

“Word Vocabulary Knowledge Assists
with Literal and Inferential
Comprehension.”

Abstract:

In 2004, analysis of pre-test data in the area of Reading Comprehension revealed that 60% of our then Year 3 children were operating below the expected (set school standard) in this area. These children were identified as being at risk in reading comprehension. It became evident that although many were competent decoders (many decoding at level 28) they were experiencing difficulty in the areas of literal and inferential comprehension; when dealing with understanding texts.

Therefore, it became evident that our reading comprehension approach needed to contain an explicit focus in our teaching. Analysing the trend over several years, has helped us to hypothesise that many children entering the middle years of primary schooling experience difficulty in maintaining meaning and making connections in texts. As many of our children are from Non-English Speaking backgrounds, it is vital that we maintain our strong Oral Language Focus, as listening comprehension proceeds reading comprehension. Further analysis of the data over a 3-year period has highlighted two further issues for the whole school Reading Program.

Firstly that Reading Comprehension needs to be a stronger focus in Years Prep to Two, as well as Year's Three-Six. Therefore, the staff have decided that a two-pronged approach needs to be implemented; reading for meaning and reading for decoding at all levels of the school.

Secondly, those strategies for dealing with text needed to be taught explicitly. For the purposes of this Action Research Project it was acknowledged that in order to enhance the comprehension abilities of our students, an emphasis on word-building, word banks, and associated meanings of vocabulary would be employed to enable our intervention group to develop their ability to analyse text, and to develop their literal and inferential comprehension.

A specific focus was on developing the abilities of the children to expand their knowledge of vocabulary with an emphasis on the use of synonyms, which it was hoped would build meaning networks, and encourage the children to learn to say, understand, and use the new vocabulary to gain clues and meanings about the text they were reading.

Pre and post testing results, indicate that students in the intervention group made significant gains in the area of synonym usage, as well as in their literal and inferential comprehension as measured by the TORCH Reading Comprehension tool for assessing reading comprehension.

Introduction:

Many students who enter the middle years of primary school show signs of difficulty in answering questions, retelling and analysing texts read; although, some students were able to read at a high level of word accuracy or decoding of a text. This difficulty in comprehending text prompted a two-fold analysis of the possible causes, of the difficulties associated with comprehending texts.

- a) Was it simply a lack of explicit teaching which was failing to give students the strategies needed to search for clues to extract meaning in text?
- b) Was it because some students from an ESL background may not have the same cultural or word and vocabulary knowledge required to enter the text?

Certainly a combination of the two factors could be said to be limiting a number of our students from entering text successfully. In a school where 22 languages are spoken in family homes, with Vietnamese and Chinese (Cantonese) family being the predominate language; and 37% communicate with their families by using a mixture of their mother tongue and English, this certainly has ramifications for teaching at the school. Further to this a significant number of our children are not fluent speakers in their home language or English and require good speaking models in both languages. In 2006, 67% of our children received an Education Maintenance Allowance which also has implications for the school.

‘A child from a low SES background in a middle to upper SES school is far less at risk than that same child in a low SES school ‘
(Oral language and Early Literacy Pilot Program) 2007

In examining research on the link between the inabilities of some students to comprehend accurately it has been noted by Gibbons 2002

“When you are unable to bring personal knowledge and understanding of a topic to a text, you are effectively robbed of the ability to make use of a key resource for reading, what you already know.” Pg 78.

Another key obstacle that has been noted is the inability of some students to access the language or vocabulary of the text, and therefore the extreme importance that the role of familiarity of language has for successfully entering and understanding text.

Gibbons 2002 notes that ‘being unfamiliar with the language makes it almost impossible to predict what will come next and that giving children the opportunity to gain some familiarity with the language of the book before they read is also important.’

Whilst this can be acknowledged as an important component in the inability of some ESL students to enter text successfully it must be noted that not all students who are unsuccessful at entering texts are from an ESL background.

Therefore the purpose of this study is to ascertain 'How does student vocabulary knowledge inform reading comprehension?'

Chan and Dally (2002) suggest that the cause may be rooted in 'converging evidence supporting the view that circumstances in oral language abilities are at the basis of students who may experience early reading difficulties rather than general cognitive or visual perceptual weaknesses.'

Certainly, the importance of appropriate oral language structures cannot be underestimated.

