"Having students articulate the outcomes of mind mapping while reading will improve text comprehension"

Abstract

Reading comprehension is a problem that many students endure during the middle and senior primary grade levels. My hypothesis is that through the use of an explicit methodology i.e. mind mapping and visualization, improved comprehension will occur by making greater links with text whilst assisting with developing working memory capacity.

Reading comprehension is an active process. The reading strategies employed is the general term used to describe this process of teaching comprehension. Research undertaken over recent years verifies that explicit teaching of strategies do show improvements for reading comprehension. In this active research study, two students from Grade 5 and 6 who both have had a background in reading difficulties were clearly assisted in their comprehension skills. Comparing pre-test and post-test results clearly indicates significant developments in comprehension. By combining the explicit teaching of students to record information on graphic organizers [mind maps] and to enhance memory recall by visualizing information have shown to improve reading comprehension.

The implications for the teaching of comprehension are that greater emphasis needs to be placed on a variety of skills and strategies to improve the outcomes for all students, but particularly for those students whose abilities in reading comprehension are assessed as below their age appropriate scores. Further research could be undertaken to analyse improvements related to literal comprehension as opposed to inferential comprehension being classified as a higher order skill.

Introduction

Broad Topic Targeted:

Many students attain a reasonable level of decoding skills by the middle / senior primary school Years3 –6. However for many children their reading comprehension level is significantly lower than their reading age.
This causes a problem because comprehension of text becomes more important because once most children transfer to secondary school it is assumed that oral and decoding is in place, so a more critical indicator of reading abilities is the level of active processing that is reading comprehension.

Related Research:

Comprehension is such an important component of the reading process, because one of the ultimate objectives of reading is to gain meaning and developing a means to retain that information, however, with all of the time, money and effort that in placed into the education system via systemic programming like CLaSS or Early Years Literacy, little emphasis is placed on the comprehension component. Interestingly enough, most classroom teachers would agree it is the area of most concern, particularly in the senior school years of Grade 5 / 6, but very little strategic direction is provided for teachers to really address this concern.

Whilst it was once assumed that good decoding went "hand in hand" with comprehension, recent research clearly dismisses this premise and identifies many issues that influence a student's ability to problem solve the reading comprehension process.

Palinscar and Brown [1986] identified four main factors that influence reading comprehension given the that reasonable reading decoding is present: reader friendly texts,

reader's knowledge, text content and the use of active strategies to enhance understanding and retention. Williams [2000] stated that all aspects of language [and there are many] support or scaffold the process of comprehension., "…These include many types of information: orthographic, phonological, lexical syntactic, semantic and contextual. All units of information are connected to every other unit either directly or indirectly".

One issue arising from this is the ability of the student to retain the information and recall it at another time. Locke [1975] cited by Palinscar and Brown [1986] discussed the notion that to comprehend well an individual uses a variety of activities to ensure both comprehension and retention or memory occur. Baddley cited in Caplan, David and Waters, Gloria [1998.) introduced the belief that the appropriate way to define short-term memory, is as a "working memory" system. "Working memory is defined as a short duration, limited capacity memory system capable of simultaneously storing and manipulating information, in the service of accomplishing a task." Working memory must have a direct relationship to many of the skills that a student with reading difficulties may direct his/her attention to a specific area, such as phonological or orthographic processes, this is a time consuming process, which results in less working memory space being available for higher order skills such as comprehension. " Studying actually requires a double or split focus. On one hand, you need to be focused on the material itself. At the same time, however, to be constantly checking to see that you are actually performing those mental operations that produce learning." Locke [1975] cited by Palinscar and Brown [1986]

There are various types of reading strategies that have been used by researchers to improve reading comprehension, these include visualization / imagery, inferring and graphic representation or mind mapping. Palinscar and Brown[1986] use the term "debugging" to explain the use of active strategies employed to process information when comprehension fails. The National Reading Panel (US Education Department, 2000] stated that text comprehension is best facilitated by teaching students a variety of techniques and strategies to assist in recall of information, formulation of questions and the ability to summarise information.

De Corte, Leicester [2001] stated that explicit teaching, demonstration and scaffolding of students learning are recognised teaching practises that are highly effective in assisting students with reading difficulties. Unfortunately, few early intervention programs target explicitly graphic representations such as mind mapping and visualising to develop reading comprehension.

Reading strategies is the term researchers and teachers use to describe the activities which readers engage in to develop a common understanding of the content and context of text. Bodrova and Leong [1998 p.3] cited the research of Wood, Bruner and Ross [1976] who described intervention and assistance from the teacher that made , "… it possible for learners to function at higher levels …", and gave it the name scaffolding. Palinscar [1986 p.74] cited Wood, Bruner and Ross, 1976 to define scaffolding as a," process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts."

At the whole text level, both past and recent research suggests that the successful implementation of the following learning strategies may result in positive overall gains for the struggling reader:

The first strategy is the use of graphic organizers, one such form are mind maps, where readers are required to convert information from text to visual representations. So what is a mind map?

Various researches have tried to encapsulate its true meaning. Deppeler [1992] describes a mind map as."… a two dimensional graphic representation of a body of knowledge using key words." Deppeler cited others who have described mind maps in the following manner as: "semantic mapping" [Sinatra, Berg & Dunn, 1985], Johnson, Pittleman & Heimlich [1986] "semantic webs" and Novak [1984] as a "concept map." They enable the reader to identify main points and summarise information read, demonstrate links between information and provide the reader with a scaffold, which can be used for retelling information. (Crimi et al, 2000) Deppeler [1992] believes that the presenting information in a

graphic manner enhances child's abilities to organize information and gain an understanding of the world around them. Deppeler [1992] cites the work of Buzan [1983], Buckley and Boyle [1981] when she advocates that, " The idea that information is gained, stored and monitored in the mind is developed through the use of mind maps." This reinforces the notion of improved working memory capacity discussed earlier.

