group made the smallest gain in his post test score. Both students B and E made limited gains from their pre test scores.

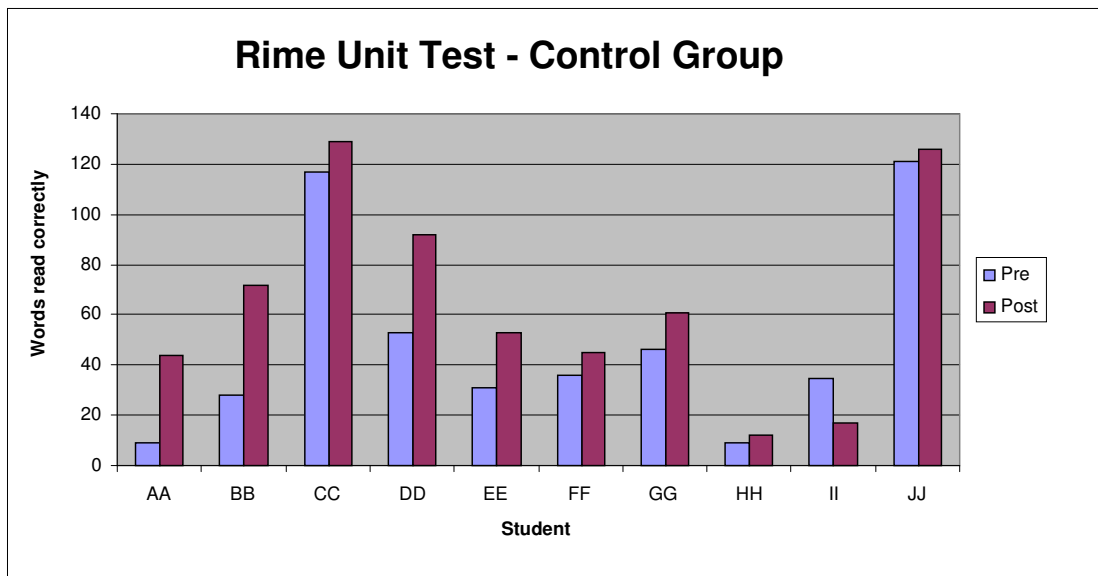


Figure 2

Figure 2 shows the pre and post test results for the control group. Trends for the control group show that most students have made some gains in their Rime Units post test. It is interesting to note the range of the scores in the group, with student JJ having the greatest pre test score among all participants from both the intervention and control groups. Results show that Student II has performed better in her pre test than her post test. Students AA, BB, DD, EE, GG, HH and II have all fallen below the mean (48.5) in the pre test. Students BB and DD's post test results have placed them above the mean (65.1), leaving students AA, EE, FF, GG, HH and II below the mean for the group. Students HH and JJ have made the least gains amongst the control group.

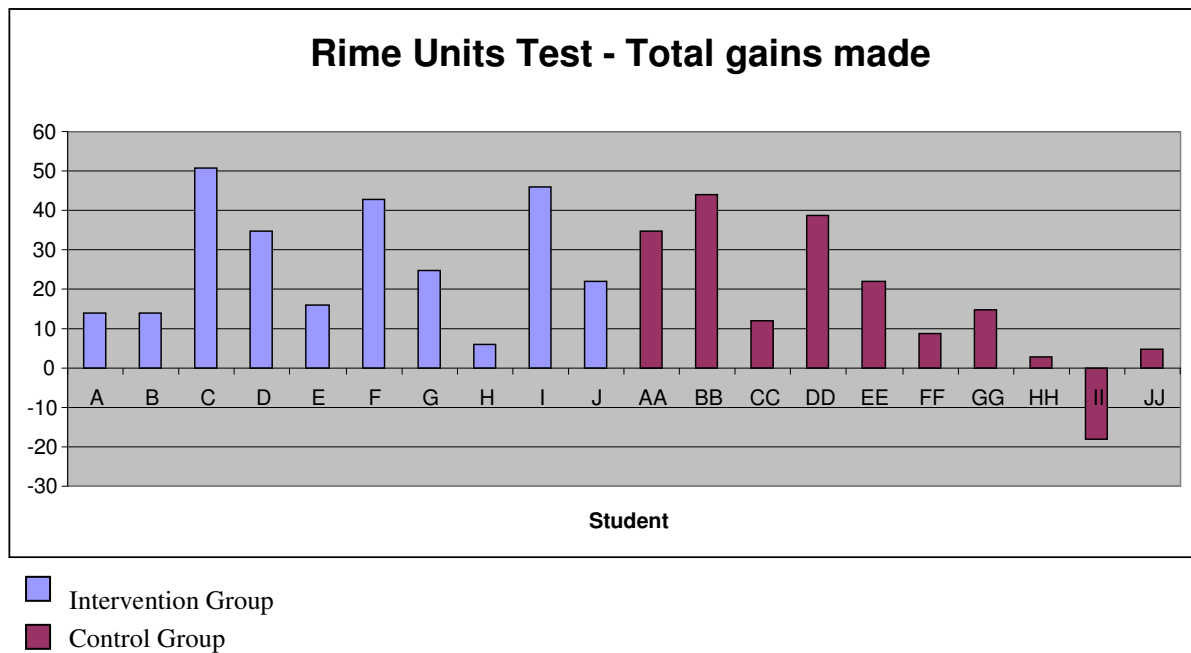


Figure 3

Figure 3 shows the total gains made in the Rime Units post tests in both the intervention and control groups. Student C has made the greatest overall gain. Trends in the control group show some inconsistencies with Student II indicating a lower post test score than her pre test score. Total gains of the intervention group resulted in a gain of 272 words in comparison to the control group which made a total gain of 166 words which equates to a 64% difference in improvement level. The results provide evidence that explicit teaching of segmenting into onset and rime improves isolated word reading.