'The complex system that relates sounds to meanings is made up of three components: the phonological, semantic and syntactic.' (Lindfors, 1987)

Children who are exposed to appropriate models of Oral Language from an early age are more likely to succeed at entering text than those who are unable to grasp the meanings of unfamiliar words, and structures. It is said that 'children who do not have an adequate set of word meanings will have greater difficulty understanding what other people mean and difficulty making themselves understood (Munro page 24 Oral Language and Early Literacy Pilot Program 2007)

Therefore, the importance of explicitly teaching children the meanings of unfamiliar words cannot be underestimated. All children need to be taught the meanings of key words, and unfamiliar vocabulary, in order to create diverse word banks, and further more encourage them to develop strategies to work out meanings for themselves, in turn building their, "Meaning, Making Motors" (Munro), in order to help them understand unfamiliar vocabulary and use these strategies in the context of a text to solve unfamiliar vocabulary.

Therefore, it may be concluded that domain knowledge and vocabulary knowledge have independent effects on comprehension and that these effects are on what is comprehended as well as how much is comprehended.

"Vocabulary difficulty had an effect on the construction of the microstructure of the text. "(Droop 1998)

Therefore, the purpose of this investigation is to teach children how to participate in word solving. To explicitly teach both decoding and deriving meanings of words, and to develop strategies, understanding and learning of new unfamiliar vocabulary.

The present investigation will encourage students to extend their vocabulary knowledge by learning the meaning of words, and by acknowledging that if you really know a word, you can:

1. Read it in many different contexts understanding the meaning each time.
2. Learn new words for concepts they already understand, with a particular focus on the use of synonyms to expand their word bank, and develop understanding of key words within a text, which in turn will

facilitate understanding at both a literal and inferential level of comprehension.

Furthermore, the hypothesis of this investigation is that teaching a group of students in the middle years of primary schooling, which are experiencing difficulties with reading comprehension to use synonyms and understanding unfamiliar vocabulary will increase their reading comprehension.

Method:

Design:

The study uses a case study OXO design. Gains in student vocabulary knowledge will aid reading comprehension; following a unit of work that explicitly teaches the use of synonyms to middle primary students who are experiencing difficulties with reading comprehension. The study compares two groups of students, an intervention group who will receive explicit teaching of the use of synonyms and a control group, who will not receive explicit instruction on the use of synonyms.

Participants:

All students chosen are in a Year 3 or 4 grouping within the school. Their ages ranging from 8-11. Students were chosen based on their scores on the reading comprehension tool, TORCH test, which takes place at the beginning of each school year. Whilst the majority of students scored poorly, two students within the intervention group were also chosen because they have been identified as students experiencing difficulty with Oral Language structures, who would benefit from extension in oral language structures and the development of their word banks, as they were observed as students who typically used a safe network of vocabulary in writing and did not often understand unfamiliar vocabulary in text.

Typically, the students chosen to participate in the intervention group, displayed behaviours such as:

- Those who most needed to expand their vocabulary as they tended to be slower readers, and also displayed reluctance whilst reading.
- As being able to read but are not always able to derive and connect meanings whilst reading.
- Not always able to gain meaning from the context in literary text.

Therefore, it was believed that through explicit teaching the intervention group would be aided to learn how to learn words, to enhance the speed, quantity and quality of vocabulary development. (Fountas and Pinnell. Pg 376).

Procedure:

In pre-testing conducted for this study students were assessed using several assessments. To gather data on reading comprehension the TORCH test (Mosseson Hill and Masters) was administered. The nominated age appropriate tests given were *Grasshoppers* or *Lizards Love Eggs*. These tests were also administered at the post test-assessments. The Burt Word Reading Test (NZCER, 1981) was administered individually to measure a child's word recognition skills, both pre and post test stages. The synonym task assessment was also administered at pre and post test stages.

As well as these assessments administered at a school level, our school is currently involved in an initiative called Building Literacy 3 to 4, Literacy Assessment Project (LAP). This project is overseen by the Catholic Education Office of Melbourne, in conjunction with representatives from Melbourne University. This steering committee plans the general research design and co-ordinates data collection and analysis off site. The data collected at school, incorporates a TORCH test for each child, as well as an appropriate AIM Reading Test. These results are then calibrated, and each child plotted on a reading progression scale, which is currently being trialled, as part of this research.

Therefore, as the data is calibrated off site, I am not able to include the data on my table. However, a copy of the calibrated test results was also considered when choosing the Intervention Group for the study. Results in [Table 1, Appendix 4] indicate entry scores pre and post, chronological age and types of assessments given. Following pre-testing a group of students was chosen for the intervention group to be taught explicitly word vocabulary strategies with an emphasis on the use of synonyms.