Deppeler [1992] stated that mind maps provide a means for the child to, "… mesh with and extend their previous knowledge." [p.8] Using metacognition, the student can identify and organise each piece of information to the particular question being asked.

Secondly, the research undertaken by Bell [1991] provides a detailed analysis of visual imagery. Visualization is the process of formulating pictures / visual images in the mind. Harvey and Goudvis [2000] concluded that visualizing and inferring or thought processes don't occur in isolation. Inferring occurs at the intersection of questioning, connecting and print. "In the reading process, this involves changing words into pictures. Bell describes imaging as a sensory link between language and thought. It is a powerful technique as it provides readers with a visual representation of text. "It links a reader to and from prior knowledge, establishes vocabulary and stores information in both long term and short term memory. (Bell, 1991) Harvey and Goudvis [2000] drew similar conclusions, "When we visualize, we create pictures in our minds that belong to us and no-one else…Visualising strengthens our inferential thinking."[p.96-97]

The need to review or evaluate what has been learned at the end of each session has been researched thoroughly by people like Vygotsky and devotees of his theories of learning.

There should be some understanding of the mechanisms of metacognitive development as described by Vygotsky. Therefore, a need exists to clarify and define the meaning of the term "metacognition". Cole and Chan [1990] used the definition first given by Flavell [1976]. It refers to metacognition as "… ones knowledge concerning ones own processes and products or anything related to them"[p.260]. Cole and Chan [1990] went on to state that it also involves, "… the active monitoring and the subsequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear."[p.261] In this case , reading comprehension. They also identified an information processing framework by which metacognition operates, " plan… monitor… check… regulative problem solving behaviour."[p.262]. Collins [1980, p.10] cited the definition of Tei and Stewart [1985] trying to clarify the meaning of metacognition in more simple terms "… having knowledge {cognition} and having understanding, control over and appropriate use of that knowledge." Brown [1994] agreed with this view when she wrote, " One of the most interesting things about human learning is that we have knowledge and feelings about it, sometimes even control it, metacognition if you like". [p.6]

On the basis of these understandings, metacognition seems to involve both conscious awareness and conscious control of ones learning and understanding in this case, in terms of knowing the benefits of using the reading comprehension strategies of mind mapping and visualising.

Findings from research suggest that using visual maps adds to teaching effectiveness and that the use of these instructional tools facilitates greater comprehension.

Link related research in literature with the problem that is being researched. What might be the cause of the problems being investigated?

Studies by researchers and teachers alike would anecdotally agree that the teaching of comprehension occurs best when a variety of teaching strategies takes into account the various of learning styles students can best employ.

What I have tried to accomplish is to link some research studying the role of text organization, in this case mind mapping and visualizing to improve the reading comprehension of students. Both strategies engage the working memory or retention of key information with students in my class who have displayed significant deficits in reading comprehension and who lack any coherent strategy or technique to apply in this situation.

In essence, teaching these strategies will provide the students with a scaffold for organizing information, to make links and develop common understandings about the text.

My hypothesis revolves around the contention that if the children can be taught to learn a strategy, in this case the use of a scaffolding in the form of mind mapping and visualising, that it will help them to recall significant aspects of the story, chapter or page and so improve their abilities and skills in comprehension of text.

Method:
Design
This study uses an OOXO design in which the gain in using a technique in mind maps conjunction with visualization / imagery is monitored for a small group of Year 5 / 6 students who have reading comprehension difficulties.

Participants
I teach in a multi-age grade 5/6 class in a Melbourne bayside suburb. The two children selected have demonstrated significant difficulties in comprehension skills and strategies throughout the year.

Student One

Students' Name	LH
Age / Grade level	12 years / Grade 5
Sex	Male
Background information related to students.	A very quiet boy, eldest son, number two in family of four. Early reading interventions included Reading Recovery. Repeated Grade 1. He has been assessed for integration assistance but missed out on funding. Identified as an "At Risk" student. Corrective Reading and Spelling Mastery programs over the last two years. Little improvement in reading comprehension has been detected, in fact observed low levels of self efficacy have probably resulted in some regression, this student has many reading difficulties with regard to fluency too. Oral Language assessment completed early 2002 with individual education learning plan implemented. Socially immature, tends to have many playground incidents which impact upon classroom learning. Oral reading quite robotic lacks continuity of the fluent, spoken voice.

Student Two

Students' Name	SR
Age	12 / Grade 6
Sex	Female
Background information related to students.	Youngest child and only daughter in family of three children. Quiet girl looking to fit in with her peer group, she doesn't ruffle any feathers. Corrective Reading programs over the last two years with little improvement in reading comprehension although oral reading fluency reading rate and use of strategies have improved significantly.

Both children have continued difficulties in decoding of multi-syllable words in oral reading, thus often impacting upon their abilities with regard to comprehension because the context and meaning is often lost in the unpacking of the text.

The teaching sessions were part of the regular literacy block guided reading sessions. There were four other children involved in the teaching phase due to their low comprehension rates and strategies.

