Explicit teaching of onset and rime will improve word reading accuracy in isolation and in prose.

Abstract:
Many students in the early years of primary school often experience difficulties in learning to read words accurately. Students often read common words based on their visual features or by converting each letter into sounds. The hypothesis of this study is that explicitly teaching onset and rime will improve word reading accuracy in isolation and in prose. Research suggests that learning to read accurately does not depend only on creating mappings at the sound-letter level but also heavily relies upon a student’s ability to intertwine these mappings with mappings of bigger letter units such as onsets and rimes (Goswami, 2002).

This study compared the results of two groups of grade one students, a control group and a focus group. The focus group was explicitly taught to use onset and rime to help them to read words in isolation and in prose accurately. The results of the study generally supported the hypothesis, suggesting that while the hypothesis was supported overall, the effect explicit teaching of onset and rime has on word reading accuracy is greater in isolation than in prose.

Introduction:
Students in the early years of primary school often experience difficulties in learning to read words accurately. Students often read common words of one or two syllables based on their visual features or convert each letter into sounds and then blend them together to read the word. While these reading strategies allow many readers to read common one and two syllable words accurately, when considering reading development as a sequence, they are the least effective strategies for increasing student’s word reading accuracy. These reading strategies demand a high level of working memory and are often slower than other strategies the student’s could have implemented.

As beginning readers, students who have difficulty reading common words accurately are required to use more complex readings strategies, calling on both their orthographic and phonological knowledge. Rashotte, MacPhee and Torgesen (2001) noted that a major cause of reading difficulties is a weaknesses in the ability to process the phonological features of language, making it difficult for poor readers to recognise words by sight and to easily sound out new words. In numerous studies with diverse student populations, phonological awareness instruction significantly improved student’s reading skills, including word reading, phoneme blending and segmenting (Pullen et al, 2005). The influence of phonological knowledge is not restricted to reading words in isolation. Munro indicated that the development of phonological knowledge affects a student’s ability to accurately read prose (1998).
When reading at the word level, successful readers manipulate sound patterns in spoken words to help read more accurately (Hoad et al, 2005). This view is supported by Goswami (1999) who noted that student’s in their second year of schooling can use analogies to facilitate the reading of unfamiliar words, and suggests that children should be trained in phonological skills, specifically focusing on onsets and rimes. Goswami suggested that reading accurately does not operate solely by mapping letters onto phonemes, but rather it is achieved by mapping letter patterns for rimes onto body units (2002). Goswami continued by highlighting that the ability to learn to read effectively does not depend only on creating mappings at the sound-letter level but it also heavily relies upon a student’s ability to intertwine these mappings with mappings of bigger letter units such as onsets and rimes (2002).

As a student’s phonological knowledge develops, so does their reading accuracy. They move from playing with rhyming patterns in words to segmenting spoken words into onset and rime and then into separate sounds (Hoad et al, 2005). Goswami and Mead (1992) also highlighted the close relationship between reading ability and phonological awareness but also suggest that rhyming and alliteration are key predictors of later reading progress. Furthermore, Goswami (1999) suggests that focusing on onsets and rimes improves student’s abilities to read unfamiliar words by using analogies. In contrast, Hulme (2002) suggests that phoneme segmentation and not rhyme, is a more robust predictor of early progress in learning to read. Nation and Hulme (1997) also questioned the influence a student’s ability to detect onset and rime has on his/her ability to read accurately. Following the completion of their own case study, Nation and Hulme suggest that onset and rime segmentation possess little relation to word reading accuracy. Nation and Hulme noted that the even the youngest students in their study could segment some words into onset and rime and that there was no relationship between their ability to do this and their word reading accuracy (1997).

Students of all word reading abilities develop their word reading skills developmentally. When discussing this reading progress as a continuum and the role of phonological awareness, Cassady and Smith (2004) noted that phonological awareness acquisition generally follows a continuous and progressive developmental process. This developmental sequence of reading includes formative phases of reading, phases that are largely concerned with the acquisition of phonological awareness skills ranging from rhyme recognition to substitution of phonemes to produce both known and unknown words (Cassady & Smith, 2004). Munro (1998) also noted that phonological and phonemic awareness are key influences on literacy acquisition.

According to Munro (1998), phonological knowledge is knowledge of sound patterns whereas phonemic knowledge is knowledge of individual speech sounds (Munro, 1998). Manyak (2008) recognised that phonemic awareness contributes centrally to student’s acquisition of the alphabetic principle, that is, the understanding that the letters of the alphabet represent phonemes in speech. Key research findings in the phonemic awareness area include Manyak’s view (2008), that instruction involving segmenting and
blending phonemes combined with a focus of the letters that represent those phonemes contributes greatly to a student’s success in beginning to read.