Two of the students were identified as severely at risk as they were rated as 3% and 22% respectively on the percentile scale, which identified them as under the 25% percentile, which is an indicator of 'a student at risk'. One other student was rated at 31% on the percentile rank and was also considered 'at risk'. Several of the other students were included in the intervention group because of their reading behaviour as described in the participant section, as well as their low score on the synonym task test; concerns were also raised about their limited word banks, and inability to make analogies between words.

The teaching procedure was based on suggestions in *Word Vocabulary Linking Reading Difficulties to Teaching and Learning (Primary)*. Munro (2006), as well as information contained in the *Pilot Project for Oral Language and Early Literacy Development (2007)*. The sequence developed took into account the needs of the students in terms of Oral Language Focus Overlay. The sequences of lessons were scripted into Phases as identified in materials from the Oral Language Pilot Project.

1. Orientating Phase – Getting to Know the Text.
2. While Learn Phase – Reading the Text

3. New Vocabulary Phase
4. Synonym Usage
5. Consolidation and Review Phase
6. Using the strategies in an Independent Text [see teaching script in Appendix 2]

Students were led through activities which relied heavily on discussion, listening comprehension and word solving activities. Students in the intervention group were withdrawn from the regular classroom program for 30-45 minute sessions 3 times a week. Overall, the students participated in 12 sessions. By the end of the sessions the children were able to develop strategies when reading unfamiliar vocabulary, in both seen and unseen text. Strategies developed for reading unfamiliar vocabulary were developed in the following way:

1. Read the text (either in group or individual settings)
2. Locate any vocabulary, you do not understand, list
3. Say the word aloud
4. Find the meaning, from a variety of sources (clues in text dictionary)
5. Make a list of synonyms for each word
6. Paraphrase a sentence – using one of your new synonyms
7. Ask yourself – does it make sense? Do I understand the text when I have explored the unfamiliar vocabulary?

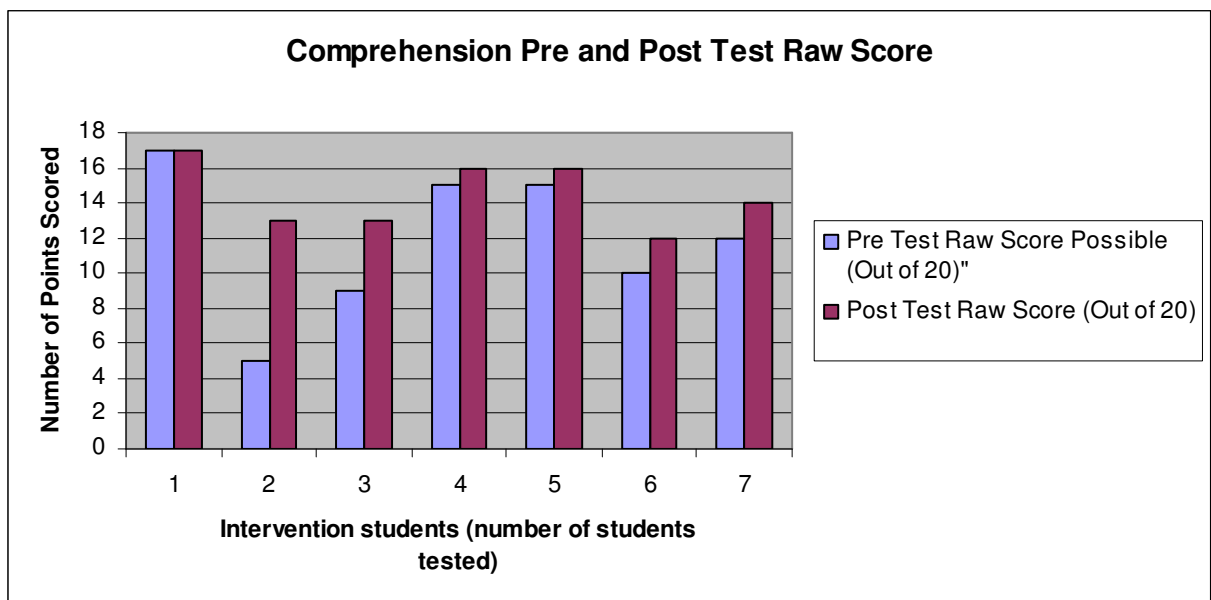
Students were able to use the strategies initially in Shared Big Books, and then independently in texts that were chosen using the Fry Readability procedure.