Materials:

The materials used include the following:
- Reading Comprehension Tasks used in pretest and post assessment:
1. Neale Analysis of Reading Ability 3rd edition[Neale, 1998] Form 1.
2. Progressive Achievement Tests- Reading Comprehension
3. Test of Reading Comprehension [TORCH] Ministry of Education of Western Australia, 1987 " The Cats "
- Fry's Readability Graph. This was used to determine the level of difficulty for each text used in the teaching sessions.
- Mind maps taken and adapted from Maurice Ryan "Teaching The Bible- A Manual of Teaching Activities, Commentary and Blackline Masters", p. 21
- Short Narrative texts. The Narrative Genre was selected because of the students' familiarity with text structure and relevance to Integrated Unit of work for term 4.

Procedure:

The tasks were taught to a group of five students in the daily reading component of the literacy block. Lesson plans; pre and post testing data have all been included in the appendix of this paper.

The tasks were administered to all students in the following order:
- ✓ Pre-assessment was undertaken using tools previously listed.
- ✓ The intensive intervention program was administered to the students in a group learning situation.
- ✓ The eight teaching sessions were conducted at the same time each day, over a two-week period. Each session lasted between 30 –40 minutes.
- ✓ Lesson foci:
  - ❖ The focus of lesson 1 was a recount planner to represent a form of graphic information.
  - ❖ The focus for lessons 2- 3, was the explicit teaching of the mind map to represent information.
  - ❖ The focus of lesson 4, was introducing reflection time at the end of the session.
  - ❖ The focus of lesson 5 introducing visualising technique with teacher and peer support then reflection.
  - ❖ The focus of lesson 6 - 7 was the independent use of strategies by the students. The students were given assistance only when required. Introduce inferential comprehension questions.

The focus of lesson 8 was to consolidate strategies and withdraw scaffolding where applicable. This process aimed at allowing the students to move from completing a task with a great deal of support to some degree of independence.
- ✓ At the end of sessions 2-7 students were required to use their mind map to retell the text and answer questions to develop and reinforce literal comprehension in a non-threatening manner.

✓ Observations of students and anecdotal notes were taken each session.

In terms of analysis, data collected in Sessions 6&7, where the students were required to complete their mind maps independently and then use them to retell the story, were corrected for the number of literal key ideas included in the mind map.

✓ At the end of the teaching unit, students were tested on an individual basis. At the beginning of this session they were asked to verbalise what they had learned during the sessions we had worked together. *Observations and / or comments of the children are recorded in the appendix.*
✓ The Neale Analysis, TORCH and PAT tests were administered again, to assess if any gains were made by students, as a result of the brief intervention program. The students were expected to read a narrative text, that was the same from the one used at the pre-testing stage The students were asked to read, pause at intervals visualize and record key ideas on a mind map if required.

Results:

The data for both students clearly identify quantative improvements in their reading comprehension levels. What is significant is that each tool used is presented in a different manner: Neale Analysis- question and answer.[Literal]

PAT-Comprehension- multiple choice questions.[Literal]

TORCH- cloze activity. [Literal, Inferential]

Even though students were working from differing ability levels, in each case the pre-test and post-test results identify marked gains particularly in percentile rankings.

Table 1

Student- LH	Pretest No. 1			Pretest No. 2			Post Test		
	Raw Score	Stanine	Percentile Rank	Raw Score	Stanine	Percentile Rank	Raw Score	Stanine	Percentile Rank
Neale Analysis	18	3	11	18	3	11	20	3	16
PAT-Comprehension	5	1	2	5	1	2	7	2	9
TORCH	1	1	1	1	1	1	5	2	5

LH showed some improved results across each of the post-test assessments which was very pleasing considering that he demonstrated during the learning period, the greatest need for scaffolding provided by the teacher. He had difficulty visualizing but was able to record on the mind map most key ideas and only asking for assistance with the making links between headings. He also tended to write in sentences rather than in point form and his handwriting was very slow. When using the information map, he tended to copy sentences from the text. LH retellings lacked fluency as he constantly referred to the mind map for guidance. Being quite disorganised provided problems in seldom getting enough time to complete each activity fully. Although once completed, he was able to use the information to retell the story with satisfactory levels of understanding. His retelling focused mainly on the ideas recorded without much elaboration. LH relied on using the mind map during the post-test assessments when his working memory was overloaded, this was a pleasing and very positive development. The TORCH results **Table 4** showed in terms of raw score improvement, the largest gain. This I believe is due to LH using the mind mapping to identify key words and phrases, following his reading of the "Cats" text.

LH demonstrated consistent improvement across all post assessments, although the gains were modest, the use of mind maps even during the post-test phase indicated that he

was comfortable in its use and he found it a useful way to remember information gained through reading.

The working memory of LH seemed to be less cluttered as a result of his visualizing and use of mind mapping strategies during the teaching sessions, however, it was noted that in the pre-test and post assessments of the Neale Analysis **Table 2**, were only minimal gains were recorded, LH confused responses focusing more on the perceived answers rather than listening to the questions indicating that his working memory was overloaded and therefore his responses became read phrases from the text instead of relevant information in context with the questions.
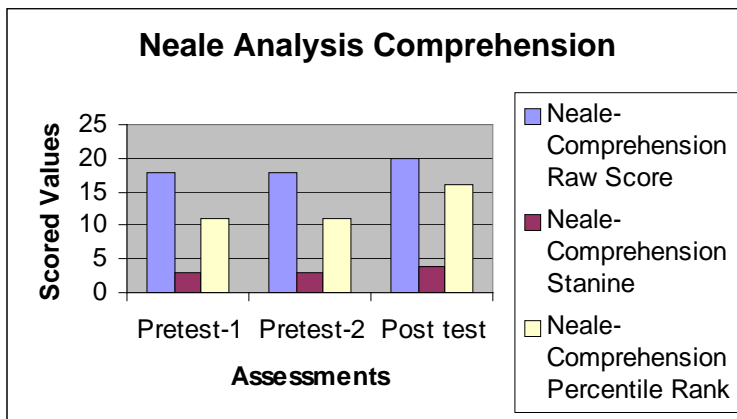
Table 2

