

Explicit teaching of metacognitive skills to underachieving readers in Year Four is associated with improvement in comprehension.

Abstract

The purpose of this study was to examine the effects of explicitly teaching metacognitive skills to under-achieving Year Four students, and how this teaching was associated with improvement in reading comprehension.

The study compared two groups of under-achieving Year Four students. Ten students participated in the teaching group and ten students were selected for the control group. A pre and post test score for TORCH and the Metacomprehension Strategy Index were utilized to show individual growth and overall gains for both the teaching and control groups.

The teaching group was explicitly taught to use metacognitive skills at each stage of reading – ‘before’, ‘while’ and ‘after’. The skills were taught by direct explanation and modeling with the teacher ‘thinking aloud’ as the appropriate strategy was demonstrated for a given task. The students developed similar ‘self talk’ to help them apply the new skills effectively.

After comparing the results of both the TORCH and Metacomprehension Strategy Index for all of the participants in the study it may be suggested that explicitly teaching metacognitive skills to under-achieving readers in Year Four is associated with improvement in comprehension.

The findings and implications of this study suggest that teaching under-achieving students in the middle years to conduct inner “self talk’ in order to focus, control and review as part of the reading process will assist them in improving in their reading comprehension ability.

Introduction

Reading comprehension is a problem for many middle primary students. These students generally have a repertoire of strategies upon which they rely, but they have difficulty in accessing, implementing and monitoring the effectiveness of these strategies. They are usually students who invest a vast amount of their attention or 'thinking space' reading at the word level and have insufficient thinking space to allocate to sentence and other 'higher level' comprehension processes (J & K Munro, 1994). Comprehension takes place in the brain of the reader – "it is the thinking that we do, before, during and after the reading" (Fountas and Pinnell, p.323 2001). Students with poor comprehension skills exhibit difficulties in activating prior knowledge, monitoring while reading and reflection after reading. Usually these children with comprehension difficulties have problems that are long-lasting and they often continue to have reading difficulties throughout their schooling (Fielding-Barnsley, Hay & Ashman, 2005 as cited in Woolley, 2006).

In order to enable students to comprehend text we need to shift away from using just the traditional phonological interventions and include more of a metacognitive focus (Fielding-Barnsley, Hay & Ashman, 2005). Less able comprehenders usually focus more on word accuracy rather than comprehension monitoring and generally have weak metacognition (Cain & Oakhill, 1999; Nation & Norbury, 2004 as cited in Woolley, 2006). These students tend to become passive and non-strategic while engaging in the reading process and as a result tend to read quite superficially and are less likely to engage in constructive processes (Woolley, 2006). Furthermore, students with poor comprehension skills have learned to cope with the reading process by focusing on skills such as decoding and word recognition and relying on post-reading questions as the main comprehension strategy. This suggests that teachers may need to review how they view comprehension if it is merely being gauged solely by 'after reading' questioning.

Related research indicates that many educators have become dissatisfied with reading programs and traditional approaches to comprehension and this has resulted in broader views of reading that embed comprehension in thinking skills (Paris, 1987 as cited in Hobson, 2008). These thinking skills refer to a student's ability to use metacognitive strategies before, during and after reading. Metacognition is "the ability to think about one's own thought processes, self-monitor and modify one's learning strategies as necessary" (Westwood, p. 29. 2004). It allows the reader to understand which skills, strategies and resources a task requires and knowing how and when to use these skills and strategies. This

involves the actual comprehending strategies such as visualising, predicting, paraphrasing and summarising to allow the reader to manipulate and link the ideas as well as using actions to manage and direct the use of comprehending strategies. The reader makes decisions about when and why to use each action and evaluates the success of the decision (Munro, 2004).

Research indicates that instruction in metacognitive strategies improves students' reading comprehension (Cross and Paris, 1988; Paris and Oka, 1986 as cited in Eilers & Pinkley, 2006). Students who were taught to activate prior knowledge, monitor while reading and reflect after reading while being encouraged to think aloud displayed improved comprehending ability (Boulware-Gooden, Carreker, Thornhill & Malatesha Josh,i 2007). This employment of explicit self-talk is further supported by Vygotskian development theory where students begin to use language not only to communicate but to guide, plan and monitor their activity (Vygotsky, 1978 as cited in Guterman, 2002). Research studies have further shown that when readers were encouraged to say aloud, 'What I know about... This reminds me of... I think this will happen...That strategy really helped me when...'. The students were able to formulate a plan of action prior to the reading of text, recognise what was helpful during the reading and reflect on new meanings after the reading. This conscious articulation by the student is a signal that they are ready to commence the reading task (Guterman, 2002), and all that it entails to fully comprehend the text.

For students with reading difficulties their understanding of comprehension is mostly associated with the answering of teacher directed questions after reading. Underachieving readers are quite limited in their metacognitive knowledge about reading (Paris & Winograd, 1990 as cited in Mokhtari & Reichard, 2002). These readers are less likely to plan, activate prior knowledge, monitor, ask themselves questions or review how successful they are in their reading attempts. These students tend to rely on reading as a decoding process rather than as a meaning-getting process. It has been shown that such children can be cognitively engaged when they are taught to use metacognitive skills (Guthrie & Wigfield, 2000; Linnenbrink & Pintrich, 2003 as cited in Woolley 2006) and furthermore the more explicit the teaching of these skills the higher the likelihood that they will make significant gains in reading comprehension (Manset-Williamson & Nelson, 2005 as cited in Woolley). Further studies to support the teaching of metacognitive skills have shown that students who use metacognitive strategies while they read become better readers and comprehend more clearly what they read (Eilers & Pinkley, 2006).

The teaching of metacognitive skills can be used in several ways to support comprehension. By activating prior knowledge and assisting the student to make connections between what they already know and new understandings, the student is able to draw on their own personal bank of experience. Through direct instruction and scaffolding where the students gain more confidence and control of their reading comprehension the teacher gradually reduces the amount of support offered. What the student is initially able to do only through teacher modeling and support, they then are able to do themselves (Vygotsky, 1978 as cited in Guterman, 2002). A major aspect of metacognition is the ability to both recognise when comprehension is not taking place and the ability to apply the skills to repair this (Harvey & Goudvis, 2003). The student needs to become engaged and strategic in the approach to reading to enhance comprehension. Teaching students how to plan their reading, monitor their reading and review their reading encourages them to become more active in the reading process thereby increasing their understandings at each level of the MLOTP model of reading (Munro, J. K. 1985; cited in Munro 2008). Students are able to select which information is important or relevant and compare and contrast similarities and differences in the texts.