Results:

Results in Post –testing of the Intervention group indicated that the teaching of strategies in relation to vocabulary development have had significant results. The two ‘at risk’ students both showed significant progress between pre and post testing. These students improved from 3% and 22% percentile ranks to a 65% percentile rank respectively on the TORCH Reading comprehension test (see TABLE 1- Appendix 4).

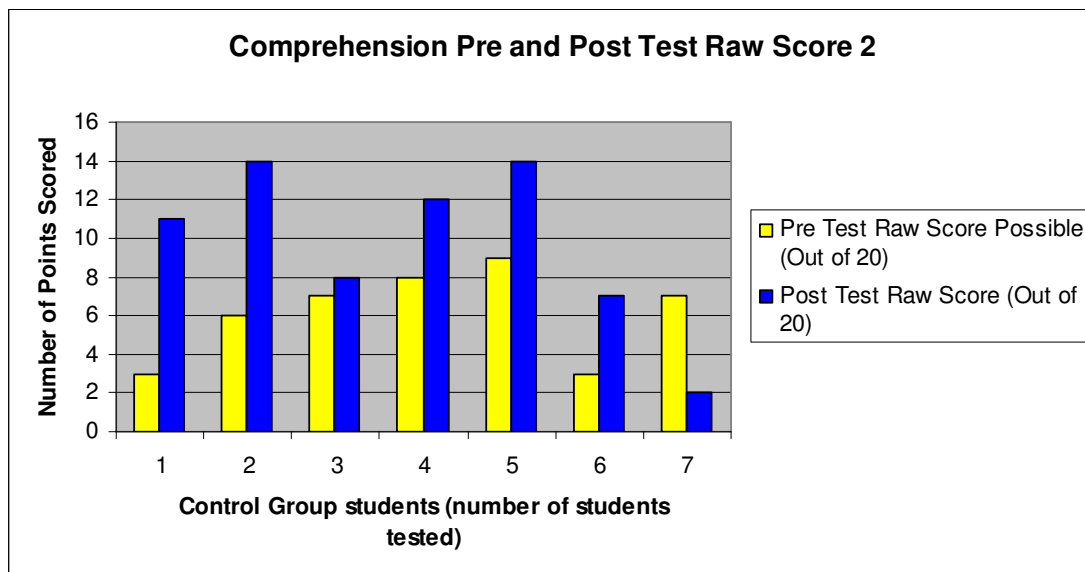
Synonym usage was also significantly improved in all participants in the intervention group, as indicated in the Synonym Task Test. (see TABLE 1 Appendix 4). Gains made by the intervention students were far greater than those of the control group (TABLE 1)

Therefore the hypothesis that vocabulary development assists with Literal and Inferential comprehension appears to have been confirmed for this study.



Post testing of the Intervention group showed gains were made by all students in the Intervention group as measured by the TORCH test. Student 2 and 3 were considered ‘at risk’ as they scored under the 25% percentile rank the cut off point for students severely at risk in their pre-test score. Their raw scores were 5 and 9 respectively, these raw scores improved to 13 in the post test.

Students 6 and 7 also improved their raw scores in their post testing, although only by two points in each instance. This indicates that they were able to show some development although huge gains were not shown. Consequently those students who only improved one point score or not at all were students who had scored quite highly on their TORCH test but had been chosen as part of the Intervention group for a number of other factors than just their TORCH test result, therefore it could be concluded that these students would be the least likely to show significant gains as their initial pre test results were quite respectable.