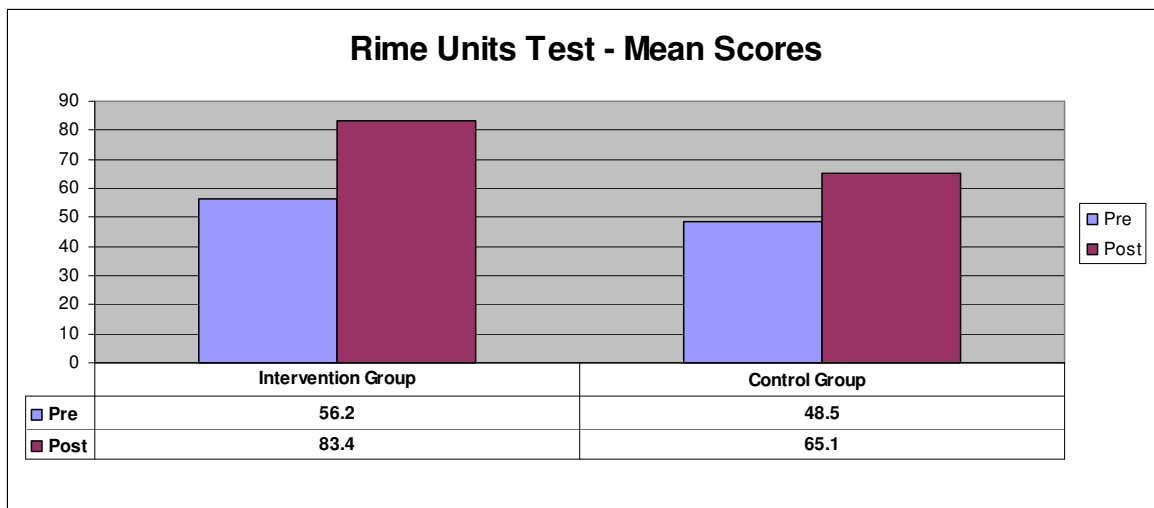


Figure 4

Figure 4 shows the mean scores for both the intervention and control groups at the pre and post testing stages of the Rime Units test. Results show that the intervention group began with a mean of 56.2 and a post result of 83.4 resulting in a 48% increase. The control group’s pre testing result was a mean of 48.5 and a post testing mean of 65.1 resulting in a 34% increase. These results provide evidence that explicit teaching of segmenting into onset and rime improves isolated word reading.

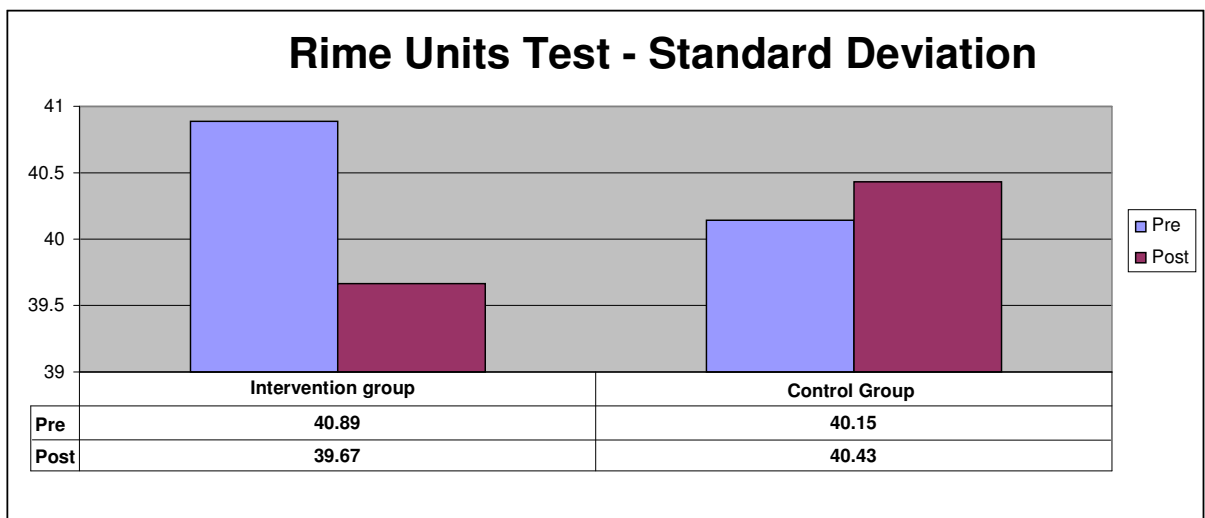


Figure 5

Figure 5 shows the standard deviation for both the intervention and control groups at the pre and post testing stages of the Rime Units test. The results show that the intervention group began with a standard deviation of 40.89 and an improved post result of 39.67 resulting in a 3% reduction. The standard deviation of the control group’s pre test was 40.15 and 40.43 at the post test resulting in a 0.6% increase. The increase in standard deviation for the control group correlates with the inconsistent post results (Figures 2 and 3).

Sutherland Phonological Awareness Test

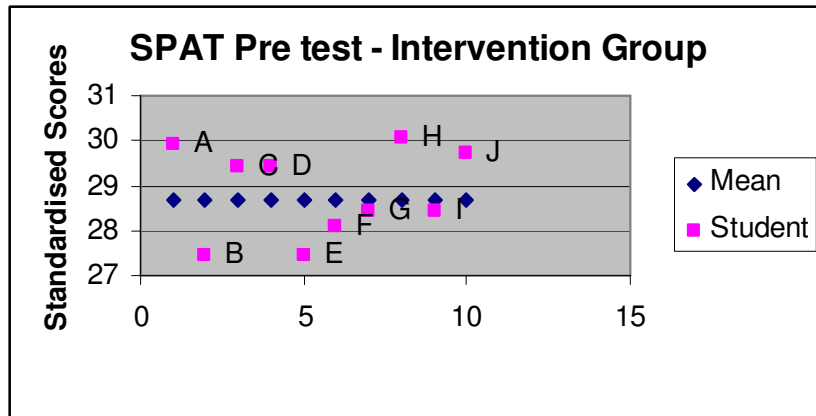


Figure 6

Figure 6 shows the intervention group's pre test scores in the Sutherland Phonological Awareness test. Students B, E, F, G and I fall below the mean of 28.7. Student H has the highest pre test score of 30.7 which correlates with the high score obtained in the Rime Units pre test (Figure 1). This finding supports that phonological awareness directly affects reading ability.

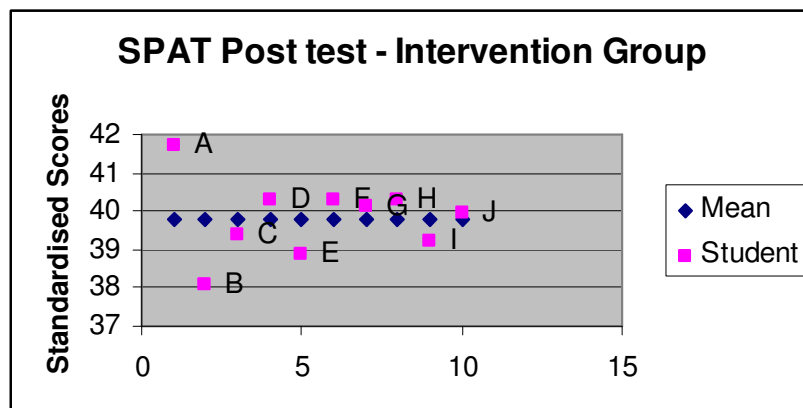


Figure 7

Figure 7 shows the post test scores for the Sutherland Phonological Awareness Test. Trends for the group show that all students have made gains in phonological awareness. Trends show that gains in the post tests have resulted in a greater mean of 39.8, an increase of 38%. Results show that students B, E and I have remained below the mean. Students F and G have made gains that have placed them above the mean and Student C has fallen below. The gains made are not consistent across the group, as some students have made much greater gains than others. Student A has made the greatest gain, whilst Student J has made the smallest gain amongst the group. The inconsistent gains have resulted in a greater deviation from the mean.