An integral part in the teaching of metacognitive skills is to encourage the students to 'think aloud' at each stage of reading- before reading, while reading and after reading to ensure this type of thinking becomes embedded and stored in the students long term memory. The present investigation aims to further support the above research by teaching underachieving readers how to use their metacognitive knowledge to assist in their reading comprehension. This will be evident in the student's ability to use their thinking 'before reading', 'while reading' and 'after reading' to both enhance their understanding of the text and to become more strategic in their approach to the reading task. These students are generally passive readers who are able to decode text but have difficulty in gaining meaningful understandings from the text.

Prediction

Explicit teaching of metacognitive skills to underachieving readers in Year Four is associated with improvement in comprehension.

Method

Design

This investigation used an OXO design and is a naturalistic study. Improvements in reading comprehension, following explicit teaching of metacognitive skills, were monitored for underachieving readers in Year Four. The study compared two groups of ten students, a control group and an intervention group.

Participants

The participants in this study were Year Four students from two classes within the school. Twenty students were selected, ten students from each class. These students were selected on the recommendation of their classroom teachers as students who were generally able to decode when reading but experienced reading comprehension difficulties.

NAPLAN test results and TORCH reading scores were used to confirm the comprehension difficulty. After completing a cloze exercise, following the reading of the Grade 3 text "Grasshoppers", all of the above students scored Stanine 6 or below. The NAPLAN test results indicated that all of the students were at or below the 47th percentile for reading comprehension. Ten participants from one classroom made up the intervention group while ten students from the other classroom formed the control group.

At the beginning of the study all of the participants were considered to be underachieving in their ability to comprehend text. Eleven of the students have achieved an independent reading level, 8 students are reading at text level 27 while one student tested at text level 20. Six students have previously received Reading Recovery instruction, four of these students were discontinued while two students were referred. The referred students, Students 2 and 16 have also participated in the ERIK program. These students as well as student 20 have been diagnosed with severe language difficulties.

It was observed and noted by the classroom teachers that although most students were able to read age appropriate texts their comprehension abilities were undeveloped. Their age, entry reading ability, earlier intervention and learning difficulties are shown in Table 1.

Table 1

Name	Teaching=1 Control=0	Age in MONTHS	Male=0 Female=1	Years of schooling	EMA No=0 Yes=1	ESL No=0 Yes=1	LNSLN Funding No=0 SLD=1	Earlier Intervention No=0 RR=1 Erik=2	NAPLAN DATA 2008 %ile rank	TORCH	Text Level	Peabody Vocab & ile rank	Self Efficacy High=1 Medium=2 Low=3
Student 1	1	111	1	4	0	0	0	0	23	31.2	28	25	1
Student 2	1	121	0	5	0	0	1	1 2	1	20.1	20	23	1
Student 3	1	114	0	4	1	0	0	1	22	24.1	28	6	1
Student 4	1	120	0	4	0	0	0	0	22	24.1	28	8	1
Student 5	1	115	0	4	0	0	0	0	18	25.9	27	4	1
Student 6	1	114	1	4	0	0	0	0	24	37.2	26	23	1
Student 7	1	116	1	4	1	0	0	0	21	22.2	28	12	2
Student 8	1	121	1	4	0	0	0	0	46	35.1	28	34	1
Student 9	1	109	0	4	0	0	0	1	18	25.9	27	2	2
Student 10	1	117	1	4	0	0	0	0	20	20.1	27	10	1
Student 11	0	118	0	4	0	1	0	0	47	37.2	28	9	1
Student 12	0	117	1	4	0	0	0	0	47	33.1	28	37	1
Student 13	0	113	1	4	1	0	0	0	20	31.2	28	6	1
Student 14	0	113	0	4	1	0	0	1	23	35.1	28	16	1
Student 15	0	121	1	4	0	0	0	0	28	35.1	27	27	2
Student 16	0	120	1	5	1	0	0	1	22	29.5	27	23	2
Student 17	0	122	1	5	0	0	1	1 2	15	29.5	27	2	1
Student 18	0	118	0	4	0	0	0	0	10	35.1	26	21	2
Student 19	0	120	0	4	0	0	1	0	30	25.9	28	2	1
Student 20	0	119	1	4	0	0	0	0	16	35.1	27	9	1

EMA : Educational Maintenance Allowance
ESL : English as a Second Language
LNSLN: Literacy, Numeracy and Special Learning Needs
SLD : Severe Language Difficulties

Materials

Materials used include the following:

Tests

TORCH: Tests of Reading Comprehension: Due to the participants limited comprehension skills the Year 3 text, "Grasshoppers" was used. The test was administered to the whole group. Students read the text silently and completed a cloze activity, however several students did not complete the pre-test task within the allotted 45 minutes. The data was analysed using the standardized TORCH scores.

Metacomprehension Strategy Index: This is a questionnaire designed to measure student's awareness of strategic reading processes before, during and after reading. The teacher read each of the questions to the 20 participants and the students recorded their response. The questionnaire was scored as three individual scores (before, during and after reading). A total of 10 points was possible for the before and while reading and a total of 5 points for the after reading. A total score rated out of 25 indicated overall metacognitive awareness.

NAPLAN Test: The 2008 reading data for all participants was utilized as a means of confirming comprehension difficulties.

Running Records: The Alpha Assessment Kit was used to determine instructional text level.

Peabody Picture Vocabulary Test Third Edition: The student's receptive knowledge may impact on the findings of this study in relation to cognitive development therefore each student was asked to complete the Picture Vocabulary Test. From a series of 4 pictures students pointed to the most appropriate picture after hearing the examiner say a word. This score was recorded as a percentile rank.

Self Efficacy Scales Adapted by James W Chapman & William E Turner, Massay University New Zealand, 2002. Students completed a questionnaire related to how they view themselves as readers. The examiner read the question aloud to the 20 participants and the students circled the face or response which best described their answer. This test was used to determine whether self efficacy was an issue and whether this needed to be catered for in the project. The students were scored 1-5 for the first

section and 5 points for each of the correct responses in the second section. The total score was 90. The students were scored as follows: 0-30 = Low Self Efficacy, 30 -60 = Medium Self Efficacy, 60-90 = High Self Efficacy

Texts

A collection of texts used over the series of lessons (Appendix 1)

Other Materials

- Teaching Unit as planned by research project teacher (Appendix 2)
- Overhead Projector
- Blank overhead transparency sheets and pens
- Thinking Checklist (Appendix 2, see Teaching Unit)
- Sticky notes
- Story Graph (Appendix 2, see Teaching unit, Lesson 8)
- Question Organiser (Appendix 2, see Teaching unit, Lesson 10)

Procedure

The tasks were administered daily to all of the students in the teaching group for a consecutive two week period. These students were removed from their classroom for the intervention while the control group continued to participate in the regular classroom program. The teaching sessions took place within the morning literacy block and were conducted either in the library or the staffroom, depending upon which room was available. Each session lasted forty five minutes.