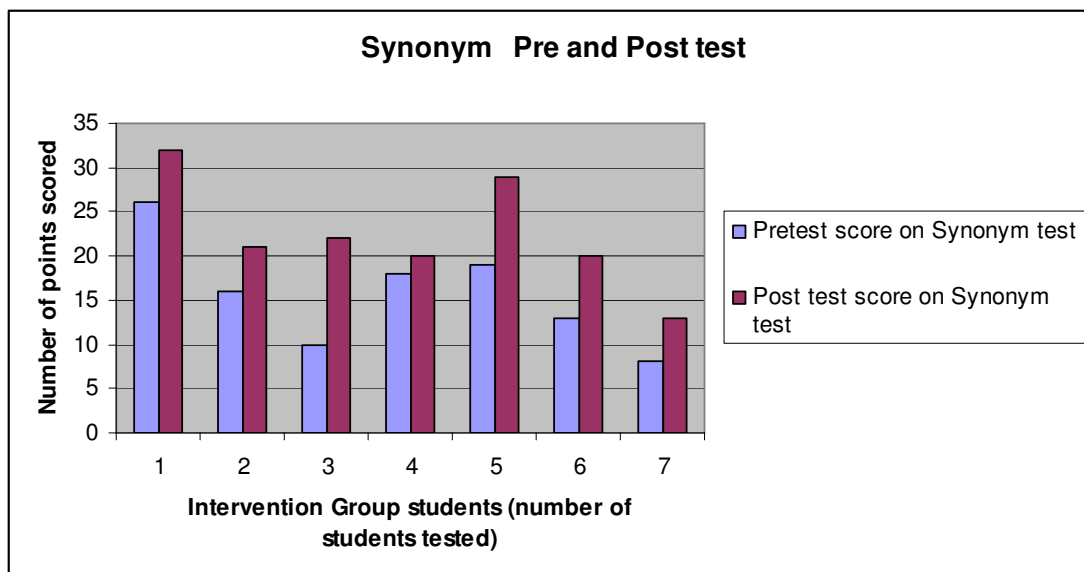


The post test results for the control group were very interesting as some of these students made significant gains but were not exposed to the explicit teaching of the intervention group. While these students made gains it should also be noted that these students although a direct correlation for reading groups in each class, each student in the control scored significantly lower than those of the intervention group in pre testing. Furthermore the graph does not indicate the full extent of the available scores as none of these students were able to achieve scores at the top end of the scale. Top raw score for the control group was 14 in post test results.

However four of the students in the control group made significant gains in the post test results. Student 1 improved 8 points between pre and post testing. The next most significant gain was then made by student 2 who had a higher raw score in pre test results but also improved 8 points in post testing. Students 4 and 5 also improved 4 and 5 points respectively.

Students 3 and 6 must be noted as still at risk improving just 1 and 4 points respectively and still scoring under the raw score of 10 and the percentile ranks of 25% (at risk marker). Of extreme concern is Student 7 who has actually slipped back 5 points from pre test results and does not even register on the percentile rank index.

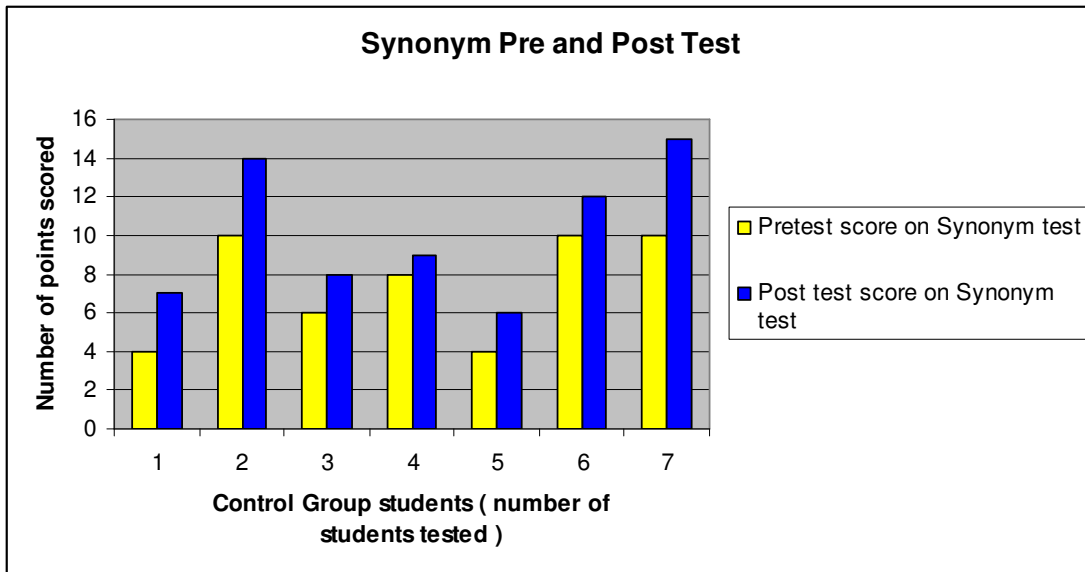
Therefore it can be stated that both groups showed gains in their post test results but the gains made in the Intervention group resulted in higher overall raw scores.