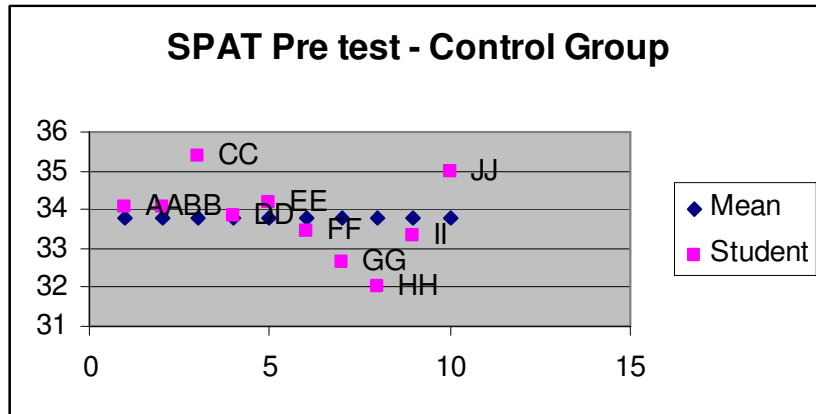


Figure 8

Figure 8 shows the control group’s pre test scores in the Sutherland Phonological Awareness test. Students FF, GG, HH and II fall below the mean of 33.8. It is interesting to note the higher starting mean of the control group compared to the intervention group (28.7). Student CC has the highest pre test score of 35.37 and student HH with the lowest pre test score of 32.02. These results correlate with the scores obtained in the Rime Units pre test (Figure 2). These findings support that phonological awareness directly effects reading ability.

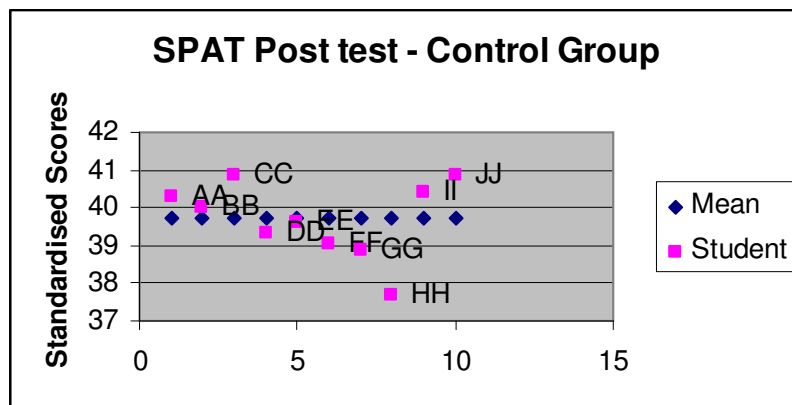


Figure 9

Figure 9 shows the post test scores for the Sutherland Phonological Awareness Test. Trends show that all students have made gains in the post testing, resulting in an increased mean of 39.7, an increase of 17%. Results show that although all students have made gains students FF, GG and HH have remained below the mean while DD and EE have also fallen below the mean. Student II has made the greatest gains in phonological awareness amongst the group. These results do not directly correlate with the results obtained in the Student II’s Rime Units post test scores. This finding does not support that phonological awareness directly affects reading ability.

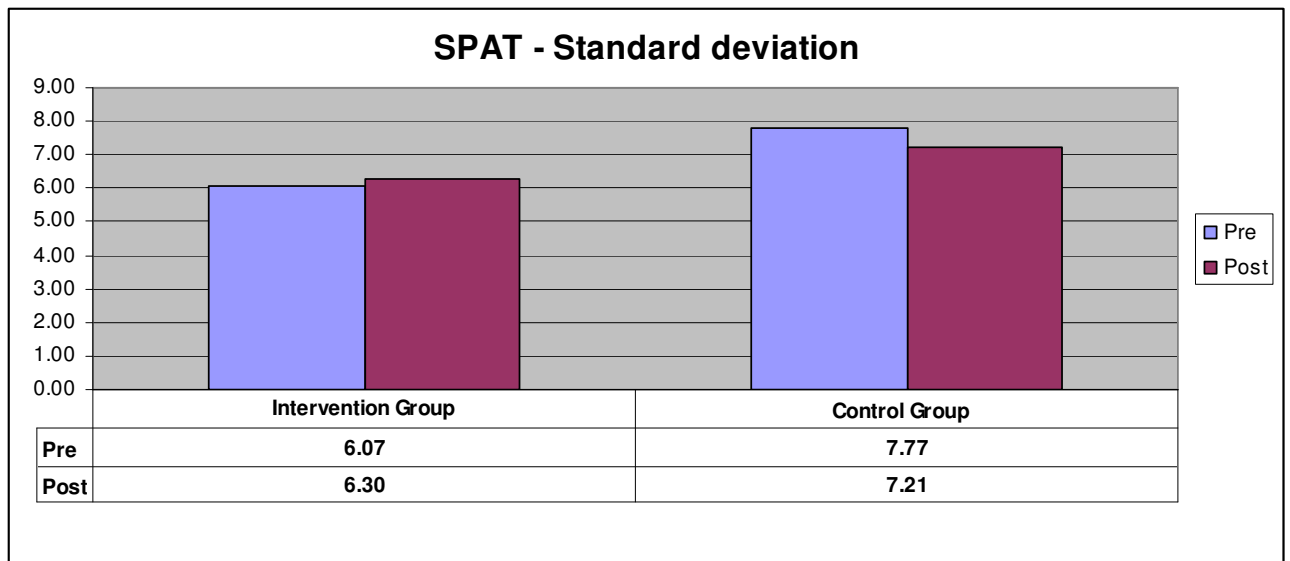


Figure 10

Results show that the standard deviation of the intervention group has increased by 4%. The control group has a decreased standard deviation of 8%. Findings correlate with individual results from the intervention group’s SPAT test scores (Figures 6 and 7) where results were inconsistent and where some students have made considerably greater gains than others.

Dictation

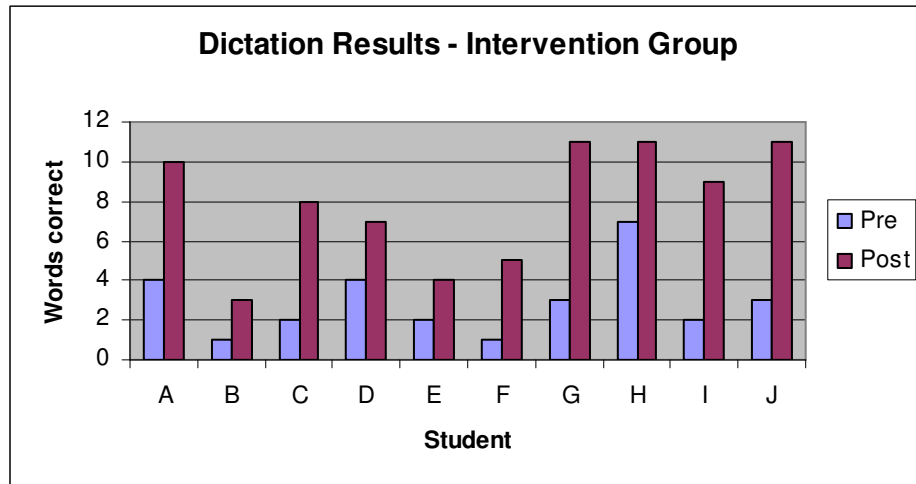


Figure 11

Figure 11 shows the pre and post test results for the dictation administered. Trends for the intervention group show that all students have made considerable gains with most students showing gains more than double their score. Student H had the highest pre test score amongst the group with 7 out of 16 words spelled correctly. Students B and F had the lowest pre test score, with 1 word spelled correctly. Post test results show that Students G, H and J had the highest score of 11 out of 16 words spelled correctly. The trends support research and the prediction that explicit teaching of segmenting into onset and rime supports spelling accuracy.