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

Session	Goal	Teaching Strategy	Learning Activities
1	To demonstrate the kind of self-talk that will be useful to the student <u>prior to commencing</u> reading of a text. To identify and mark on a checklist the types of self-questions that may be useful.	<u>Teacher Modeling</u> The strategy is explained by the teacher. The teacher models the appropriate self- talk. The teacher models by thinking aloud prior to reading. The teacher reads the text.	The students will be introduced to the book, "Not a Nibble" by Elizabeth Honey. Using the 'Read To' strategy the teacher focuses on front cover, title and first paragraph. Activates own prior knowledge at word, sentence, topic and whole text level.

Session	Goal	Teaching Strategy	Learning Activities
2	<p>To practice activating prior knowledge before reading.</p> <p>To demonstrate the kind of self-talk that will be useful <u>while</u> the student is reading .</p> <p>To teach the students how to manipulate the text.</p>	<p><u>Guided Practice</u> <u>/Teacher modeling</u></p> <p>The teacher and student formulate ideas for getting reading plan ready- teacher to scaffold the student's attempts.</p> <p>Teacher models how to manipulate text while reading – using think-aloud strategy.</p>	<p>Introduce book, "In Flanders Fields" by Norman Jorgensen. Discuss ideas for activating knowledge- compile group list. Teacher to vocalise 'while reading' strategies while students listen to story being read.</p>

Session	Goal	Teaching Strategy	Learning Activities
3	<p>To practice using the before and while reading strategies in a supported context.</p> <p>To introduce and teach the <u>post</u> reading strategies.</p> <p>To consolidate prior strategy learning and make links between each stage of reading focusing on the significance and importance of each stage.</p>	<p><u>Guided practice/teacher modeling</u></p> <p>The teacher scaffolds the students attempts in activating prior knowledge and while reading strategies through a shared reading experience.</p> <p>Students are encouraged to think aloud during this process.</p> <p>Teacher models ways to review the reading</p>	<p>Shared book experience using the text, "Luke's Way of Looking" by Nadia Wheatley and Matt Ottley Before reading re-visit checklists for 'before and while' reading. Students contribute to 'ready to read' plan. Students and teacher to say aloud what will be helpful in reading this text. After reading, teacher models the self questioning, key ideas, emotional response, why the material was written and new words and their meanings.</p>

Session	Goal	Teaching strategy	Activities
4	<p>To practice using 'before reading' strategies using title, illustrations and first paragraph.</p> <p>Say aloud and record their reading plan.</p>	<p><u>Guided practice</u></p> <p>The teacher directs the students and scaffolds the student's attempts, providing support and praise for their efforts as well as guiding them through the checklist.</p> <p><u>Collaborative practice</u></p> <p>Students share ideas with a partner while teacher moves to each pair making sure that task is being followed correctly.</p>	<p>Introduction of text, "Through the Fence" by Janette Johnstone. In pairs students discuss what they need to include in their reading plan. Using 'before reading' checklist students plan and discuss prior knowledge and experience. Students ask themselves, "Am I ready to read?" Students read the text and mark with a sticky note where they were correct or incorrect in their prediction.</p>

Session	Goal	Teaching Strategy	Activities
5	<p>To practice developing a plan of action and maintaining and monitoring the plan.</p> <p>Say aloud the plan and what action will be taken during the reading.</p>	<p><u>Guided Practice</u> The teacher directs the students and scaffolds the student's attempts, providing support and praise for their efforts as well as guiding them through the checklist.</p> <p><u>Collaborative Practice</u> Partner work. Teacher to offer suggestions or ideas to guide and keep students on track.</p>	<p>Using the same text revisit the action plan from the previous lesson as well as the 'while reading' checklist compiled during teacher modeling.</p> <p>Students work with partner to discuss what actions will be helpful while they are reading.</p>

Session	Goal	Teaching Strategy	Activities
6	<p>To practice developing a plan of action and maintaining and monitoring the plan.</p> <p>To practice implementing review strategies on a seen text.</p> <p>Say aloud the plan of action before reading and what action will be taken during and after the reading.</p>	<p><u>Guided Practice</u> The teacher directs the students and scaffolds the students attempts, providing support and praise for their efforts as well as guiding them through the checklist</p> <p><u>Collaborative Practice</u> Partner work while teacher makes notes regarding student's understandings through observation and discussion. Teacher to offer suggestions or ideas to guide and keep students on track.</p>	<p>Using same text as previous two lessons</p> <p>Teacher and student discussion using prompt questions recorded during teacher modeling. Joint attempts to respond to initial questions. Discuss what will be helpful to answer the questions eg. sticky notes, recall pictures made while reading</p> <p>Using worksheet and text students fill in responses to review questions with a partner.</p>

Session	Goal	Teaching Strategy	Activities
7	<p>To practice using metacognitive skills before, during and after reading a text and begin to take control over these strategies.</p> <p>To say aloud the self-talk while engaged in these activities.</p>	<p><u>Guided Practice</u> Teacher provides support for student's attempts and praise for all self-talk articulated aloud.</p> <p><u>Consolidation and Independent Practice</u> Students begin to use the strategies through a guided approach that helps to focus their thinking and encourages them to take some control over the task.</p>	<p>Introduce text, "Grandad" by Pauline Cartwright and activate prior knowledge and experience.</p> <p>Students read the text and pause at marked sentences to record responses on 'checklist for reading' sheet. Students also continue to use their sticky note reminders.</p>

Session	Goal	Teaching Strategy	Activities
8	<p>To consolidate the use of metacognitive skills with a specific focus on comprehension.</p> <p>To say aloud the self-talk while engaged in these activities.</p>	<p><u>Guided Practice</u> Teacher provides support for student's attempts and praise for all self-talk articulated aloud.</p> <p><u>Consolidation and independent practice</u> Students begin to use the strategies through a guided approach that helps to focus their thinking and encourages them to take some control over the task</p>	<p>Introduction of text, "Way Out There" by Leonard Karuana.</p> <p>Using shared reading strategy focus on what strategy each student finds most helpful eg visualising as they read, listening to themselves while reading etc.</p> <p>Using graphic organizer students to make decisions about what was important in the reading through the use of a story graph (Eilers & Pinkley 2006).</p>