Munro (1998) also noted that phonological knowledge is first displayed when children learn and remember how to say words. Children who find this difficult early in life may have difficulty in both saying words accurately and reading words at a later stage. Following on from this learning, children then learn to recognise sound patterns in words and segment words into onset and rime (Munro, 1998). Children may also be able to isolate a sound within a word, segment one-syllable words into sounds and blend a string of sounds into a word (Munro, 1998). Cassady and Smith (2004) also noted that these skills have repeatedly been demonstrated to be essential precursors to basic reading development. This success Munro (1998) noted, can be achieved by having students recognise sound patterns and letter clusters in written words, break up the spoken forms of the words into smaller sounds and link the letter clusters and sounds (Munro, 1998).

According to Cassady and Smith (2004), students normally master blending tasks prior to segmenting tasks, but that they also master onset-rime blending tasks prior to blending three phonemes in C-V-C words. Goswami (2002) believes there is clearly an important role for rime awareness in phonological development, suggesting that focused teaching of rime awareness should play a role in a student’s reading development. Furthermore, Munro (1998) suggests that students need to be able to link sounds and letters and manipulate sound patterns in complex ways by matching sounds in two or more words, deleting sounds from words and substituting sounds.

Another key aspect to improving reading accuracy is the ability to transfer knowledge from one learning experience to another. Munro (1998) suggests that students need to be able to transfer their literacy knowledge, and to use what they know about some words to read others. They also need to ‘transfer’ what they know about letter cluster-sound matches in one word to the same letter cluster in other words. This allows them to use what they know about some words to read others (Munro, 1998).

When considering a reading intervention based on onset and rime through segmenting and blending, Rashotte, MacPhee and Torgesen (2001) suggest that a phonologically based reading instruction program delivered in small groups (3-5) can significantly impact the word level reading skills of deficient readers. Students of teachers in the most effective schools spend more time daily in small group instruction and that small group instruction is at least of equal benefit as one on one instruction (Rashotte, MacPhee and Torgesen, 2001).

The present investigation aims to extend the earlier research by examining the effect of explicitly teaching onset and rime has in wording reading accuracy.

The hypothesis for this action research is:

Explicit teaching of onset and rime will improve word reading accuracy in isolation and in prose.
**Method:**

**Design**

This study uses a case study OXO design, in which the gain in word reading accuracy following explicit teaching of onset and rime is monitored and assessed for two Grade One students.

**Participants**

The case study involves four students, two students in a focus group and two students in a control group. The students involved in the research were selected from Prep/One/Two classrooms in a Catholic Primary School in regional Victoria. The male students are all in Grade One. The students live at home with Mum, Dad and siblings. Each set of parents take a keen role in their child’s academic development and liaises frequently with the school regarding their child’s progress. Student A and Student B represent the focus group, whereas Student C and Student D represent the control group.

Student A has continued to demonstrate reading difficulties since beginning his Prep year while student B has had some success in reading, meeting the Prep benchmark level of 5. Student B’s reading progress has not continued into his second year of schooling. Student A has been identified as ‘at risk’ this year in literacy and has participated in Catch a Falling Star this year. Student A was deemed ‘at risk’ because of his low Observation Survey scores at the beginning of Grade One. Catch A Falling Star is a small group reading intervention program conducted at the school four days a week for 45 minutes. Catch a Falling Star is similar in structure and methodology to ERIK, which is implemented as an intervention program in the Melbourne diocese. Student B has not participated in any kind of reading intervention.

Through classroom observation, the classroom teacher has observed that both students A and B heavily rely on Distinctive Visual Features when reading unfamiliar words in isolation and in prose. Importantly, both Student A and Student B display poor phonological skills in everyday reading activities in the classroom. Not attempting to sound out regular words or pausing to find known letter clusters are reading strategies both students do not regularly implement when reading to their classroom teacher. Each student’s age, entry reading ability and Pre Test scores are shown over the page in Table 1.
Table 1