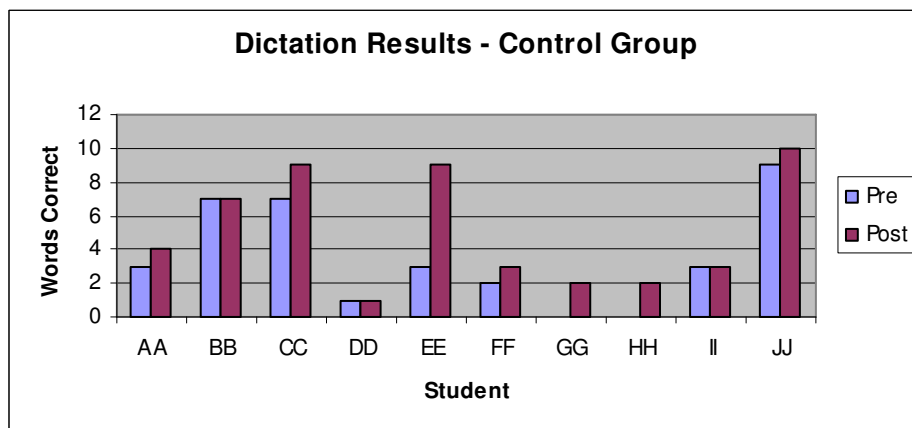


Figure 12

Figure 12 shows the pre and post test results for the control group. The figure shows that Student JJ had both the highest pre and post test score amongst the group. Trends for the control group show that most students have made some gains. Students BB, DD and II made no gains at all.

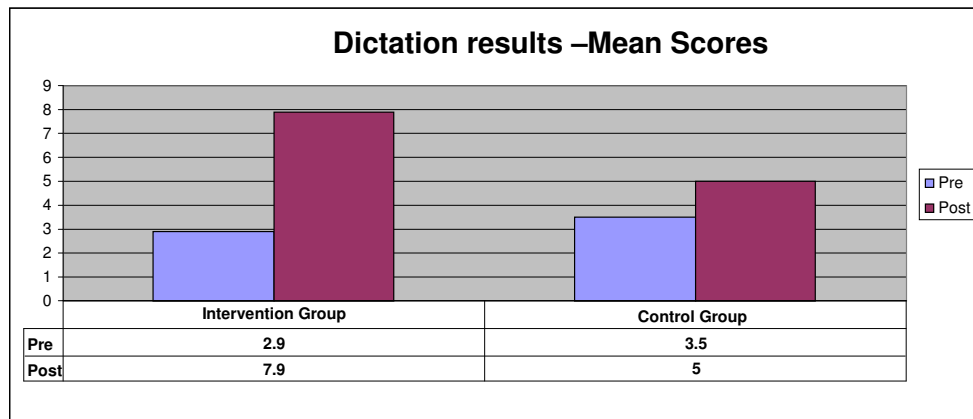


Figure 13

Figure 13 shows the pre and post test dictation mean values for both the intervention and control groups. The intervention group’s mean for the pre test was 2.9 and the mean for the post test was 7.9 resulting in an increase of 172%. The control group’s pre test results showed a mean of 3.5 and a post mean score of 5, resulting in a 42% increase. The greater gains made by the intervention group supports the prediction that explicit teaching of segmenting into onset and rime improves spelling accuracy.

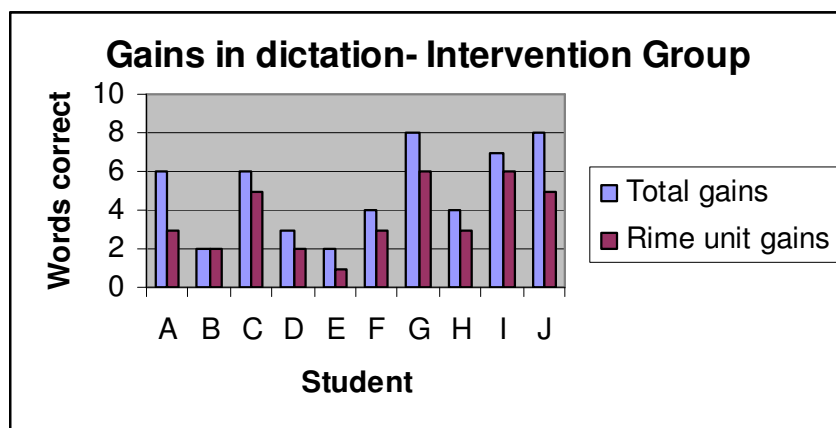


Figure 14

Out of the 16 dependable rime words included in the dictation, 10 of the words contained a rime unit that was taught within the 10 lesson teaching sequence (Appendices 2 & 3). Figure 14 shows the gains made by the students in writing words containing the rime units that were explicitly taught. Trends in the intervention group show that at least half of the gains made by each student are attributed to the rimes that were explicitly taught. Results show that Student B’s total gains of 2 were words that contained rime units explicitly taught. These results strongly support the prediction that explicit teaching of segmenting into onset and rime increases spelling accuracy. It is also evident, that most of the students in the intervention group have also made some gains in correctly spelling words that contained a rime unit that had not been explicitly taught.

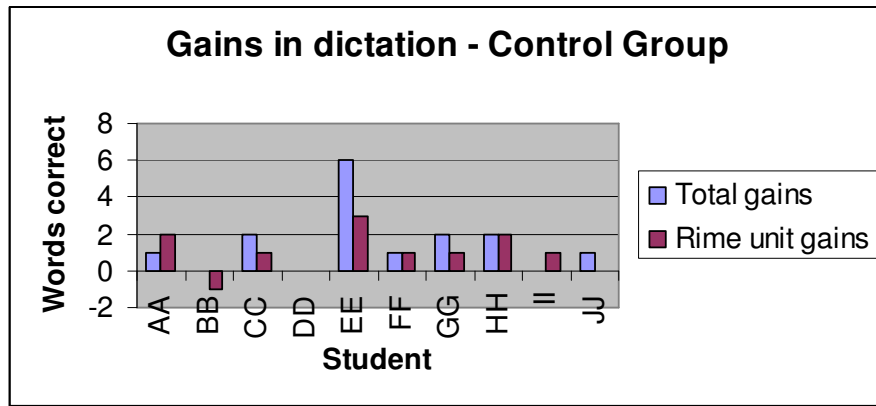


Figure 15

Figure 15 shows the total gains made by the control group. Despite these students not being explicitly taught the rime units, some gains were made. The results indicate that gains are inconsistent as Students AA, BB and II have correctly spelled words in the post test that differ from the words they spelled correctly in the pre test.