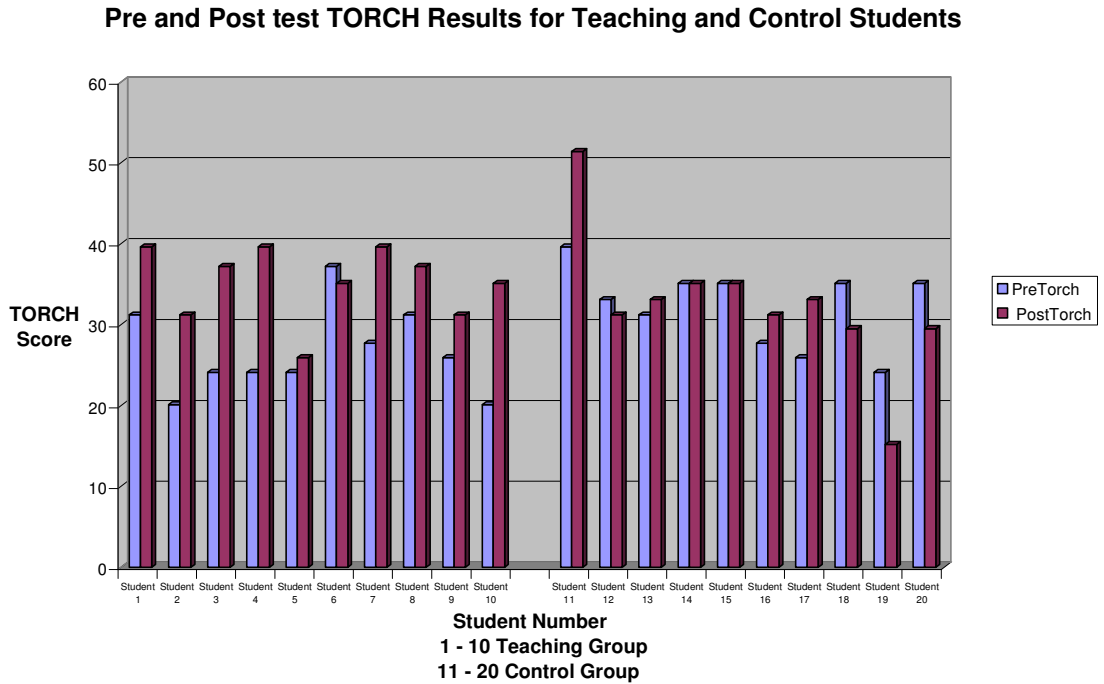
Session	Goal	Teaching Strategy	Activities
9	<p>To independently use the metacognitive skills associated with before, while and after reading.</p> <p>To independently use these skills to assist in comprehension.</p>	<p><u>Independent Practice</u> Students use their own knowledge of metacognitive strategies to assist them in the comprehension exercise.</p> <p>Teacher and student feedback at the end of the session.</p>	<p>Using text, "The Red Planet" by Sharon Fear students read text and respond to text to show their understandings.</p> <p>Students use personal prompt sheet and checklist. Students practise cueing themselves and decide when and where to use the strategies. Students identify relevant information on graph.</p>

Session	Goal	Teaching Strategy	Activities
10	<p>To independently use the metacognitive skills associated with before, while and after reading.</p> <p>To independently use these skills to assist in comprehension</p>	<p><u>Independent practice</u> Students use their own knowledge of metacognitive strategies to assist them in the comprehension exercise.</p> <p>Teacher and student feedback at the end of the session</p>	<p>Using text, "The Asteroid", by Hugh Price and Beverly Randell students read text and respond to text to show their understandings.</p> <p>Students use personal prompt sheet and checklist. Students practise cueing themselves and decide when and where to use the strategies. Students complete question checklist (Munro 2004).</p>

Results

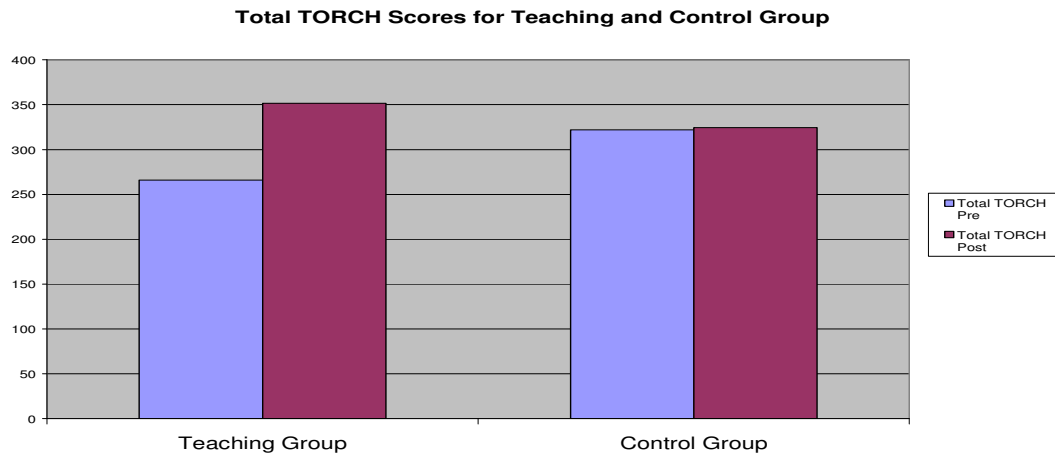
Results indicate support for the hypothesis, that explicitly teaching Year Four underachieving readers to use metacognitive skills is associated with improvement in reading comprehension.

Figure 1



The TORCH results show a trend for improvement for ninety percent of the intervention group and forty percent of the control group, this being 9/10 students in the teaching group and 4/10 students in the control group (Figure 1). Gains made by the teaching group were greater than those of the control group as shown through the comparison of the total pre and post-testing scores (Figure 2).

Figure 2



However, it should be noted that students in the control group demonstrated higher comprehension scores on the TORCH test in pre-testing with the teaching group having a mean pre-test TORCH score of 26.5 and the control group having a mean pre-test score of 32.2.

Comparison of TORCH results

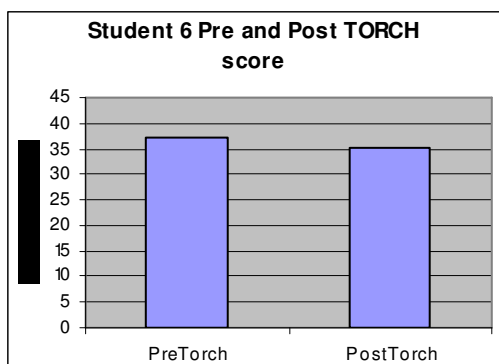
The post-testing results show that the gains made by the teaching group were greater than the control group. All students at the commencement of the research were considered to be under achieving readers and low in their comprehension.

Table 2

Pre and Post TORCH Score for Teaching Group		
	Pre TORCH	Post TORCH
Student 1	31.2	39.6
Student 2	20.1	31.2
Student 3	24.1	37.2
Student 4	24.1	39.6
Student 5	24.1	25.9
Student 6	37.2	35.1
Student 7	27.7	39.6
Student 8	31.2	37.2
Student 9	25.9	31.2
Student 10	20.1	35.1

As can be seen in Table 2, all students in the teaching group except Student 6 showed improvement in their post-testing scores.