<table>
<thead>
<tr>
<th></th>
<th>Rime Unit Test</th>
<th>Burt Word Reading Test</th>
<th>Word Reading Test</th>
<th>Sutherland Phonological Awareness Test</th>
<th>Text Decoding Level / Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student A</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>24</td>
<td>80.4% Level 6</td>
</tr>
<tr>
<td>(Focus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student B</td>
<td>36</td>
<td>19</td>
<td>10</td>
<td>27</td>
<td>93.2% Level 10</td>
</tr>
<tr>
<td>(Focus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student C</td>
<td>52</td>
<td>17</td>
<td>10</td>
<td>30</td>
<td>96.7% Level 6</td>
</tr>
<tr>
<td>(Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student D</td>
<td>9</td>
<td>12</td>
<td>6</td>
<td>28</td>
<td>89.1% Level 6</td>
</tr>
<tr>
<td>(Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Student C and Student D were chosen as control students because their learning backgrounds are extremely similar to students A and B. The control students attend the same school as students A and B but are in a different classroom. Both students C and D have been identified as ‘at risk’ in literacy this year and have participated in Catch a Falling Star in the second semester. Students C and D were deemed ‘at risk’ because of their low Observation Survey scores at the beginning of grade 1. Interestingly, Student B’s decoding level is 4 levels higher than that of the other students, even though his results in all of the other tests administered are comparable to that of his peers involved in the research study. For this reason, Student B will read a level 10 text for the Decoding Pre and Post tests instead of the level 6 text read by students A, C and D.

Materials

Materials used during the study include:

Assessment:
- AlphaAssess running records text: ‘Bedtime’ - Level 6. This text was used for Pre and Post testing purposes. (Students A, C and D).
- PM Benchmark running records text: ‘Lost at the Shopping Mall’ – Level 10. This text was used for Pre and Post testing purposes. (Student B).
- Sutherland Phonological Awareness Test: This test consisted of 4 subtests: A. Syllabic and Subsyllabic Level, B. Phonemic Level (CVC), C. Phonemic Level (Blends) and D. Grapheme-Phoneme Correspondences. This test was used for Pre and Post testing purposes.
- Rime Units Test: This test comprises of 38 rime units and a total of 149 words. The words range from 3 to 5 letters in length. Words are not read in rime groups. This test was used for Pre and Post testing purposes.
- The BURT Word Reading Test: This standardised test was used for Pre and Post testing purposes.
- Marie Clay Word Reading Test: This test is part of the Observation Survey and was used for Pre and Post testing purposes.
Teaching Aides / Resources:

- The Cat on the Mat is Flat by Andy Griffiths (Text).
- Reggie Queen of the Street by Margaret Barbalet (Text).
- Mutt Dog by Stephan Michael King (Text).
- Picture cue cards. See Appendix C.
- Flash-cards of onset and rime unit words made using target words from texts used in each lesson. See Appendix B for specific word lists.
- Individual whiteboards and dual colour whiteboard markers.

Procedure

The students were withdrawn from the class together on a daily basis, at the same time for two weeks. Each session lasted 25 minutes in total. The sessions were conducted in a removed, learning focus area of the classroom and were administered by the classroom teacher while an assistant was in charge of the remaining students in the class. Each student had their own position at a table where all the materials they would need for the session were already placed in front of them.

Each session followed a similar format. The session begin with Getting Knowledge Ready reading strategies, followed by While Reading Strategies. The Getting Knowledge Ready component of the session was aimed at reviewing, remembering, discussing and ‘getting ready’ all of the learning that had taken place in the previous lesson/s. It was during the While Reading component of the lesson onset and rimeing through segmenting and blending was explicitly taught. This was completed through focusing on four areas of reading strategies 1) Rhyming, 2) Segmenting and 3) Blending through onset and rime. Following this explicit teaching, each session was concluded by allowing approximately five minutes for focusing on After Reading Strategies. This conclusion to each session allowed the students to script what they had learnt, what they will remember and most importantly, what they will implement in their reading next time.

The sessions were designed to be implemented in a junior classroom, with the aim of building upon word reading strategies in a sequential manner. The teaching sequence implemented was based on the following teaching pathway adapted from Munro (1998):

1. Have the student accurately say the words
2. Have the student segment spoken words into onset and rime
3. Guide the student to suggesting other words that rime or alliterate with the pattern
4. Discuss with the student the shared sound pattern
5. Work with the student on segmenting the words into sounds.
6. Have the student read each word independently. (It is important that the student reads the rime unit before reading the word).
7. Guide the student to be able to transfer the letter-sound rime units to other words.

An overall guide to each session is shown over the page in Table 2, more comprehensive plans of each session are found in Appendix A.
Table 2

<table>
<thead>
<tr>
<th>Session:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting Knowledge Ready:</strong></td>
</tr>
<tr>
<td><strong>While Reading Strategies:</strong></td>
</tr>
<tr>
<td>• Rhyming</td>
</tr>
<tr>
<td>• Segmenting</td>
</tr>
<tr>
<td>• Blending through onset and rime</td>
</tr>
<tr>
<td><strong>After Reading Strategies:</strong></td>
</tr>
</tbody>
</table>

Results:

A full data set showing relevant background information and a comprehensive list of all Pre and Post Test scores is attached to the Action Research document.