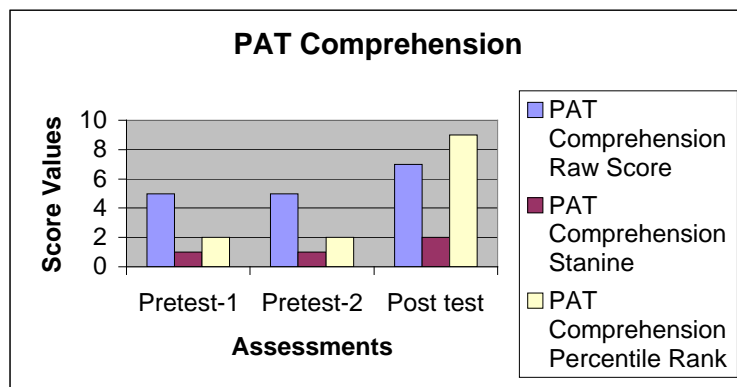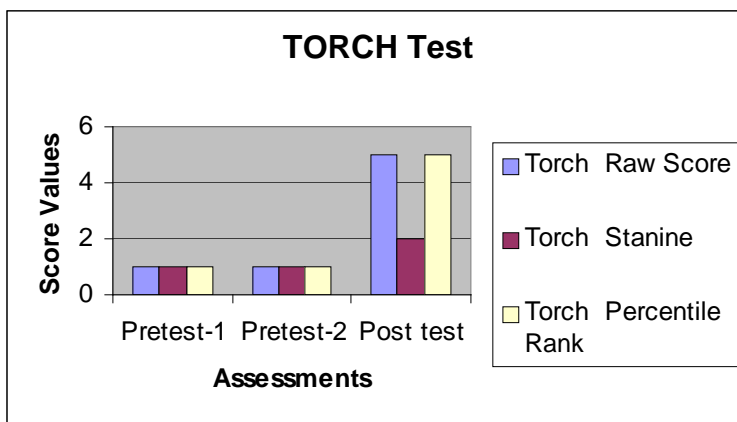**Neale Analysis Comprehension**

(bar chart — Scored Values vs Assessments: Pretest-1, Pretest-2, Post test)
Legend: Neale-Comprehension Raw Score; Neale-Comprehension Stanine; Neale-Comprehension Percentile Rank

Table 3

PAT Comprehension

(bar chart — Score Values vs Assessments: Pretest-1, Pretest-2, Post test)
Legend: PAT Comprehension Raw Score; PAT Comprehension Stanine; PAT Comprehension Percentile Rank

Table 4

TORCH Test

(bar chart — Score Values vs Assessments: Pretest-1, Pretest-2, Post test)
Legend: Torch Raw Score; Torch Stanine; Torch Percentile Rank

Table 5

Student-SR	Pretest No. 1			Pretest No. 2			Post Test		
	Raw Score	Stanine	Percentile Rank	Raw Score	Stanine	Percentile Rank	Raw Score	Stanine	Percentile Rank
Neale Analysis	29	5	44	30	5	49	35	6	70
PAT-Comprehension	22	6	65	23	6	68	26	7	78
TORCH	10	3	17	11	4	26	15	6	68

SR demonstrated an ability to refer to the mind map for assistance when needed during instruction and felt comfortable referring to it. The process of recording key words and phrases seemed to trigger her memory and as a result she added more information than had previously been attempted. SR made some attempts at inferring information during the latter sessions. This was reinforced with her improved results in all post assessments. As the graphs and tables of results testify, SR made significant gains in her ability to retain and then recall information. This suggests that the use of the two strategies introduced during the instruction sessions, namely mind mapping and visualizing provided scaffolding for SR that allowed positive learning outcomes.