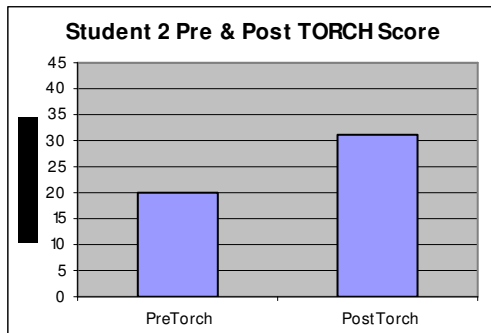
Figure 3



Student 6 in the teaching group had a pre-test score of 37.2 and a post-test score of 35.1 (Figure 3). This is a loss of 2.1 points. It should be noted that student 6 was absent

for three consecutive sessions and this may have impacted on this student's post TORCH score (Appendix 3).

Figure 4



Student 2 has considerable difficulty in decoding text and has received several interventions as well as an extra year of schooling. The results for Student 2 were particularly noteworthy as a gain was made from 20.1 to 31.2 – a gain of 11.1 points and a movement in percentile rank from 11 to 38 (Figure 4).

Figure 5.1

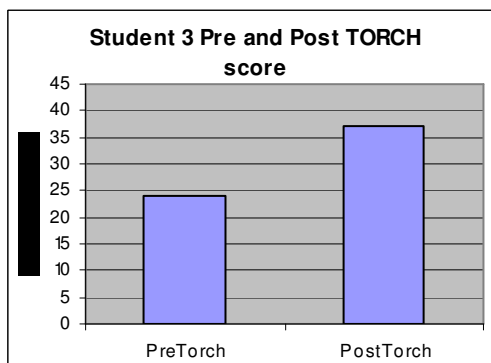
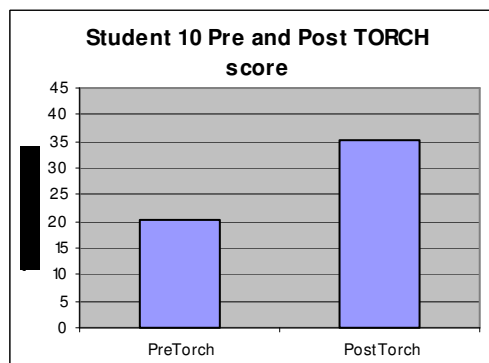


Figure 5.2



Student 3 and 10 were both observed to be engaged and focused throughout the series of lessons and this was further observed through the improvement in their TORCH scores. Student 3 has received Reading Recovery instruction and has a low vocabulary (Table1) - but made a gain in scores from 24.1 to 37.2 – an increase from stanine 3 to 5 (Figure 5.1). Student 10 has not received any intervention and is a fluent, expressive reader however comprehension continues to prove to be difficult for this student. Therefore, it is worth noting the gains made in the pre and post-testing TORCH scores from 20.1 to 35.1 – an improvement of 15 points and an increase from stanine 3 to 5 (Figure 5.2).

Figure 6.1

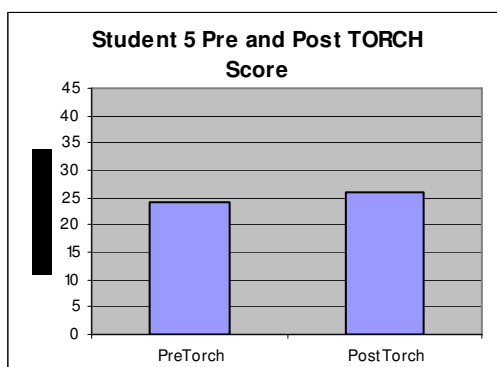
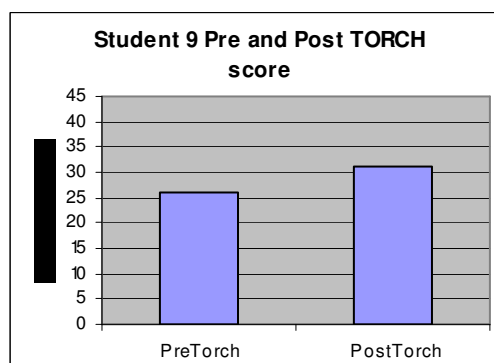


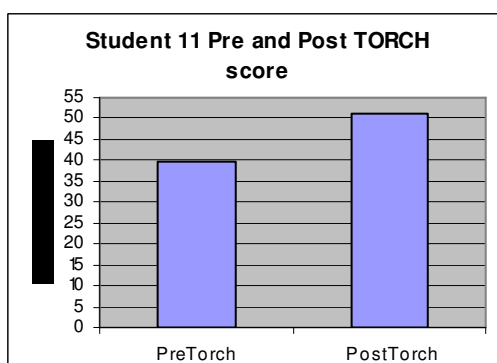
Figure 6.2



Student 5 and student 9 interacted well in the discussion during the lessons and made good connections between self and the text through oral language. Both students have a very low vocabulary (Table1) but did show improvement in their comprehension. Student 5 made a gain of 1.8 points in their TORCH score (Figure 6.1), while Student 9, having also received reading recovery, made a greater gain of 5.3 points (Figure 6.2).

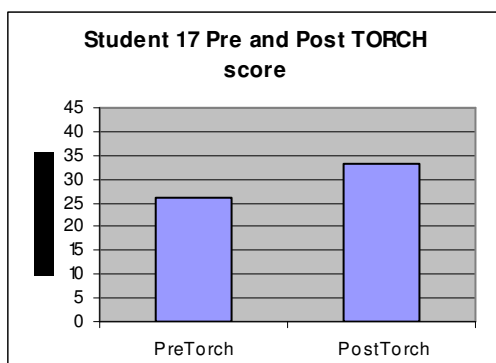
The students in the control group made an overall lesser gain than the teaching group. However, again it must be noted that the pre-testing scores for the control group were on average 5.7 points above the teaching group scores for TORCH and that some of these students may have been higher functioning in their comprehending abilities and may have reached a plateau in their learning over this period of time.

Figure 7



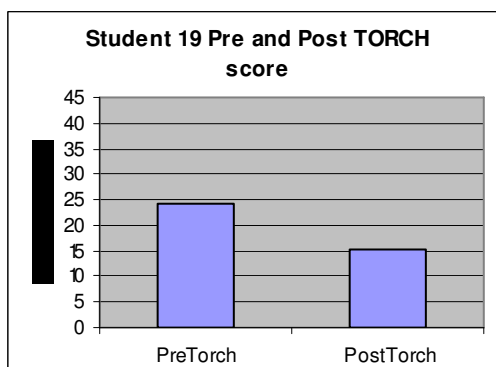
Student 11 in the control group is the only ESL student in the whole group and made a gain from 39.6 in the pre-testing to 51.4 in the post-testing – a gain from stanine 6 to 8 and a rise of 26 points in percentile rank (Figure 7). It is possible that this student, although ESL and having a low vocabulary, may have greater comprehension abilities as can also be seen in his higher NAPLAN results (Table1).