Text level

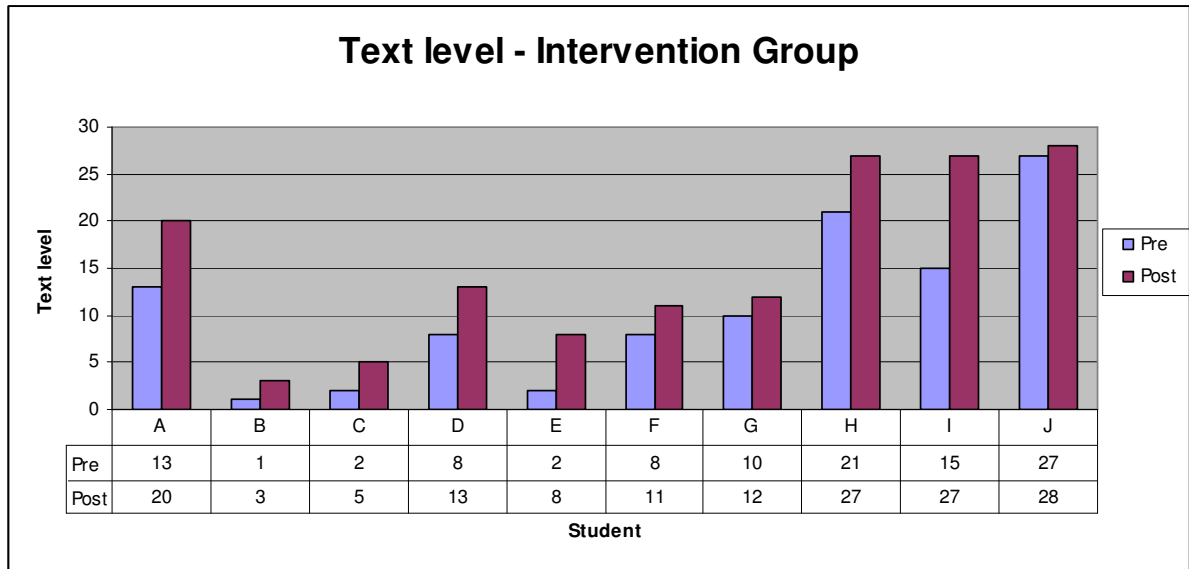


Figure 16

Figure 16 shows the pre and post instructional text levels for each student in the intervention group. Trends for the group show that all students have made some gain in prose reading. Student I has made the greatest gain, whilst Student B has made the least gain. This supports the prediction that the explicit teaching of segmenting into onset and rime improves prose reading.

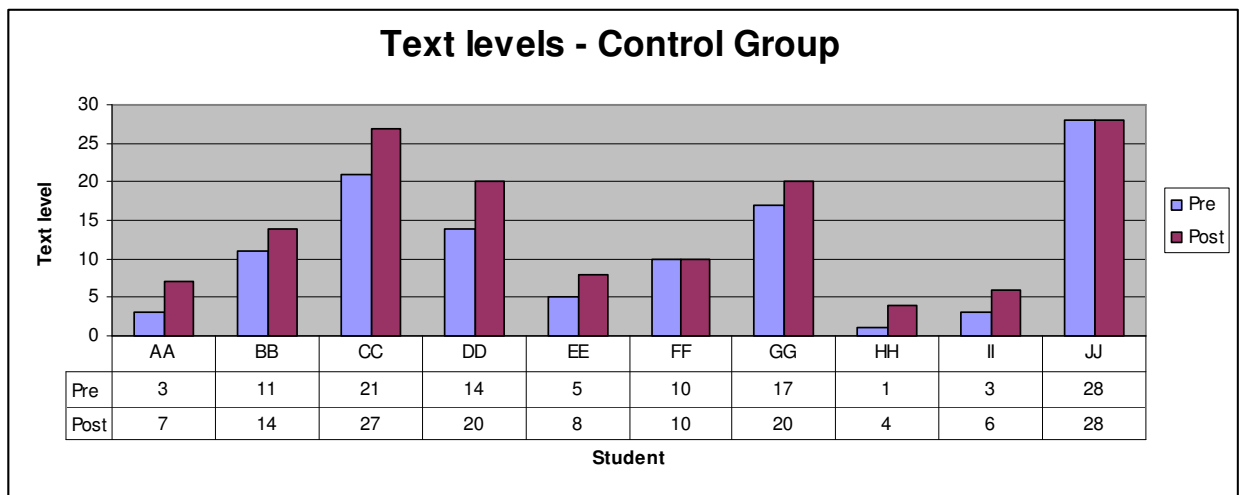


Figure 17

Figure 17 shows the pre and post instructional text levels for each student in the control group. Trends for the control group show that most students have made some gain in prose reading. Students CC and DD have made the greatest gain, whilst student FF made no gains. Figure 17 does not show any gain in Student JJ's text level as instructional levels were only assessed between 0 and 28.

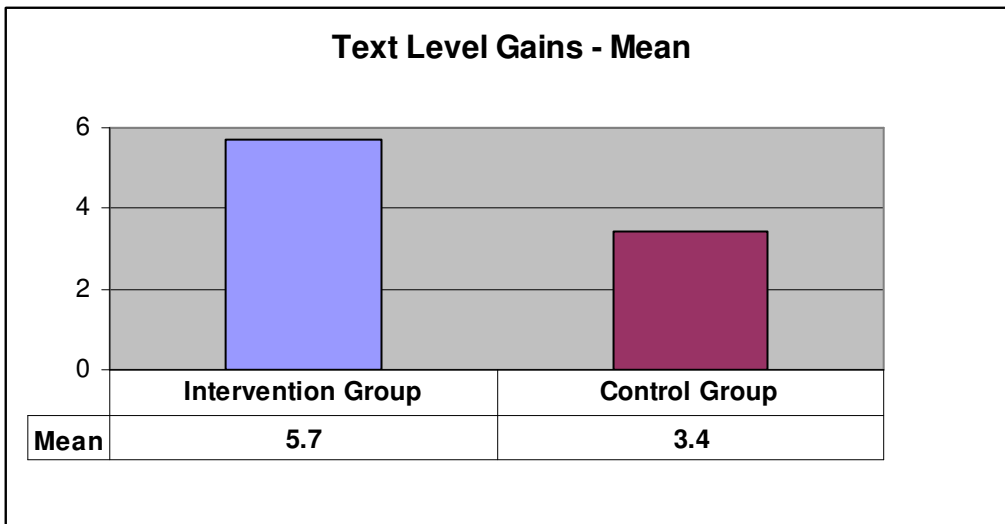


Figure 18

Figure 18 shows the mean for the total combined gains made in text level for both the intervention and control groups. The intervention group's mean is 67% greater than the control group's mean.