Focus Group:

![Rime Units Test](image)

Figure 1

Trends for the group indicate that explicit teaching conducted through the project directly impacted upon the group’s ability to identify and read rime units. As shown in Figure 1, Student A’s Rime Unit Test score increased by 91%, whereas Student B’s score increased by 69% over the same period. Though Student B’s percentage of improvement is less than Student A’s, he increased his raw score by 25, from 36 to 61. Student A increased his raw score for the Rime Unit Test by 11 to 23, up from 12 in the Pre Test.
### Rime Units Test

#### Table 1

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student A</td>
<td>bin, can, man, day, play, hot, not, fat, stop, duck, pick, jump</td>
<td>bin, can, man, day, play, hot, not, spot, fat, tap, hop, top, stop, shop, lip, zip, pit, rock, clock, back, wing, duck, jump</td>
</tr>
<tr>
<td>Rime Units read &gt;75% (3 or more out of 4) accurately:</td>
<td>Rime Units read &gt;75% (3 or more out of 4) accurately:</td>
<td></td>
</tr>
<tr>
<td>Student B</td>
<td>bin, pin, can, man, than, day, say, tab, bug, mug, hot, not, spot, fat, pat, chat, that, cap, tap, hop, top, stop, shop, zip, ship, hit, pit, grit, rock, sock, back, black, ring, sick, think, name</td>
<td>bin, pin, spin, can, day, say, play, stay, saw, grab, mug, plug, slug, hot, not, shot, spot, fat, pat, chat, that, tap, clap, hop, top, stop, shop, zip, drip, ship, hit, pit, spit, grit, rock, sock, block, back, hill, bring, duck, luck, truck, stuck, pick, brick, snail, bank, tank, mask, task, junk, bunk, trunk, pink, wink, jump, name, came, slide, chain</td>
</tr>
<tr>
<td>Rime Units read &gt;75% (3 or more out of 4) accurately:</td>
<td>Rime Units read &gt;75% (3 or more out of 4) accurately:</td>
<td></td>
</tr>
</tbody>
</table>

In the post test, Student A incorrectly 1 word that he had read correctly in the pre test. Interestingly, Student B, whose raw scores are higher overall, read 8 words incorrectly on the post test that he had read correctly on the pre test. 6 of these errors involved the student misreading the rime unit.

As shown in Table 1, Student A’s Pre Test results show that he read only 2 words beginning with two letter onset units: *play* and *stop*. In the Post Test, Student A read 5 words involving two letter onset units *play*, *spot*, *stop*, *shop* and *clock* correctly. Table 1 also shows that Student B was able to build upon his knowledge of rime units between the Pre and Post Tests.

The Pre Test words read (see Table 1), show that Student B read 4 rime units with 75% or greater accuracy, while on the Post Test, he read a total of 11 rime units with 75% or greater accuracy. The student was able to build upon his knowledge of rime units and apply this knowledge when reading other words with the Rime Unit Test. Student A did not display this reading skill to the same extent, reading only 2 rime units, *ot* and *op* with 75% or greater accuracy on the Post Test.

When analyzing the number of rime units detected (a total of 38), both students improved their ability to read at least one word from a rime group. In the Pre Test, Student A correctly read 9 different rime units (an accuracy of 24%), compared to 14 rime units in
the Post Test (an accuracy of 39%). Student B increased his ability to correctly read different rime units from 17 (45%) in the Pre Test to 27 (71%) in the Post Test.

![Burt Reading Test](image)

Both Student A and Student B were able to improve their Burt Reading Test scores as shown in Figure 2. Student A improved 50%, from reading 12 to 18 words correctly. Student B improved his raw score by 31% by reading 25 words correctly in the Post Test compared with 19 in the Pre Test.
Figure 3 shows that the group trend for the Word Reading Test was neutral to negative. Both Student A and Student B read 10 words correctly on the Pre Test. On the Post Test, Student A read 9 words correctly, whereas Student B again read 10 words accurately. Interestingly, neither Student A or Student B read the exact same words correctly on the Pre and Post Tests (see Table 2 below). Student A incorrectly read 1 word that he had read correctly on the Pre Test, boys, in doing decreasing his accuracy by 10% when compared to the Pre Test raw score. Student B however, incorrectly read come and they on the Post Test, words that he had previously read correct on the Pre Test. Student B achieved the same raw score for both tests by substituting these two errors with the correct reading of went and boys, two words he read incorrectly on the Pre Test.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student A</td>
<td>for, a, you, at, school, went, get, we, this, boys</td>
<td>for, a, you, at, school, went, get, we, this</td>
</tr>
<tr>
<td>Student B</td>
<td>come, for, a, you, at, school, get, we, they, this</td>
<td>for, a, you, at, school, went, get, we, this, boys</td>
</tr>
</tbody>
</table>