Figure 8



Student 17 from the control group was observed during the pre-test as quite anxious and requested assistance a number of times. This student was unable to fully complete the task in the required time, however, during the post-test the student was observed to be engaged with the text, searching and scanning the text independently and as a result was able to fully complete the cloze activity. This student has had an extra year of schooling, completed the Reading Recovery program and has a severe language delay (Table 1). Student 17 made a gain of 7.2 points in the TORCH score (Figure 8).

Figure 9



Student 19 had the lowest pre-test score for the control group and recorded a loss of 8.9 points in the post-test (Figure 9). This student has a severe language delay and also has a low vocabulary (Table 1).

The TORCH results indicate support for the hypothesis that teaching metacognitive skills to underachieving readers in Year Four is associated with improvement in reading.

Metacomprehension Strategy Index

Figure 10

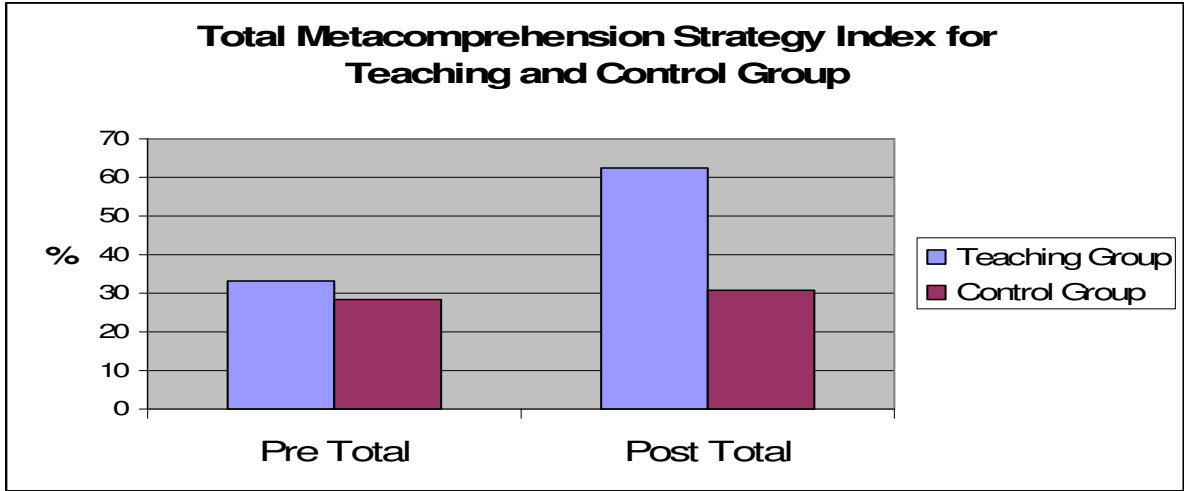


Figure 11.1

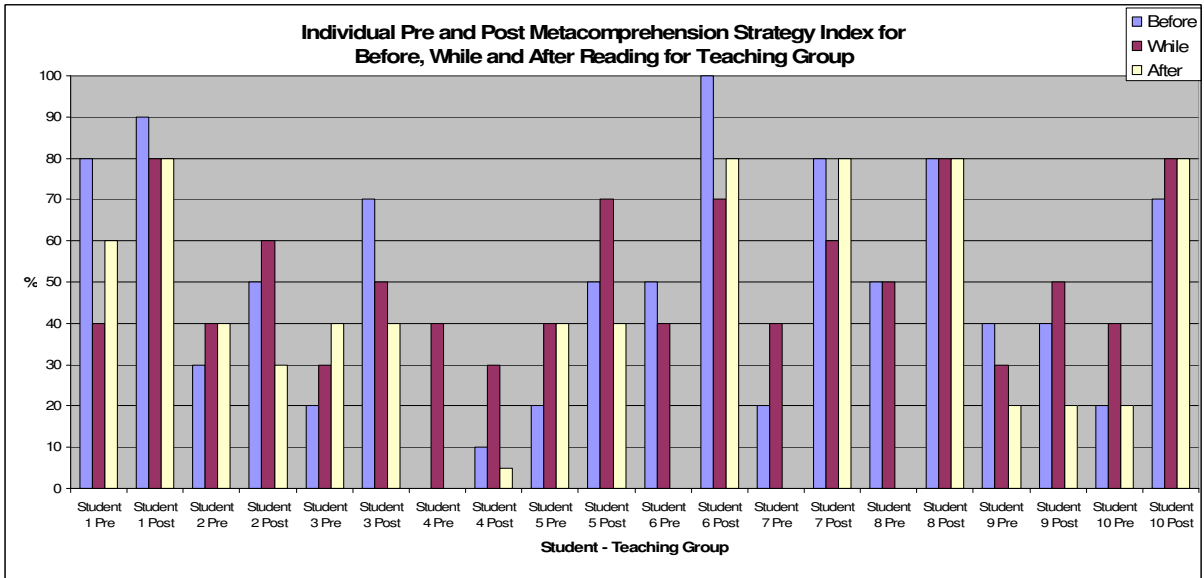
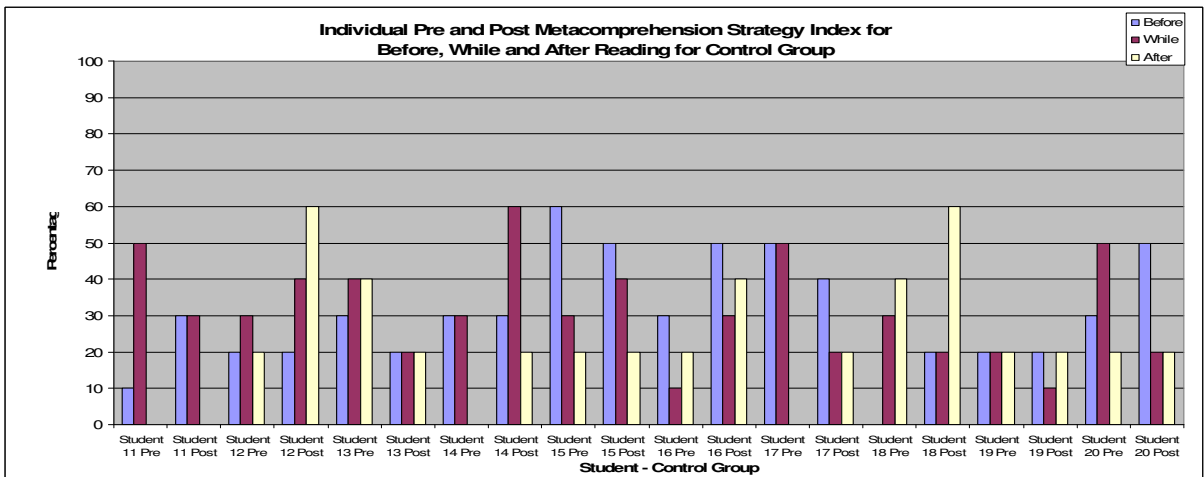