SR most significant improvement was in the more inferential TORCH - **Table 8** where once having read the text, students need to use both literal and inferential strategies to successfully respond to the cloze format. Using the percentile rank as a point of reference, SR score improved from 17 %to 68%. Suggesting that the teaching session were of benefit particularly in the inferential or higher order comprehension skills.
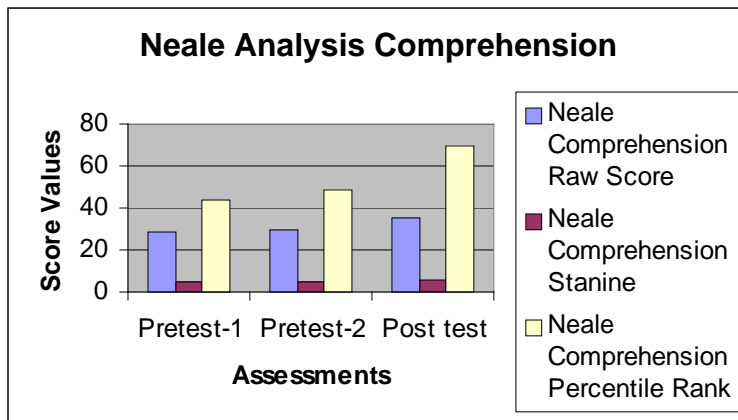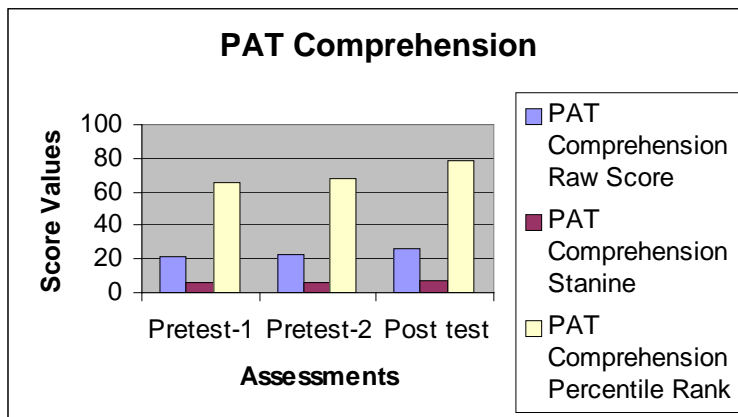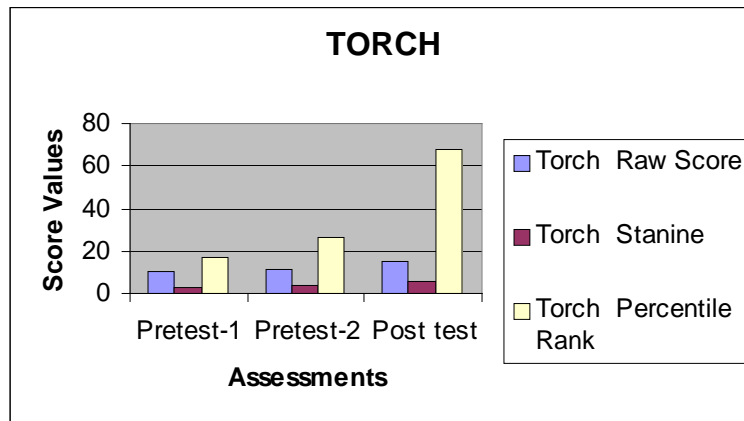
Table 6

Table 7

Table 8

TORCH

Score Values / Assessments

- Torch Raw Score
- Torch Stanine
- Torch Percentile Rank

(Pretest-1, Pretest-2, Post test)

Discussion:

The data supports the hypothesis "mind mapping and visualisation is shown through research to improve comprehension of students by making links with text read whilst assisting with developing working memory capacity." Both students made gains in varying degrees in this area. The use of mind maps appears to have been a successful strategy for the retention of information successful for each student. The increase in the number of key ideas or phrases each student used on the mind maps seems to support the research on working memory. The visualization technique appears to have assisted students with recall of information and noting key ideas on the mind map, in so doing has improved the ability of students to use memory space and so thereby allowing them to concentrate more on what they read. However in this research study, there is not enough evidence to suggest that the use of mind maps and / or visualization applied individually, will assist students with the inferential comprehension skills specifically.

Improved levels of comprehension were sustained over the duration of the sessions. Explanations may include factors such as level of scaffolding that provided a level of security for each student. Even though students were required to work independently during these sessions, they were still aware that support would be given if they were experiencing great difficulties. LH in particular required this assistance. He will ask for assistance but often this is not a spontaneous reaction, and many times he waits for the teacher's prompts. During the testing phases, where students were required to work individually without any teacher support, could have had an impact on the results, consequently this may illustrate the need for a more gradual withdrawal of scaffolding provided by the teacher over a longer period of time that wasn't possible during this active research study.

Using the visual organization of information via mind mapping and visualization techniques, provided both students with a means of organizing information in a more orderly manner which appears to have allowed them to recall vital clues at a glance rather than endless scanning of text which formally resulted in a cluttered working memory and hence a reduced retention, recall and understanding of information.

Improved levels of self-efficacy were observable throughout the duration of the lessons. Greater participation certainly by SR leads me to surmise that her confidence grew as her level of participation and interaction within the group occurred. Even LH was able to fell a degree of confidence when given the option to use mind mapping to organize contextual information.

The use of metacognitive reflection time provides instantaneous feedback for students. Again, the explicit teaching of such techniques would benefit all students by reinforcing positive self-talk and hearing the comments and discussion points of their peers in a context that they can readily relate to.

On reflection, three points come to mind:

1. A more analytical approach with regard to the assessment phase by the identification of literal and inferential questions used in the assessment tools used could provide a more detailed impact statement for each student.
2. If such improvement occurs using explicit teaching of strategies in such a short space in time, how long would this improvement be sustained until a plateau is reached? An interesting thought in light of Vygotsky's zone of proximal development!
3. What would the median improvement have been for each of the students?

If I was to replicate this research, I probably would improve the methodology in the following ways:

a. Endeavour to complete then teaching sessions over ten lessons instead of eight to allow more time for the dismantling of the scaffolding procedures.
b. Try to ensure consistency of sessional times each day.
c. Use fictional stories other than aboriginal myths as they may have been inappropriate given the level of difficulties with name pronunciation and complex plot development.
d. Record the key words and phrases for each of the text to monitor to progression over the teaching sessions.

Implications For Teaching Practice:

Results of this active research study together with those of the current research do support the need for a more intensive and active programming to encourage teachers to develop a multi-facetted approach to the teaching of reading comprehension. It appears apparent that the use of mind maps and visualisation have been instrumental in improved comprehension of the sample group, therefore, explicit teaching of a range of comprehension strategies must be given a high priority by teachers and systemic planners to ensure improvements can be maintained.

In relation to this sample of students, I would be hoping to continue using other forms of graphic organizers and definitely introducing this strategy to other in my class who have difficulties with information retention and recall during reading sessions.

As mentioned earlier, "all aspects of language [and there are many] support or scaffold the process of comprehension." No one strategy provides the ultimate solution, however, it is clear that explicit classroom planning to employ a truly balanced program where a range of comprehension strategies is provided, will provide the scaffolding that many students require to allow improved levels of comprehension to occur.