Note: Underline denotes words read correctly in both Pre and Post Tests.
Trends for the group indicate that explicit teaching of onset and rime through segmenting and blending improves student’s phonological awareness. Both Student A and Student B were able to improve their Sutherland Phonological Awareness Test (SPAT) scores as shown in Figure 4. Student A’s Post Test score improved 25% on his Pre Test score, 24 to 30. Student B’s overall improvement was slightly greater, improving 26% from 27 to 34.

When breaking down these results into the SPAT subcategories, Student B made the greatest improvement at the phonemic level. On the Pre Test, Student B scored 9 out of 16 on the phonemic level subtest, followed by a Post Test score of 14 (an increase of 31%). The majority of this improvement was in the area of “Deletion of initial phoneme”, scoring 3 out of 4 on the Post Test compared to 0 in the Pre Test.

Student A’s improvement was much more broad, with subtest scores increasing by no more than 1 when comparing Pre and Post Test results. On the SPAT Pre Test, Student A scored 87.5% and 62.5% on the first two subcategories (Syllabic and Subsyllabic Level; Phonemic Level), increasing these scores to 93.5% and 75% on the Post Test.

Importantly, both students scored poorly on the Phonemic Level (blends) and Grapheme-Phoneme Correspondences subcategories on the Pre and Post Tests. Student A improved his score from 0 to 2 (7% correct) while Student B improved from 3 to 5 (18% correct).
The trend data for the group suggests that the explicit teaching of onset and rime through segmenting and blending slightly improved the student’s ability to accurately read prose. Student A made the most progress, improving his decoding accuracy from 80% to 94% over the course of the program. Student B had less scope to improve substantially because of a relatively high Pre Test score of 93%. He managed to improve 2% to 95% during the program. Figure 6 shows that Student A improved his prose reading accuracy by 14%, whereas Student B improved his prose reading accuracy by 2%. It is important to note that Student A read a level 6 text while Student B read a level 10 text.

Control Group Results/Comparison:

The data for Student C and Student D indicates less progress overall when compared to the improvements made by Student A and Student B over the same time.

In the Rime Units Test, Student C’s score increased by 8% while Student D’s score decreased by 12% overall. These results reflect less improvement in detecting and reading rime units by Student C and Student D when comparing the overall percentage increases for all four students.

In the BURT Reading Test, Student C and Student D both increased their Post Test raw score by 3. Student C’s score increased from 17 to 20, an improvement of 18%, while Student D increased his BURT Reading Score by 25%, from 12 to 15. These improvements are of higher values than the improvements made in the Rime Units Test but don’t show the same amount of progress as that displayed by Student A and Student
B in the same test. Student A and Student B improved their scores by 50% and 31% respectively.

The results of the Word Reading Test were neutral compared to the results from the other tests administered. Student C increased his score by 10% while Student D’s score remained the same between the Pre and Post tests. Student C and D’s data for the Word Reading Test closely reflects the results from Student A and Student B, with Student A’s Post Test results decreasing, while Student B’s results remained constant.

The trend data for the Sutherland Phonological Awareness test correlates well with the focus and control groups. While Student A and Student B improved their raw scores by 25% and 26%, Student C and Student D improved their raw scores by 7% and 3% respectively. These results show a clear, consistent distinction between the two data sets (focus and control).

When reading prose, Student C’s Post Test results showed a 4% decrease in word reading accuracy from 96.7% to 92.3%. Student D increased his word reading accuracy when reading prose by 1%, from 89% to 90%. These results compare closely with the results of Student B who improved his prose word reading accuracy by 3%.

A more abstract view of the Action Research data can be found on the attached data set.

Discussion:

The findings of this action research generally support the hypothesis that explicit teaching of onset and rime will improve word reading accuracy in isolation and in prose. The data indicates that explicit teaching of onset and rime has a positive impact on student’s ability to read words accurately in isolation and in prose with varying degrees of influence. A comparison of Pre Test and Post Test scores for all four students shows the Focus Group had made the most improvement in their word reading accuracy over the course of the study.