Discussion

In reflecting on the results of this study, trends support that explicit whole class teaching of segmenting into onset and rime improves prose reading and spelling accuracy. Students improved in both isolated word reading and prose reading and made considerable gains in spelling accuracy. The intervention would need to take place over an extended period of time to gain further insight into any significant effects of the explicit teaching however findings for the current research are positive.

Lane, Pullen, Eisele & Jordan (2005) state that “the most important thing for teachers to do is make the sound structure of language conspicuous to students who do not develop phonological awareness independently” (p.109). The results of the Rime Units test support this research as the intervention group made greater gains than the control group (Figures 1, 2, 3 and 4). Without explicit teaching of segmenting into onset and rime, the control group’s gains are inconsistent across the group (Figure 3). Some students have made greater gains while others have made very little gain. The standard deviation of the control group (Figure 5) provides further evidence of these inconsistencies as the post scores have resulted in a greater standard deviation than in the pre testing, demonstrating the varying levels of gains made by the students. Student II highlights inconsistencies as her results indicate that she performed better in her pre test than her post test (Figures 2 and 3). It can be concluded that this student is inconsistent in the skills used to decode unknown words and does not have a sound knowledge of rime units. A closer investigation of Student II’s Rime Units pre and post tests supported this finding.

The gains made in the control group could be attributed to the word level teaching taking place in the control group’s classroom. Though rime units were not explicitly and strategically taught during the period of the current research, it is unknown what explicit teaching has taken place. Decoding skills such as blending and segmenting are key strategies taught in the Early Years Literacy program and therefore it cannot be assumed that these students had not been exposed to any explicit word level teaching.

Research states that “to ensure early success, beginning readers-especially struggling beginning readers-should be provided with instruction that is both explicit and systematic” (Adams, 1990; Lane, 1994; National Reading Panel, 2000; Snow, Burns, & Griffin, 1998, as cited in Lane 2005, p.64) The benefits of explicit teaching are highlighted with all students across the intervention group making gains in their ability to segment words into onset and rime and read isolated words successfully. It is through the students’ ability to decode isolated words that they were able to transfer their knowledge of segmenting use the skills acquired, to make gains in prose reading when reading a continuous text. The inclusion of both a prose reading activity and a reflection within the explicit teaching lessons benefited students, as it allowed them to articulate the strategies learnt and how they would apply this to both prose reading and independent literacy tasks. This was supported in the post test results of the intervention group where students were not only able to recall and recode their knowledge of the particular rime units taught, but were also able to transfer their knowledge of segmenting to other words containing rime units that had not been explicitly taught. Annotated test results support this finding. Student J in particular,

demonstrated in her pre test that a score of 112 / 150 was obtained. Though many of the errors made contained rime units that were familiar to the student, errors occurred due to difficulties in segmenting into onset and rime. Many of the words read incorrectly such as ‘splin’ for ‘spin’, ‘cat’ for ‘chat’ and ‘slice’ for ‘spice’ were attributed to distinctive visual features and did not demonstrate a sound understanding of how to segment words appropriately. Therefore, for this student, explicit teaching of segmenting has assisted her in using her knowledge of rime units more effectively.

Research states that “phonological awareness...is an important skill for students to acquire during the early stages of learning to read (O’Conner, Jenkins & Slocum, 1995 as cited in Moore 2005 p.42). Trends in the Sutherland Phonological Awareness Test indicate the students with the lowest levels of phonological awareness have some of the lowest scores in text level, dictation results and onset and rime test results (Table 2). The explicit teaching of segmenting into onset and rime also resulted in an increase in the Sutherland Phonological Awareness test scores of the intervention group (Figures 6 and 7). However, these results cannot be used conclusively as the results from the control group have also showed an increase in their overall scores (Figures 8 and 9). Though gains were made, the inconsistent nature of the results (Figures 6, 7 and 10) can be attributed to the nature of the test administered. The Sutherland Phonological Awareness Test assesses different aspects of phonological awareness including, syllable counting, rhyme production and detection, phoneme identification, manipulation, blending and segmentation and non word reading and spelling. Therefore, it can be concluded that the explicit teaching of the intervention group did not assist in every aspect of the test. Exposing students to segmenting into onset and rime is one aspect of phonological awareness which prepares students for further competency in syllable detection and manipulation of individual phonemes. “Instruction at the onset-rime level is an important step for many children” (Treiman, 1985, 1991, 1992 as cited in Lane et al. 2005 p.103) “Onset-rime tasks could, therefore, be considered an intermediate step in the development of phonological awareness” (Lane et al, 2005, p.103)

The explicit teaching of segmenting into onset and rime as well as the oral manipulation of words within the 10 lesson teaching sequence has assisted students in making gains in the areas of rhyme detection and production, identification of onset and the manipulation of sounds through deletion of phonemes. Students experienced difficulty in segmenting individual phonemes. Their attempts were consistent with the explicit teaching they were exposed to. When asked to segment words into individual phonemes, many of the students in the intervention group segmented them into onset and rime. For example, the word trip (t-r-i-p) was segmented into 2 parts – “tr” “ip”.

The results in the dictation test lend support for the work of Snowling and Hume (1991) who suggest that “a common assumption is that learning to spell is likely to be even more related to phonological skills than learning to read” (as cited in Hulme et al 1997 p154). Reflection of the results demonstrate that while the results for the control group were initially greater in the pre test, the gains made by the intervention group highlight the specific gains that have resulted from the explicit teaching of segmenting into onset and rime (Figures 11, 12 and 13). Research states that “students’ spelling skills and confidence can be increased if they understand more about word structure, syllabification and effective ways of subdividing words into pronounceable parts” (Lam & Westwood, 2006, p.13). The gains made in the intervention group support

this research as the students' dictation scores directly correlate with the rime units taught (Figure 14). This was supported in the teaching sequence where students benefited from being provided with the opportunity to practise writing target words both in isolation and in prose.

Once again, it is evident that students not only benefited from the explicit teaching and exposure to rime units but were able to transfer and use their knowledge of segmenting to make successful attempts at writing new words correctly in the onset and rime dictation test (Figure 14). The inconsistent results of the control group further support the need for explicit teaching (Figure 15). The results obtained by students AA, BB and II suggest these students are not consistent in the strategies they are using to record and spell dictated words and do not display a confidence or certainty in their ability to record new words.

The results in text level for the intervention group (Figure 16 & 18) further support the prediction that explicit whole class teaching of segmenting into onset and rime improves prose reading of Grade 1 and 2 students. However, these results can not be used conclusively as most students in the control group (Figure 17) have also made gains in prose reading. Reading strategies encompass a range of skills that are required to be able to decode a text effectively. Segmenting into onset and rime is just one of these skills. One factor that needs to be considered when discussing these results is the duration of the testing period. For the purposes of this research project, all tests had to be administered in a one to one setting and therefore time constraints resulted in the running records being administered prior to any of the other tests. It is therefore essential to note that for some students there was a greater lapse in time between the administration of the running record assessments and the other three tests. Furthermore, during this time all students in both the control and intervention groups, received teaching on prediction and comprehension skills, sight word vocabulary and other word attack strategies in both shared and focused guided reading sessions. Whilst the explicit teaching of segmenting into onset and rime may have benefited students, particularly those who were reading at lower text levels, it can not be assumed that this was the only cause for the increase in text levels.