Possible Directions For Future Research:

Some questions that may be pursued as a result of this active research study:

1. How does the level of self-efficacy affect reading comprehension outcomes?
2. How much repetition would it take to ensure automaticity or the internalization of these comprehension strategies?
3. What improvement in self efficacy occurred during these lessons?
4. What other strategies could be employed to improve reading comprehension outcomes for students?
5. What metacognitive processes are the most effective during the reflection phase?
6. Which is more effective in freeing working memory space, mind mapping or visualizing?

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Appendix 1

Teaching Unit for teaching children to use the reading strategy of mind mapping to aid comprehension.

The lessons will take place in the classroom as part of the daily literacy block sessions. The lessons will taken in the context of guided reading and so last up to forty-five minutes.

The reading groupings established within the class are according to the common need using the principal of zone of proximal development devised by Vygotsky. The "zone of proximal development" was the culmination of Vygotsky's research and study into a theory of teaching-learning process. Veresov [1996] used Vygotsky's [1978, p.86] later definition of ZPD as, " … the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or on collaboration with more capable peers." Renshaw [1998, p.87] paraphrased this by writing, "… the distance between what a child can achieve alone and what a child can achieve with the assistance of a more advanced partner."

The short term goal for the sessions to have the mind mapping used as a scaffolding process then leading the children to use visualisation as the scaffolding is gradually withdrawn over the course of the instruction.

Lesson One:

Aim:
- To introduce an information strategy recount planner to recall text comprehension using key question words.

Materials:
Story book: Jack and the Beanstalk by Elizabeth Laird, Mammoth, 200
Western Australian First Steps - Writing Resource Book, Recount Planner, p. 53

1. Explain to students that we are going to concentrate on how our brain can help us to remember many things.
2. What does the term comprehension means to the group?
3. Provide positive feedback to each child. Link the reading process with the ability to comprehend the text in relation to a better understanding of the book itself through recall of various parts of the story.
4. Introduce and read the well known fairy tale Jack and the Beanstalk.
5. Have children listen with own copy of the story to follow.
6. Recall the key literal comprehension points using the Recount Planner using the question words Who? Where? When? What? Why?
7. Discuss the responses to these question words and record on the planner.
8. Children to develop questions and answers to these question words.
9. Each child asks questions and others respond.
10. Discuss why this planner assists in recalling the text.

Lesson 2:

Aim:
- To introduce the graphic organizer or mind map strategy to the students whilst reading another well known fairy tale.

Materials: Enlarged mind map for teacher.
　　　　　Mind map planner for each child-Appendix 5 [a]

Fairy tale: Princess and the Pea by Elizabeth Laird, Mammoth, 2000.

1. Revise the previous session. Review what we learnt in the previous session. Ask students: How does it help us to be better readers?" What questions do we ask ourselves when we are reading a story?
2. In this session we will learn how to record information we hear and remember to help us further with our reading and understanding. Introduce the mind map and explain that is organized to help us record information sequentially.
3. Read: "The Princess and the Pea " to students. Students read along with their own copies to the text. Pause at selected points in the text. Ask students to recall the main ideas read in that section of the text. The teacher will record information, modeling the use to the mind map with student .At the completion of the reading procedure, read through the information map together and then ask each student to retell the story in their own words, then completing their own the mind map.
4. Students ask each other questions from the text.

Lesson 3:

Aim:
- To revise the mind map strategies introduced in the previous sessions.
- To practise the application of these strategies, given teacher support.

Materials:
Enlarged mind map format.
Story: Jack and the Beanstalk.

1. Review what has been learnt so far in the previous two sessions. Review the value of the mind map
2. Explain the objective of this session.
3. Have the children retell the Jack and the Beanstalk fairy tale from memory.
4. Select key question words [Who? What? When? Where? Why?] to add information or phrases that would be appropriate to record on the mind maps taken from Jack and the Beanstalk.
5. Write together. Teacher will record on an enlarged copy of the map; students will copy onto their own.
6. Now demonstrate how to form links between each question word using verbs to form a web effect. At the end of the session. Ask each student to refer to the mind map and retell the story now and vocalise what they know about the story.
7. Students ask each other questions from the text.

Lesson 4:

Aims:
- To revise the information map strategies introduced in the previous sessions.
- To practise the application of these, providing teacher support as needed.
- Have students reflect upon what they have learned.

Materials

Individual mind maps.
Enlarged copy of the information map, which will be used by the teacher, to scaffold learning.
Text: "The Fire Sticks" by anonymous an edited extract taken from Australian Legendary Tales- Folklore of the Noongahburras collected by Mrs K L Parker, P.23 Living Geography: Australia- 2002 Hawker Brownlow. Australia.
Pencils / Textas

1. Review what has been learnt so far in the previous sessions, i.e. How can we help our brain to remember what we have read? What questions words do we ask ourselves while we are reading? What do we record on the mind map?
2. Explain the objective of this session.
2. Before reading ask students to explain what they are going to do while reading And after reading each section.
4. Read together, each section of "The Fire Sticks".
5. At the end of each section, pause and discuss what they can record on the mind map eg. key words or phrases.
6. Write together. Teacher will record on an enlarged copy of the map; students will copy onto their own.
7. At the end of the session. Ask each student to refer to the information map and retell the story.
8. Devise questions to ask one another.
9. Reflect upon what has been learned using the mind map to help recall story details.

Lesson 5

Aims:
- Introduce visualisation technique.
- To consolidate the use of the mind map strategies introduced in the previous sessions.