Overall, Student B achieved post test results that more clearly support the hypothesis, for his levels of improvement were consistently higher than the results displayed by Student A. Importantly, Student B was able to maintain results at least equal to his Pre Test scores, the only student in the action research to do so. This could be attributed to Student B’s ability to apply what he has learnt when attempting new, challenging tasks, a skill Student B repeatedly displayed during the action research sessions. This ability to apply new learning to other unfamiliar words and tasks may have allowed him to more consistently display his learning improvements.

The results of the Rime Units Test display the greatest improvements when comparing the two groups. This suggests that the students were able to apply their knowledge of onset and rime in a rime specific reading test, while the control group was unable to increase their raw scores because they were not involved in the onset and rime sequence of lessons during the course of the action research. The results of the Rime Units Tests
are particularly interesting in light of Munro (1998), who questioned whether teaching students to read words by teaching onset and rime units before abstract phonic units help learning. Munro noted that onset and rime units are more reliable in how they are said than vowel diagraphs, with young readers finding it easier to learn to read words by using rhyming patterns (1998).

The Burt Reading Test and Word Reading Test contain very few like words that were used during the teaching of the ten focus lessons which may account for why the results for the two groups in these two tests were statistically closer than the results obtained in the Rime Unit Test and the Sutherland Phonological Awareness Test. The results for these two tests suggest that while the impact of explicitly teaching onset and rime on word reading accuracy in isolation is positive, it is of lesser note than on word tests with rime specific word lists. The improvements made by Student A and Student B on the Burt Reading Test could be largely based on an increase in confidence to look for know letter clusters or call upon prior knowledge to help read the word in isolation, rather than an ability to use onset and rime to help read the word accurately.

The results of the Sutherland Phonological Awareness Test also suggest that explicit teaching of onset and rime increases student’s phonological awareness. More specifically, it may help the students to identify initial and final phonemes, segmentation of words and produce rhyme. Though the results of the Sutherland Phonological Awareness Test don’t specifically identify the link between onset and rime and word reading accuracy, the scores in percentage of improvement show a clear differentiation between the two groups. These results are of particular note when discussed in terms of a student’s phonological ability. Phonemic ability predicts later reading achievement, for both word recognition and comprehension (Munro, 1998). Munro added that teaching phonemic awareness through blending, segmenting words and counting the number of sounds improves early reading (1998).

The effect onset and rime had on word reading accuracy in prose is not as clear as the other areas of the action research. While the Text Level Decoding tests show a small improvement based on the Pre and Post Test scores for Student A and Student B, a closer analysis of the test data shows that the improvements in word reading accuracy do not resemble any explicit teaching conducted throughout the ten lessons. This suggests that Student A and B were able to apply their learning of onset and rime in one syllable words to far more complex words and letter structures, or perhaps more plausibly, their prose word reading skills improved slightly over the course of the action research as a result of normal classroom teaching. It is important to note that while the Pre and Post test scores do support the hypothesis, the extent to which the hypothesis is supported is greater in reading in isolation compared to in prose.

The findings of this action research, particularly involving the data collected from the Rime Units Test are supported by Goswami (1999), who proposed that students use what they know about some words to read unfamiliar ones, progressively adding to their orthographic knowledge. Goswami (1992) had noted earlier that a student’s ability to categorise words by onset and rime units (matching some of the tasks implemented in the
ten focus lessons), related to the student’s awareness of not only spelling sequences in those words, but also the student’s development of reading.

Beyond noting that explicit teaching of onset and rime improves student’s ability to accurately read words in isolation and to a lesser extent in prose, the implications for teaching practice are based around effective instruction and the role of onset and rime within a holistic reading program. While the results of this action research clearly show the effect onset and rime has on word reading accuracy of rime specific words and words in isolation it loosely identifies the connection between explicit instruction of onset and rime and prose reading accuracy. A broader analysis of teaching reading practice may be able to identify more specific implications for teaching practice.

This action research is quite limited in its scope for data collection, only studying the results of four students. Future research should examine a larger cohort of students and involve study longitudinal data using more complex data analysis methods such as effect sizes and Z scores. Further research and analysis should focus on the role knowledge of onset and rime plays among other reading strategies in reading. The role explicit teaching of onset and rime plays in not only word reading accuracy but on reading strategies such as use of analogy or comprehension at a sentence level could also be worthy of focused research.

Developing further research on this possible inter-connectedness between onset and rime and various other levels of word reading knowledge could be further investigated using Munro’s Multiple Levels of Text Processing model (Munro, 2010). As shown in the model, there are many word level strategies a young reader needs to implement when reading; these strategies refer to the ‘how to’ of reading. What could be explored is how a student’s knowledge of onset and rime works together with his/her knowledge of vowels, analogy or syllables.