Figure 11.2



Student's total scores for the Metacomprehension Strategy Index for both the teaching and control group as seen in Figure 10 shows that the teaching group made an overall gain of 29.2% and the control group an overall gain of 2.4%. Figures 11.1 and 11.2 show overall performance for each student in "Before Reading", 'While Reading' and 'After Reading' metacognition skills for each student in the teaching group and the control group. It can be clearly seen that individual gains for the teaching group are generally higher than those scores for the control group as recorded in the post testing.

Table 3

% Score for Pre and Post Metacomprehension Strategy Index for Teaching and Control Group								
	Before	While	After	Total	Before	While	After	Total
Student 1	80	40	60	60	90	80	80	84
Student 2	30	40	40	36	50	60	30	56
Student 3	20	30	40	28	70	50	40	56
Student 4	0	40	0	16	10	30	5	20
Student 5	20	40	40	32	50	70	40	56
Student 6	50	40	0	36	100	70	80	84
Student 7	20	40	0	24	80	60	80	72
Student 8	50	50	0	40	80	80	80	80
Student 9	40	30	20	32	40	50	20	40
Student 10	20	40	20	28	70	80	80	76
Student 11	10	50	0	24	30	30	0	24
Student 12	20	30	20	24	20	40	60	36
Student 13	30	40	40	36	20	20	20	20
Student 14	30	30	0	24	30	60	20	40
Student 15	60	30	20	40	50	40	20	40
Student 16	30	10	20	20	50	30	40	40
Student 17	50	50	0	40	40	20	20	28
Student 18	0	30	40	20	20	20	60	28
Student 19	20	20	20	20	20	10	20	20
Student 20	30	50	20	36	50	20	20	32

Table 3 shows the pre and post-test percentage scores for the three stages of reading for each student. Students in the teaching group made an overall gain of 31 per cent for 'before reading', 24 per cent for 'while reading' and 31 per cent for 'after reading' thinking. The control group made a gain of 5 per cent for 'before reading', a loss of 5 per cent for 'while reading' and a 10 per cent gain for 'after reading' thinking.

The overall gains for each stage of reading made by the teaching group were greater than those recorded for the control group.

Comparison of Metacomprehension Strategy Index scores and TORCH scores

Figure 12.1

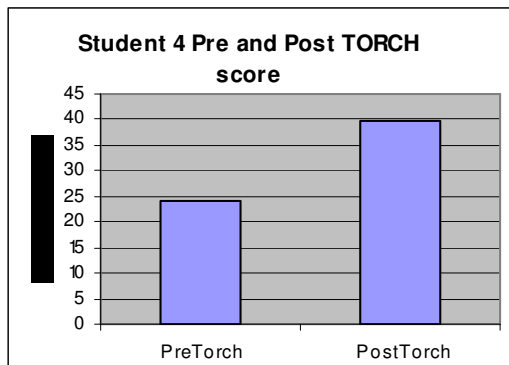
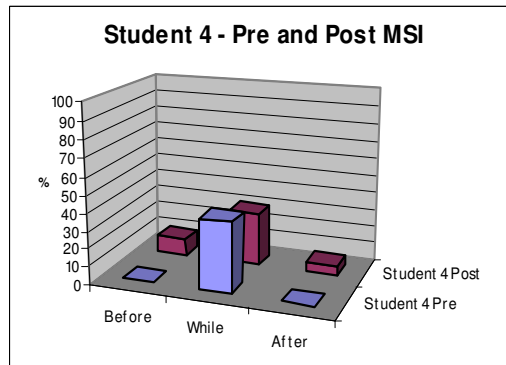


Figure 12.2



Student 4 as seen in figure 12.1 showed an improvement in the TORCH score by moving from 24.1 to 39.6 – this is a movement from stanine 3 to stanine 6. For the metacomprehension test this student made a 10 per cent improvement in the 'before reading', a 10 per cent loss in the 'while reading' and a 30 per cent gain in the 'after reading' – an overall gain of 40 per cent. Greater gains were made on the TORCH test for this student.

Figure 13.1

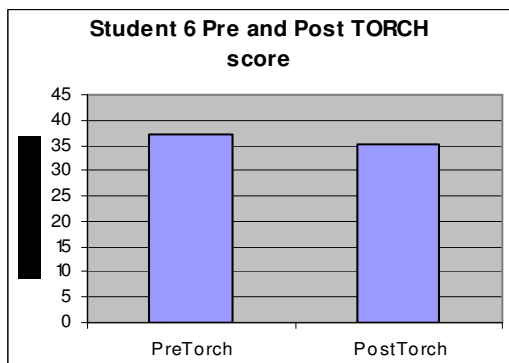
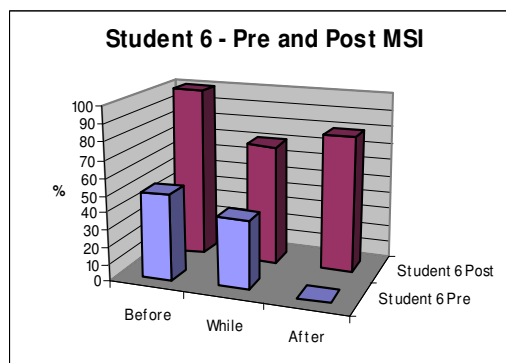


Figure 13.2



Student 6 as can be seen in Figures 13.1 and 13.2 made a 50 per cent gain on 'before reading', a 30 per cent gain on 'while reading' and an 80 per cent gain on 'after reading' thinking with an overall improvement of 48 per cent. Again this greater gain on the metacomprehension index does not correlate with the loss of 2.1 points made on the TORCH test.