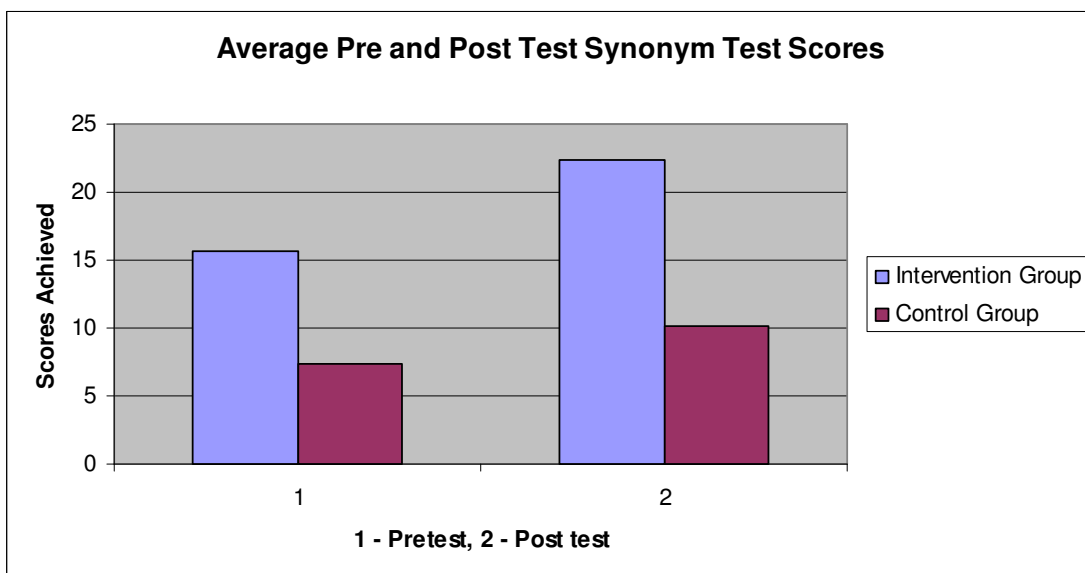
Synonym pre and post test results showed that gains were made by the Intervention group after the series of explicit teaching sessions.(TABLE 1 APPENDIX 4) This was pleasing as the students showed knowledge of the usage of synonyms in the teaching sessions but it was not known if this new found confidence would transfer under test conditions where they could not converse with others to come to a decision about their choices, something they had been encouraged to do during the teaching sessions. Students 3 and 5 demonstrated the most significant gains almost doubling their usage of synonyms from the pre test results. This was particularly pleasing for Student 5 as although he had scored adequately on the TORCH test pre test he had been included in the Intervention group because he is a student who often has difficulty identifying the meanings of words and is known as unwilling to take chances with unfamiliar words. Difficulty still is evident for students where they do not frequently use the vocabulary in the Synonym test including such words as fatigued and liberate. No students in the Intervention group were able to generate synonyms for this vocabulary. However vocabulary that was familiar to the students such as cat, small and child were able to generate more appropriate responses in the post test results after the students had been exposed to the explicit teaching on the use of synonyms in the teaching sessions.

Student 7 improved from a score of 8 to 13 during post testing. This result is one of the smallest gains and the lowest score of all the students in the Intervention group. Further intervention in focus groups may be appropriate to build up this student's use of vocabulary knowledge.

In conclusion it must be noted that all students who made gains also did so off a higher base score than the students in the Control group. Student 1 also improved only 5 points but started at a base score of 26 which is quite high. Therefore the explicit teaching on the usage of synonyms has been successful with the Intervention group.