Finally, further research and study of explicitly teaching onset and rime is required to help initiate ‘best practice’ in the classroom, rather than purely in a small group / intervention setting such as this action research. Key questions that could be part of further research may include: How does this knowledge of the effect onset and rime has on word reading accuracy fit with how we teach developing readers in the classroom? How does a student’s knowledge of onset and rime integrate with other skills and knowledge young readers require to read accurately?
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Appendices:

Appendix A:

Teaching Sequence Outline

Lesson 1:

Getting Knowledge Ready:
Picture cue card game (Teacher models first).
- Students match picture cards, saying the name both pictures as they are picked up. Eg. Log and dog. Focus on accurately saying the words.
- Once all the cards have been matched, the teacher questions.

While Reading Strategies:
Rhyming
- Students suggest sentences that rhyme. Eg. “I saw a cat sitting on a mat”.
  “The pot is very hot” “I said a wish for a fish”.
- Use picture cards to orally cue students into rime units.

Segmenting
- Using whiteboards, students segment words (from picture cards) into smaller parts. Students identify onset and rime units.

Blending through onset and rime
- Students identify onset and rime units by writing the words from picture cards using two different coloured textas.

After Reading Strategies:
- Students say a summary of they learnt today and what they will remember.

Lesson 2:

Getting Knowledge Ready:
- Students match picture cards from lesson 1 without teacher input.
- Students say each word when matching and say other words that have the same rime.

While Reading Strategies:
Rhyming
- Using the picture cards from lesson 1, students suggest other words that rime.

Segmenting
- Students identify the first sound and the last sound of some of the words from focus list.
- Students say each word and tap for each sound.

Blending through onset and rime
- Students identify onset and rime units of words by highlighting letter and letter clusters when saying each word. Students repeat each word and count the sounds in each word.
After Reading Strategies:
- Students make links between onset and rime units from lesson 1 and 2.
  “When I read these words I will _______”. “Tapping for each sound helps me to _______”.

Lesson 3:
Getting Knowledge Ready:
- Students take in turns to suggest words for rime. Teacher prompts by suggesting words from picture cue cards (Cards not used).

While Reading Strategies:
Rhyming
- Teacher reads “Frog on a log in a bog” by Andy Griffiths.
- Students identify common rime unit in the text. Students recount these words from the text.
- Students read title of text “Harry Black, the sack, the snack and a sneaky snack stealing yak called Jack”. What is the common rime unit?

Segmenting
- Students identify the first sound and the last sound of some of the words from “frog on a log in a bog”
- Students say each word and tap for each sound.
- Students share ‘ack’ words with the teacher writing down these words.

Blending through onset and rime
- Using the ‘ack’ word list, students identify onset and rime units of words by highlighting letter and letter clusters when saying each word. Students repeat each word and count the sounds in each word. Student name the first, second and third sound of each word and link each onset and rime to a letter cluster.

After Reading Strategies:
- “Next time I read words like _______ I will _______”.

Lesson 4:
Getting Knowledge Ready:
- Students take in turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

While Reading Strategies:
Rhyming
- Teacher reads “Harry Black, the sack, the snack and a sneaky snack stealing yak called Jack” by Andy Griffiths.
- Students identify common rime unit in the text. Students recount these words from the text and suggest other rime pattern words.

Segmenting
- Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
• Students segment words into sounds using word cards, textas and whiteboards.
  Blending through onset and rime
  • Students read the words by themselves, reading the onset and rime units separately before reading the word.
  • Students to be able to name first, second, third and fourth sounds in each word.

After Reading Strategies:
• “Today I learnt __________”.
• “From now on, when I am reading new words, I will______”.

Lesson 5:
Getting Knowledge Ready:
• Students take in turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

While Reading Strategies:
Rhyming
• Students and Teacher read “The cat on the mat is flat” by Andy Griffiths.
• Students identify common rime unit in the text. Students recount these words from the text and suggest other rime pattern words.

Segmenting
• Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
• Students segment words into sounds using word cards, textas and whiteboards.

Blending through onset and rime
• Students read the words by themselves, reading the onset and rime units separately before reading the word.
• Students to be able to name first, second, third and fourth sounds in each word.
• Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

After Reading Strategies:
• “Today I learnt __________”.
• “From now on, when I am reading new words, I will______”.

Lesson 6:
Getting Knowledge Ready:
• Students take in turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

While Reading Strategies:
Rhyming
• Students and Teacher read “Duck in a truck in the muck” by Andy Griffiths.
• Students identify common rime unit in the text. Students recount these words from the text and suggest other rime pattern words.