Research also states that “students who have very low levels of reading ability benefit most from explicit instruction in how to apply those skills in a meaningful context” (Lane et al, 2005 p.104). The explicit teaching provided to the intervention group has supported students in isolated word reading and in turn allowed them to use the skills acquired in prose reading. Observations also showed that over the course of the lessons, students became more confident in their ability to segment words into onset and rime. At the final stages of the learning sequence, students were able to independently articulate the behaviours they planned to use prior to prose reading.

There are a number of factors that need to be taken into consideration if repeating this study or continuing teaching sessions with these selected students. Primarily, many of the students who began with limited phonological awareness and rime unit knowledge may have benefited from further time spent on each rime. Though the lessons encompassed the revision of previous learning, some students found it difficult to consolidate their learning with two new rimes being presented every lesson. For others, future teaching should include the explicit teaching of longer and more difficult rime units. While the rime units taught may have greatly assisted students

with particularly low levels of phonological awareness and prose reading levels, the rimes taught may not have had a significant impact on students reading higher and more complex texts. Furthermore, in order to gain a deeper insight into the effects of the study on prose reading, a further investigation would have to take place. Running record assessments should be administered to assess the specific reading behaviours being used prior to and after the study.

It is essential that when providing explicit teaching, teachers have a sound knowledge of the purpose and direction of what they teach. Students need to be assessed to determine their level of need in terms of phonological awareness and explicit teaching should be planned with a clear purpose and set of intended outcomes in mind.

The results suggested that explicit whole class teaching of segmenting into onset and rime is a successful strategy in improving spelling accuracy and isolated word reading. Though remaining inconclusive, there is some evidence that supports that explicit whole class teaching improves prose reading ability.

An area of interest for future research would be the comparison in results between an intervention group who were exposed to whole class teaching and students who were removed from a class setting to participate in the intervention. Further research could also investigate the improvements in self efficacy that arise in relation to the intervention and the effect of analogy in improving isolated word writing, prose writing and spelling accuracy.

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Appendices

Student's Demographics and Results

Appendix 1

Name	Control = 0 Teaching=1	Age in MONTHS	Gender 0=Male 1=Female	Years of Schooling	ESL No=0 Yes=1	Earlier Intervention 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 Standardised Score PRE	SPAT Standardised score POST	Text level PRE	Text level POST	Dictation (max 16) PRE	Dictation POST
A	1	75 months	1	2	1	0	10	88	102	36	52	1.2	1.94	13	20	4	10
B	1	68 months	0	2	0	0	10	9	23	21	29	-1.27	-1.71	1	3	1	3
C	1	76 months	1	2	1	0	10	5	56	25	37	0.71	-0.44	2	5	2	8
D	1	77 months	0	2	0	0	10	50	85	33	43	0.71	0.51	8	13	4	7
E	1	72 months	0	2	1	0	10	9	25	21	34	-1.27	-0.92	2	8	2	4
F	1	90 months	1	3	1	1	10	54	97	25	43	-0.61	0.51	8	11	1	5
G	1	84 months	0	3	1	1	10	41	66	27	42	-0.28	0.35	10	12	3	11
H	1	88 months	0	3	1	1	10	108	114	37	43	1.37	0.51	21	27	7	11
I	1	80 months	1	3	0	0	10	86	132	27	36	-0.28	-0.61	15	27	2	9
J	1	87 months	1	3	1	0	10	112	134	35	39	1.04	0.13	27	28	3	11
AA	0	75 months	1	2	1	0	0	9	44	36	44	0.28	0.6	3	7	3	4
BB	0	78 months	1	2	0	0	0	28	72	36	42	0.28	0.32	11	14	7	7
CC	0	78 months	1	2	1	0	0	117	129	46	48	1.57	1.15	21	27	7	9
DD	0	84 months	0	2	0	0	0	53	92	34	37	0.03	-0.37	14	20	1	1
EE	0	79 months	0	2	1	0	0	31	53	37	39	0.41	-0.1	5	8	3	9
FF	0	85 months	0	3	1	1	0	36	45	31	35	-0.36	-0.65	10	10	2	3
GG	0	83 months	0	3	0	1	0	46	61	25	34	-1.14	-0.8	17	20	0	2
HH	0	75 months	0	2	1	0	0	9	12	20	25	-1.78	-2.03	1	4	0	2
II	0	75 months	1	2	0	0	0	35	17	30	45	-0.49	0.73	3	6	3	3
JJ	0	77 months	1	3	0	0	0	121	126	43	48	1.18	1.15	27	28	9	10

Table 3

Appendix 2

Onset and Rime Dictation

Sam the fat elephant reached out with his trunk to try and help his sister. He was just about to grab her when he fell. He sat back down on a rock with a thump and let out a big sob. The small fox said “I think you could do with a rest. I can use my tail to shake the tree. Then she will slide out of the trap.”

words being assessed.

Total score: /16

Outline of Rime Units to be taught

Lessons	Rime Units	Target Words	Prose Reading texts
Lesson 1	Introduction/at	at: bat cat hat mat rat sat brat drat flat spat	Big Book: Greedy Cat is Hungry Reference?
Lesson 2	ab/ay	ab: dab fab gab lab tab blab drab flab slab ay: hay ray lay may bay clay stray gray	Smart Phonics Poster: The Stray, Gray Dog
Lesson 3	it/in	it: bit fit git lit mit nit sit kit slit in: pin sin bin tin shin grin thin spin	Website: Bowling pins Website: I can knit http://www.hubbardscupboard.org/ printable_booklets.html#WordFamilyBooklets
Lesson 4	aw/op	aw: raw gnaw law straw op: cop hop mop pop top stop chop drop plop flop shop slop	Smart Phonics Poster: Paul's awful cold
Lesson 5	ight and revision	ight: sight knight right bright tight fight	Smart Phonics Poster: One Starlit night
Lesson 6	ank/unk	ank: sank unk: sunk skunk dunk punk gunk bunk	<u>Frank and Hank</u> Frank and Hank were best friends. They loved going fishing with their dads and sleeping in their bunk beds in the cabin near the river bank. Frank and Hank enjoyed throwing stones in the water and watching as they sank to the bottom. One night, as Frank drank from his cup, Hank jumped back with a fright. "What's that in the tree?" he yelled. As they watched, a skunk dropped from the tree and ran out of sight. "He stunk!" said Frank and Hank grinned.
Lesson 7	ell/ill	ell: dell fell sell tell ill: bill dill gill Jill kill pill will drill frill grill still	Smart Phonics Poster: Bill and Jill