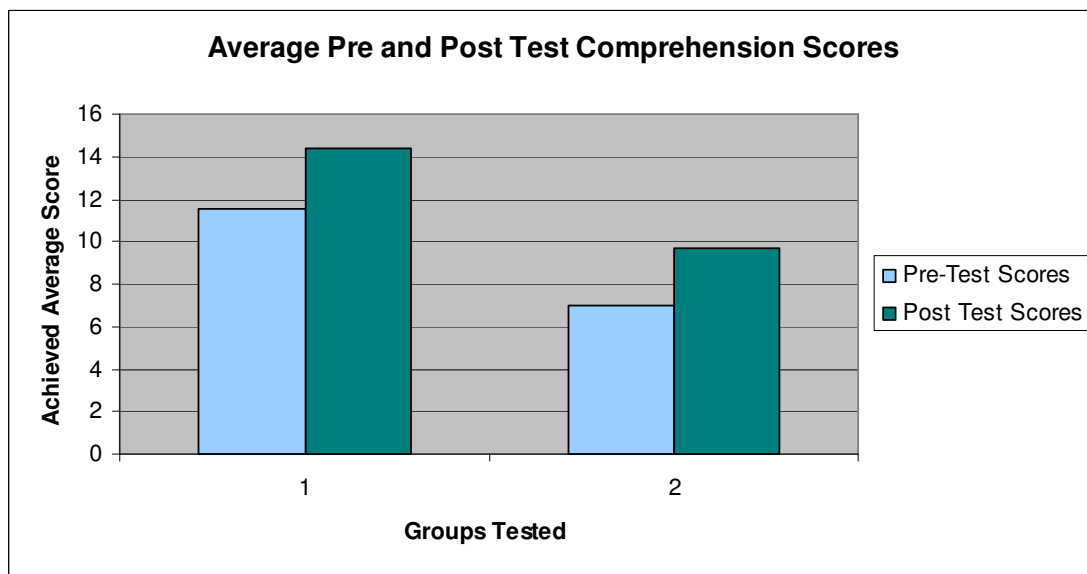


Students in the Control group showed slight gains between pre and post testing. The graph shows a lower number of points scored overall as the top score in this group was 15. The Control group also scored at a lower level in the pre test score with three students scoring 10 (the highest score of the group). Students in the Control group improved between 1 to 4 points from their pre test scores. This is not a surprising result as these students were not exposed to explicit instruction on synonym usage but rather general strategies of comprehension within classroom instruction. This may explain their gains in their reading comprehension test but their lack of progress in their synonym test.



Direct comparison between the Intervention and Control groups overall median scores indicate that the Intervention group made significantly bigger gains than the Control group in the area of synonym usage. (TABLE 1

APPENDIX 4). In the post test scores students from the Intervention group displayed double the usage of synonyms than those in the Control group. The average median score of students in the Intervention group was 22.4 compared to the median score of 10.1 for students in the Control group. Students in the Intervention group showed an improvement of 6.7 median points from pre to post testing. Students in the Control group improved from a median score of 7.4 to 10.1 at post testing. Therefore the final difference at post testing between the two groups was 12.3 median points. This indicates the importance of explicit teaching if students are to make significant gains.



The results of the pre and post testing median scores show gains were made by both groups involved in the study. The Intervention (Group 1 on the table) median score at pre testing were significantly higher than the Control (Group 2 on the table) with an average median score of 11.5 compared to the control group median of 7. At post testing the median score of the Intervention group was 14.4 and the Control group 9.7. Therefore the students in the Intervention group on average were ranked at 74 % on the percentile scale. Those students in the Control group were ranked at 30% on the percentile scale or just over the 25% marker for students at risk. While median scores indicate the average it is still important to keep in mind that individual students in the Control group did make significant gains in the area of Reading Comprehension as measured by the TORCH reading comprehension test.

Therefore in concluding the analysis of the data it would appear that although individual students in the Control group were able to make gains in the area of Reading comprehension it is the overall results of the students in the Intervention group who have confirmed the hypothesis that the explicit teaching of word vocabulary assists students with their literal and inferential comprehension.

Discussion:

The results of this study seem to indicate that the hypothesis has been confirmed even though the sample of students involved was a small number. Certainly, the intervention group has improved significantly particularly those students considered at risk previously in reading comprehension have made significant gains particularly in their reading comprehension score.

In comparison students in the control group made some gains although they were not directly involved in the explicit teaching sessions. 4 of the 7 control students improved in their Reading Comprehension scores – this I believe is due to the fact that although they were not directly involved in the explicit instruction, the classroom teacher in this instance is known to be an efficient and talented teacher, therefore, the students in her room have improved because she is focused in her instruction in strategies to do with reading comprehension.

Where the most significant differences occurred, are with those students in the Intervention Group improved use of synonyms, and the control group's limited improvement in this area, as evidenced by their Post-test results. The study has therefore several implications for teaching practice in the area of reading comprehension. Firstly, that many of the students in the Intervention group had previously demonstrated difficulty understanding the main idea of texts because they often did not have the knowledge of particular vocabulary, and they were not able to generate synonyms and antonyms for words. These students needed to be taught that in order to read efficiently they have to develop 'Sufficient background knowledge and vocabulary to render written texts meaningful and interesting' (Snow, Burns, Griffin 1998)

Therefore, it appears that there is a direct link in the ability of these children in the Intervention Group and how their reading comprehension has developed as their vocabulary knowledge has strengthened, as well as beginning to show their use of several strategies to identify unfamiliar words within a text. Synonym usage was also viewed as 'fun' during teaching sessions, and students enjoyed generating lists of words this sense of enjoyment may have also added to the success of the study.