**Segmenting**
- Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
- Students segment words into sounds using word cards, textas and whiteboards.

**Blending through onset and rime**
- Students read the words by themselves, reading the onset and rime units separately before reading the word.
- Students to be able to name first, second, third and fourth sounds in each word.
- Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

**After Reading Strategies:**
- “Breaking news words up in my reader will help me to________”.
- Some words that rime with went are _______”.
- Some words that rime with dip are _______”.

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**Lesson 7:**

**Getting Knowledge Ready:**
- Students take in turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

**While Reading Strategies:**

**Rhyming**
- Students and Teacher read “Ed and Ted and Ted’s dog Fred” by Andy Griffiths.
- Students identify common rime unit in the text. Students recount these words from the text and suggest other rime pattern words.

**Segmenting**
- Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
- Students segment words into sounds using word cards, textas and whiteboards.

**Blending through onset and rime**
- Students read the words by themselves, reading the onset and rime units separately before reading the word.
- Students to be able to name first, second, third and fourth sounds in each word.
- Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

**After Reading Strategies:**
- “Breaking words up helps me to ______________”
- “We need to look for different sounds at the start and end of words”.

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Lesson 8:

**Getting Knowledge Ready:**
- Students take turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

**While Reading Strategies:**

**Rhyming**
- Students and Teacher read “Bill and Phil and the very big hill” by Andy Griffiths.
- Students identify common rime unit in the text. Students recount these words from the text and suggest other rime pattern words.

**Segmenting** * No new words from now on. Teacher to use words from previous lessons, mixing up onset and rime units so that patterns are not easily noticed.
- Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
- Students segment words into sounds using word cards, texts and whiteboards.

**Blending through onset and rime**
- Students read the words by themselves, reading the onset and rime units separately before reading the word.
- Students to be able to name first, second, third and fourth sounds in each word.
- Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

**After Reading Strategies:**
- “Breaking news words up in my reader will help me to________”.
- Some words that rime with went are _______”.
- Some words that rime with dip are _______”.

Lesson 9:

**Getting Knowledge Ready:**
- Students take turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

**While Reading Strategies:**

**Rhyming**
- Students and Teacher read “Mutt Dog” by Stephan Michael King.
- Students identify rime units in the text and suggest other rime pattern words.

**Segmenting** * No new words from now on. Teacher to use words from previous lessons, mixing up onset and rime units so that patterns are not easily noticed.
- Teacher uses word cards broken into onset and rime to model reading words. Students tap for each sound.
- Students segment words into sounds using word cards, texts and whiteboards.
Blending through onset and rime

• Students read the words by themselves, reading the onset and rime units separately before reading the word.
• Students to be able to name first, second, third and fourth sounds in each word.
• Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

After Reading Strategies:
• “Breaking news words up in my reader will help me to________”. 
• Some words that rime with went are _______”.
• Some words that rime with dip are _______.

Lesson 10:

Getting Knowledge Ready:
• Students take in turns to suggest words for rime. Teacher prompts by suggesting words from previous lessons. (Cards not used).

While Reading Strategies:
Rhyming
• Students and Teacher read “Reggie Queen of the Street” by Margaret Barbalet.
• Students identify rime units in the text and suggest other rime pattern words.

Segmenting * No new words from now on. Teacher to use words from previous lessons, mixing up onset and rime units so that patterns are not easily noticed.
• Students segment words into sounds using word cards, textas and whiteboards.

Blending through onset and rime
• Students to be able to name first, second, third and fourth sounds in each word.
• Students transfer the letter-sound rime units to other words by suggesting other words sharing the same letter-sound rime units.

After Reading Strategies (Reviewing the 10 lessons):
• “I can now _______ when I am reading words”.
• “An example of my new learning is ______________”. 
Appendix B:

Lesson 3:
Jack, tack, quack, lack, mack, whack, back, pack

Lesson 4:
ship, tip, sip, dip
get, bet, wet, jet
jam, ham, dam, Sam

Lesson 5:
sat, fat, mat, cat, that, flat, chat
bin, fin, win, pin, tin, sin

Lesson 6
pip, hip, dip, whip
now, how, cow, wow
went, sent, gent, vent

Lesson 7
hop, stop, pop, flop
play, hay, day, may, way
pain, stain, main, rain

Lesson 8
A selection of words from lessons 1 to 7

Lesson 9
A selection of words from lessons 1 to 7

Lesson 10
A selection of words from lessons 1 to 7
Appendix C: Picture cards