1. Review what has been learnt so far in the previous sessions. Each student explains what he or she has learned so far in this unit of work.
2. Discuss the objective of this session. Prior to reading ask students to explain what they are going to do while reading and after reading each section.
3. Explain to students that we are going to concentrate on how our brain can help us to remember many things. "When you are reading, use your brain as a camera. Take a photo of the text and then you can remember all the important things that happened."
4. Ask students to scan over today's text, "Pwanga, The Spider Woman", before reading think about the question words used on the mind map.
5. At the end of each section, pause. Ask students what they will do now? (Students should be able to recall that they need to take a photo of the text and record information on the map) Allow students time to record their key words or phrases. Allow students to complete this task independently. Provide assistance with spelling if necessary.
6. At the end of the session. Ask each student to refer to the information map and retell the story then answer questions for text.
7. Reflect upon what has been learned using the mind map.

Materials:

Individual information maps.
Text " Pwanga, The Spider Woman" by Leah Kerinaiua, p.74
Pencils / Textas
Lesson 6-7

Aims:

- To revise the information map and visualisation strategies introduced in the previous sessions.
- To practise the application of these independently.
- Introduce an inferential layer onto the mind map.

Activity	Task description
Review	Today you are going to show me what you have learnt together during the past lessons. You will be expected to work on your own but you may ask for help with any words you do not understand. You do not need to wait for each other to complete today's work, just work at your own pace.
Text Reading	Students to read over today's text, [6]"The Sun Woman and the Moon Man ", [7]" The Hunter and the Brolga"
Cue Students To Visualisation.	Discuss what they have visualized using the mind map format.
Mind Mapping	Students complete mind map Appendix 5 [b], make links using verbs.
Literal Questioning	Answer literal questions .
Inferential Questions To Explain Cause And Effect.	Introduce questions such as: - Why do you think … happened? - How do you think… ? - How do you know…?
Reflection	Students comment on what has been learned in this session.

Materials:
Individual mind maps.
Munroe. J - Literacy Intervention Strategies p. 19
"The Sun Woman and the Moon Man" by Charles P. Mountford
" The Hunter and the Brolga" by Dianna Merrkiyawuy

Lesson 8

Aims:

- To consolidate the use of the visualisation and information map strategies introduced in the previous sessions.
- To practise the application of these independently withdrawing the teacher support [scaffolding].

1. Explain the aim of this lesson. Today you are going to show me what you have learnt together during the past two weeks. You will be expected to work on your own but you may ask for help with any words you do not understand. You do not need to wait for each other to complete today's work, just work at your own pace.
2. Each student explains what he or she has learned so far in this unit of work.
3. Prior to reading ask students to explain what they are going to do while reading and after reading each section
4. Ask students to scan over today's text, "Goolagya and the White Dingo" and
5. At the end of each section, pause. Ask students what they will do now? (Students should be able to recall that they need to photo and record information on the map) Allow students time to record their key words or phrases. Allow students to complete this task independently.

6. At the end of the session. Ask each student to refer to the information map answer questions.
7. Reflect upon what has been learned using the mind map.

Materials:

Individual information maps.
Text "Goolagya and the White Dingo" by Charles P. Mountford, Page 72

Appendix 2

Fry Readability Graph:

Lesson	Text Name	Number of sentences in each 100 word passage	Number of syllables in each 100 word sample	Estimated grade level
1-	Jack and the Beanstalk	7.3	108	3
2-	Princess and the Pea.	7.3	107	3
3-	Jack and the Beanstalk	7	108	3
4-	The Fire Sticks	7.5	110	3
5-	Pwanga, The Spider Woman	6	113	5
6-	The Sun Woman and the Moon Man	5.5	122	6
7-	The Hunter and the Brolga.	7.1	132	6
8-	Goolagya and the White Dingo	5.5	124	6