Lesson 8	ake/oke	ake: take sake rake drake oke: yoke poke cloke	<p style="text-align: center;"><u><i>Jake's Surprise</i></u></p> <p>Jake woke up early that morning and ran to the door. He poked his head out to see if mum was home. He crawled along the floor like a snake, to see if she was gone. He wanted to surprise her – he was going to bake her a cake for her birthday. First he needed to take out all the ingredients that he needed to make the cake. He mixed them up and poured them into the cake tray, and put it in the oven. After cleaning up, Jake walked over to the oven to take out the cake. “Oh no” he said as he opened the oven door and smoke filled the room. “Oh goodness” he choked. “Dear me” said mum as she walked in the room. “This is a surprise!”</p>
Lesson 9	ock/ack	ock: cock dock lock mock tock flock frock shock stock ack: hack Jack lack rack sack crack slack snack stack	<p>Smart Phonics Poster: Clackety Clack</p>
Lesson 10	ump and revision	ump: bump dump hump lump rump clump grump plump	<p style="text-align: center;"><u><i>Mr Rump the grump</i></u></p> <p>Mr Rump got out of bed. “What’s that lump?” asked Mrs Rump. “I got a bump when I jumped into bed” said Mr Rump. “You silly old man” laughed Mr’s Rump, “come and have some tea.” “I don’t want tea!” yelled Mr Rump, “I want cake.” “You don’t need cake...you are too plump!” Mr Rump frowned. “Don’t be such a grump” Mrs Rump said as she gave him a big hug.</p>

Revision Bingo: Day 5

bat	fab
night	grab

bit	sight
knit	grab

may	hop
fight	cat

ray	crab
slab	cat

crab	tight
cat	raw

raw	stop
chat	mat

stop	fight
flab	chat

stab	brat
may	paw

say	tight
rat	paw

paw	slit
gray	rat

day	thin
pin	flat

kit	brat
saw	paw

drop	kit
grin	fat

spin	chop
hat	bit

pin	sat
clay	draw

flat	sin
saw	pop

sin	bright
stray	hay

flop	cat
night	saw

clay	shin
hop	flat

bay	right
knit	saw

draw	day
in	cat

bin	bit
hat	claw

brat	hop
fit	spin
clay	draw
grab	fit

Revision Bingo: Day 10

bat	fab
night	snack

shock	sight
knit	grab

may	hop
fight	stock

skunk	crab
slab	cat

crab	tight
hump	raw

raw	stop
chat	poke

frock	fight
flab	chat

stab	clock
may	paw

say	tight
rat	paw

paw	slit
grump	rat

day	thin
crack	flat

pin	grill
clay	draw

spin	chop
fell	bit

drop	kit
grin	frill

kit	brat
saw	dump

brat	hop
bunk	spin

clay	draw
grab	frock

flat	dock
saw	pop

sin	bright
stray	clump

flop	sell
night	saw

clay	shin
drill	flat

smack	right
knit	saw

draw	day
sake	cat

bin	stock
hat	claw

Appendix 5

Lesson Plans

Lesson 1 followed the following lesson plan format.

Introduction	<i>Today we are going to learn about how to break up words.</i> Introduce the strategy of onset and rime.	3 - 5 minutes
Phonological Awareness – Oral based activity	Introduce 'Frodo' (Frog puppet). Use the puppet to cue students into the session. Explain that Frodo likes to segment words and break them up into easier parts. Teacher selects two target words and segments them aloud. Students blend the sounds together to make the target words. Students brainstorm 3 and 4 letter words containing the specified rime units (one at a time). These are listed on the board.	3 - 5 minutes
Segmenting task	Students use the Interactive Whiteboard to segment the brainstormed words. The teacher begins by writing one word on the board. These are read aloud and students repeat.	2 minutes
Manipulation of target words	Students orally manipulate words using teacher modelling. "Cat – change the "c" for "m". 'Cat' change the "c" for a "m". That makes mat. Students repeat. Students then use the Interactive Whiteboard to manipulate target words by adding and deleting phonemes.	3 - 5 minutes
Prose Reading	Teacher states: <i>This story has some words that have the rimes we learnt today. Today when we are reading I want you to look out for these rimes and see if you can break them up and blend them together just as we did before. This will help you to read words more easily.</i> After reading: <i>Today when we read, we segmented</i>	10 minutes
Writing target words	Students use whiteboards to write target words. Teacher segments the words aloud as children blend and record them on their whiteboards.	3 minutes
Prose Writing	Students select one new word that was learnt in today's session. Students dictate a sentence containing the word and read it aloud to a buddy.	10 minutes
Lesson Reflection	Students reflect on their learning. <ul style="list-style-type: none">- What was learnt today?- How will this help me in reading and writing? Introduce the 'Onset and Rime Wall.' Add the new onsets and rimes learnt in the session.	5 minutes

Lesson Plans

Lessons 2 – 4 and 6 – 10 follow the following lesson plan format.

Revision of previous lesson	Students articulate what they have learnt in the previous session. <i>What skill did we practise yesterday?</i> <i>What rimes have we learnt?</i> <i>Has anyone used this skill since our last lesson?</i>	3 - 5 minutes
Reading Target Words	10 target words are selected from the previous session. Students read them on flash cards. Students are given time in pairs to verbalise the target word in a sentence.	3 - 5 minutes
Introduction	Introduce the two new rime units to be targeted in today's session. Teacher articulates the rime and students repeat it. These are written on flash cards to be displayed on the onset and rime wall.	2 minutes
Phonological Awareness – Oral based activity	Use the puppet to cue students into this session. Teacher selects two target words and segments them aloud. Students blend the sounds together to make the target words. Students brainstorm 3 and 4 letter words containing the specified rime units (one at a time). These are listed on the board.	3 - 5 minutes
Segmenting task	Students use the Interactive Whiteboard to segment and blend the brainstormed words. The teacher begins by writing one word on the board. These are read aloud and students repeat.	10 minutes
Manipulation of target words	Students orally manipulate words using teacher modelling. "Cat – change the "c" for "m". <i>'Cat' change the "c" for a "m". That makes mat.</i> Students repeat. Students then use the Interactive Whiteboard to manipulate target words by adding and deleting phonemes.	3 minutes
Prose Reading	Teacher states: <i>This story has some words that have the rimes we learnt today. Today when we are reading I want you to look out for these rimes and see if you can break them up and blend them together just as we did before. This will help you to read words more easily.</i> Students listen to and join in reading prose. They identify the targeted rime units. Any new words are added to the list. After reading: <i>What did you do that helped you read the text?</i> * In later sessions, students independently articulate their own plan for reading. "Today I will.."	10 minutes
Writing target words	Students use whiteboards to write target words. Teacher segments the words aloud as children blend and record them on their whiteboards.	5 minutes

Prose Writing	<p>Students select one new word that was learnt in today's session. Students dictate a sentence, which is recorded by the teacher. Students share their sentences with a buddy.</p> <p>*In later sessions, students can write their own sentence.</p>	10 minutes
Lesson Reflection	<p>Students reflect on their learning.</p> <ul style="list-style-type: none"> - What was learnt today? - How will this help me in reading and writing? <p>As a group, add new onsets and rimes discovered in the lesson on the class' 'Onset and Rime' wall.</p>	5 minutes