Several of the students indicated that they had never thought about the possibility of substituting one word for another – this was evidenced in many of the pre-test results where several 'students' listed rhyming words (e.g. cat, mat, sat etc) as synonyms. Although results from the post-test results indicate more explicit teaching will enhance further improvement – the fact that the children are beginning to develop an ability to generate synonyms – is evidence that this is helping them to understand unfamiliar vocabulary and in turn to develop strategies of word knowledge to aid them in using these strategies within an appropriate context to solve difficulties that arise in the text. Therefore, the first implication of teaching comprehension seems to indicate that an emphasis on word knowledge needs to be a priority if we are to succeed in teaching children to comprehend text effectively. Certainly it cannot be underestimated in a school where many children do not experience

a 'world organised into interrelated patterns, based on our personal experiences and knowledge' (Gibbons 2002) when dealing with text, it is therefore apparent that it is our role to be explicit and to lead them to an understanding of words and equip them with strategies to deal with word solving, in order to engage effectively with text.

The second implication is the importance of talk and its role in explicit teaching. The teaching sessions and the post-test results indicate the effectiveness of involving the students in effective talk, discussion and problem solving. The teaching sessions were developed with an Oral Language Focus Overlay in mind, particularly vital where many students are not fluent speakers in their home language or English. The Oral Language and Early Literacy links cannot be underestimated in trying to achieve success.

'We learn to talk by talking. We learn to listen by listening. The more we talk and listen to other's talking, the better our ability to manipulate language. The better our ability to manipulate language, the better our ability to think and therefore to read and write for both of these are thinking activities.' (Monroe 1991)

The "Getting to Know the Text" or the Orientation Phase was a major emphasis as it focused on the importance of what the teacher's role was prior to reading a text it also acknowledged the extreme importance of engaging students successfully in the text. The fact that this phase took two sessions did not seem to diminish the overall result – but rather focussed the children on their roles as listeners and speakers when engaging with text as well as shoring up the strategies they would use to engage with the text throughout each of the following 10 sessions.

The teaching sessions also relied heavily on teacher-student interaction and also in facilitating talk between children to solve and answer any problems that may arise. The children were also asked to reflect on their learning after each session – this chance to articulate what had been learnt – helped them to consolidate their learning, and to revise what had been learnt at the beginning of each new session.

A number of factors need to be consolidated when suggesting future research in this area of study. Firstly that the number of students participating in the study be increased. Secondly groups could be sorted into NESB speakers and native speakers, to measure the differences in gains made between the two groups – this could further assist to analyse the role of word vocabulary in reading comprehension. Thirdly, student's socio-economic backgrounds could be definitively and thoroughly researched, as all but 2 of the 14 participants in this study were on EMA, so this was not a diverse study on children's socio-economic backgrounds.

Finally, in conclusion it may be said that 'it is vital that all teachers continue to work collaboratively, to analyse data to improve classroom practise and to

promote deep learning'. Effective use of Assessment P.Griffin 2006 – Learning Matters Vol II. No.2. 2006.

whether or not they are involved in Action Research, such a continued focus on assessment and learning can only lead to improved results for all children in the area of Reading Comprehension.

Bibliography/References:

Teaching Reading: Literature Review National Inquiry into the Teaching of Literacy

December 2005

Australian Government –Department of Education, Science and Training.

Scaffolding Language, Scaffolding Learning Teaching second Language Learners in the Mainstream Classroom

Pauline Gibbons Heinemann 2002

Guiding Readers and Writers Grades 3-6

Irene Fountas and Gay Su Pinnell

Heinemann 2001

Word Power for Young Writers

Oxford Victoria Australia 2002

Mierke Droop, Ludo Verhoeven

'Background Knowledge, Linguistic Complexity And Second Language Reading Comprehension

Journal of Literacy Research

Volume 30 Number 12 1998 Pages 253-271

Munro, J 2006 Literacy Intervention Lecture Notes on Comprehension-Paraphrasing

Word Vocabulary

Listening Strategies

Munro J , 2007

Oral Language and Early Literacy Teaching Notes

Strategic Learning Support Materials

Brown, R " A First Language : The Early Stages

Cambridge MA Harvard

Hugh McCusker
Oral Language and Early Literacy Pilot Program
2007

David Huggins
Strategic Learning Support Strategy Materials
Oral Language Initiative 2007
CEO Melbourne

Patrick Griffin
“Effective Use Of Assessment to Improve Meaning Making in Years 3 and 4
students”
Learning Matters Vol 11. no.2.2006

Patrick Griffin
“Innovation in the Classroom”
EQ Australian Summer 2006

Inside Stories Big Book Series
Mimosa MCGraw- Hill Australia Pty Ltd
2006

Traditional Tales and Fables Series

TORCH (Mossenson, Hill and Masters) 1996

Burt Word Reading Test NZCER 1981

Synonym Task Test(Munro J)