Appendix 3

Observations Taken From Lessons

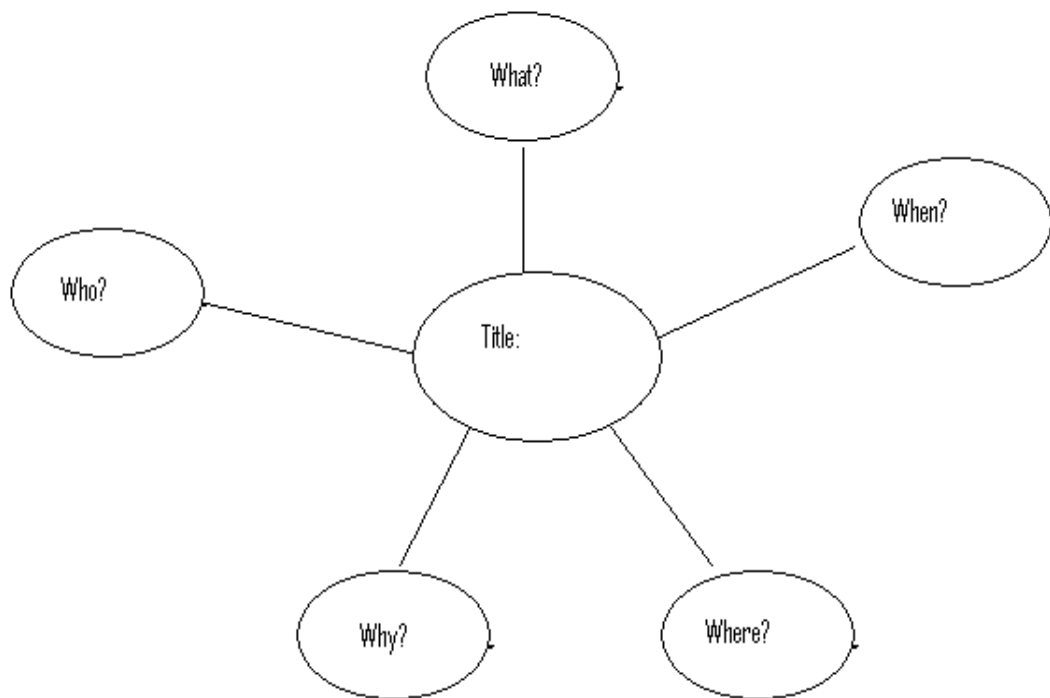|	LH	SR
	Observations	**Observations**
Lesson 1	The student was a passive participant in the lesson. Reluctant to respond. Did ask one question, " Why was Jack selling the cow?"	Used recount planner without any problems. Interacted with responses freely. Provided some questions in review for literal comprehension.
Lesson 2	Continued reluctance to participate in an active way.	Participated well within the group activity.
Lesson 3	Often disorganized and unfinished. Prefers not to read aloud.	Sets about her work in a more orderly manner. Answering more questions within group discussion.
Lesson 4	Can recall the role of the mind map without any difficulty. Mind maps tend to be in sentence form from text.	Working well providing improved responses to questions, mind maps developing well.
Lesson 5	Can use the mind map with increased confidence.	Mind mapping is being used with ease, to use key phrases instead of full sentences.
Lesson 6	Continues to struggle to manage the demands of the task in terms of completing activity. Identifying many literal answers .Introduced reflection	Reflection: "Visualising helps to know what to do next!"
Lesson 7	Use of inferential questions provided some scaffolding but was uncomfortable giving answers without written evidence. Reflection noted making links between characters [who?] and events.	Provided some evidence of inferencing in questions asked and answered.
Lesson 8	Needed some continued guidance, lacks confidence to work on inferential alone.	Didn't appear to be discouraged at the withdrawal of scaffolding strategy.

Appendix 4

Resources Used In Lessons:

- ❖ Jack and the Beanstalk by Elizabeth Laird, Mammoth, 2000.
- ❖ Princess and the Pea by Elizabeth Laird, Mammoth, 2000.
- ❖ "The Fire Sticks" by anonymous an edited extract taken from Australian Legendary Tales- Folklore of the Noongahburras collected by Mrs K L Parker, P.23 Living Geography: Australia- 2002 Hawker Brownlow. Australia.
- ❖ "Goolagya and the White Dingo" by Charles P. Mountford, taken from Read About Thinks About 2, p.72- Horwitz Martin , 1999.
- ❖ " The Sum Woman and the Moon Man" by Charles P. Mountford, taken from Read About Thinks About 2, p.12- Horwitz Martin , 1999.
- ❖ "The Hunter and the Brolga." by Dianna Merrkiyawuy. An extract taken from "The Aboriginal Children's History of Australia", P.12-13 Rigby, Australia, 1977.
- ❖ "Pwanga , The Spider Woman" by Leah Kerinaiua. An extract taken from "The Aboriginal Children's History of Australia", P.74-75 Rigby, Australia, 1977.
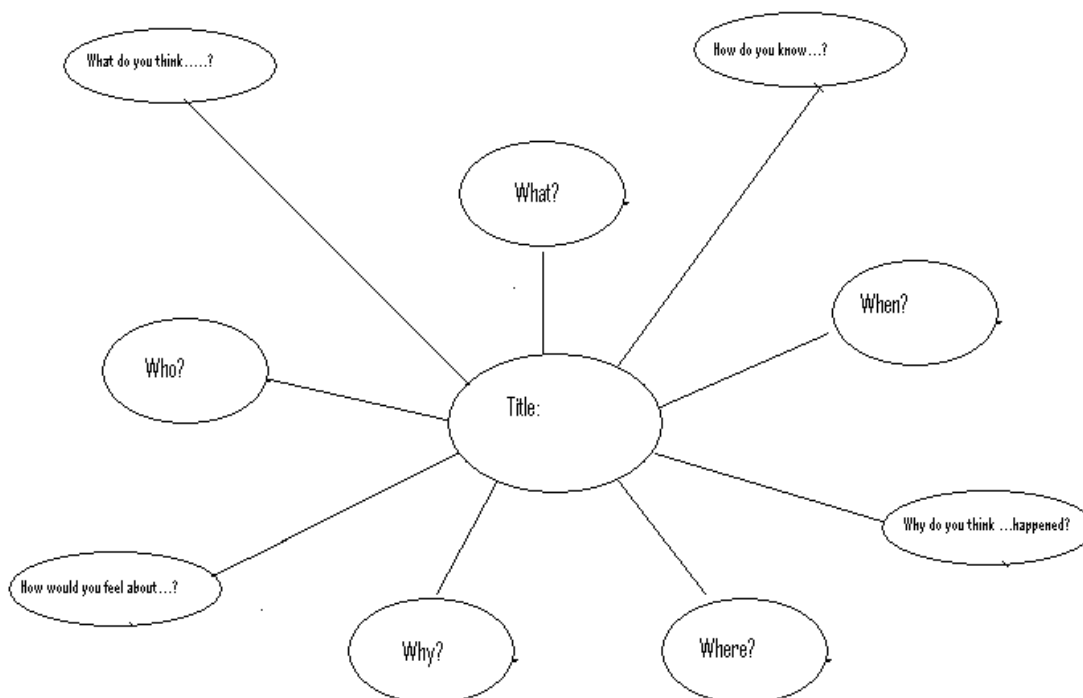
Appendix 5

Mind Map Planner

[a]

[b]