Figure 14.1

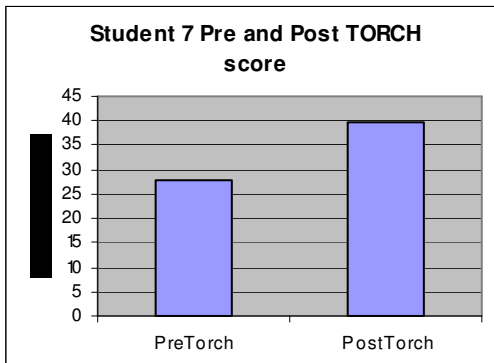
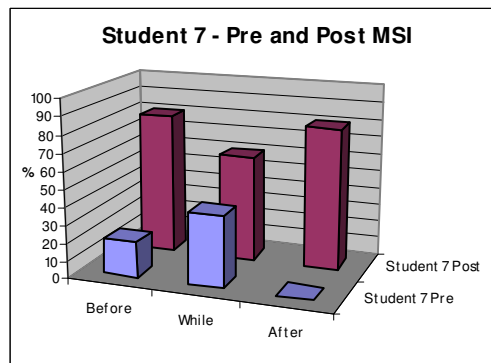


Figure 14.2



Student 7 displayed mature articulation skills in the discussions during the lesson series and made a 60 per cent gain in 'before reading', a 20 per cent gain in 'while reading' and an 80 per cent increase in 'after reading' thinking (Figure 14.2). This increase supports the post-test scores achieved on the TORCH test of a movement from 27.7 to 39.6 points – a gain of 11.9 points (Figure 14.1).

Figure 15.1

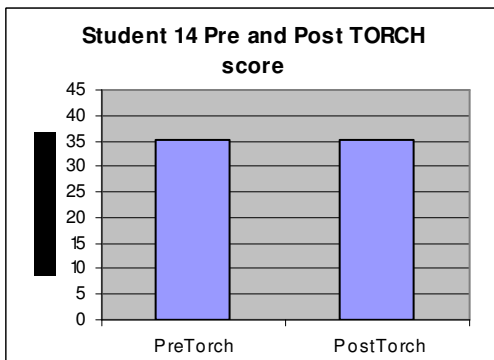
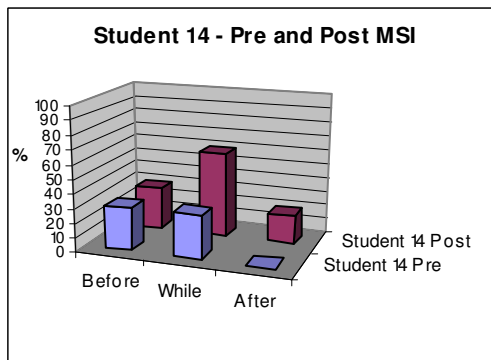


Figure 15.2



Student 14 in the control group achieved the same pre and post score in 'before reading', a 30 per cent gain in 'while reading' and a 20 per cent gain in 'after reading' with an overall improvement of 16 per cent (Figure 15.2). This student's TORCH score remained the same for both pre and post-testing (Figure 15.1).

Figure 16.1

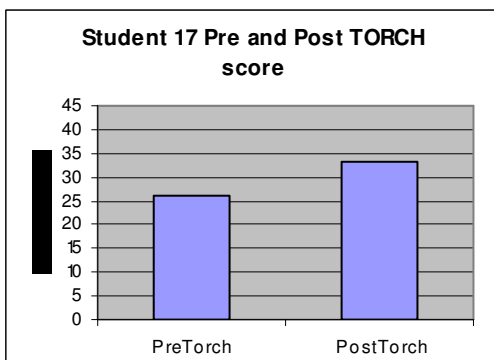
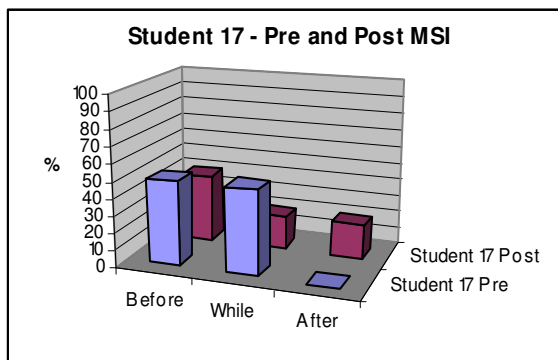


Figure 16.2



Finally, Student 17 recorded an overall loss of 12 per cent for the three stages of reading with a loss of 10 percent in 'before reading', a loss of 30 per cent for while reading and a gain of 20 per cent for 'after reading' thinking (Figure 16.2), whereas this student made an overall gain of 7.2 points during the post-testing in the TORCH test (Figure 16.2).

Discussion

When reflecting on the results of this study there is support for the initial prediction that explicit teaching of metacognitive skills is associated with improvement of reading comprehension in low achieving readers. Student results indicate that improvement in reading comprehension was evident in ninety per cent of the teaching group and forty per cent of the control group. Therefore there was a greater overall gain in the teaching group. Support for the hypothesis, however is not conclusive as some students in the control group increased their performance on the written comprehension task.

Given these results it is important to acknowledge firstly why one student in the teaching group did not show improvement and secondly, why four students in the control group made gains in their comprehension without receiving the explicit instruction.

As discussed one possible reason for the lack of improvement for student 6 in the teaching group was this student's absence for three consecutive lessons however Student 9 was also absent for three teaching sessions and yet this student did show improvement (Appendix 3).

Student 11 in the control group, the only ESL student in both the teaching and control group, showed improvement in the post-testing. Perhaps this can be attributed to the fact that reading the same TORCH text a second time may have enhanced this student's understanding or the fact that this student does receive increased time and attention from the classroom teacher across all areas of the curriculum. It is interesting to note that both student 16 and 17 from the control group who are both past Reading Recovery students and students who have received an extra year of schooling showed gains in their comprehension. One possible reason for this is that both of these students had achieved a pre-test TORCH score in the bottom thirty per cent of the control group and therefore the potential for improvement was greater in these students. Also, in their classroom these students receive small group reading instruction on a daily basis and this may have impacted on the findings of this study.

Another variable which may have impacted on the final comprehension results for the teaching group was the choice of texts used at the independent stage of the teaching sequence. These texts were selected based upon their current inquiry unit, "Space". This provided an added element of interest generated by the students creating lively discussion and support in their comprehension.

The results lend support for the work of Munro and Munro (1994) whereby the teaching of metacognitive strategies can be seen as a way of empowering low achieving readers to improve comprehension. It was extremely evident through observation and notes taken throughout the series of lessons that the students in the teaching group began to take control of the reading task through developing a 'plan of action' before reading, using their sticky notes to mark relevant information while reading and reflection on the reading after reading the text.

This study is also supported by the findings of Eilers and Pinkley (2006) and Boulware-Gooden, Carreker, Thornhill and Joshi (2007) where explicit instruction of metacognitive strategies assisted students in their reading comprehension. An important aspect of the above studies is that those students who were taught to activate prior knowledge, monitor while reading and reflect after reading while being encouraged to think aloud displayed improved comprehending ability. It was also noted in Eilers and Pinkley (2006) that proficient readers tended to independently or intuitively use metacognitive strategies in their reading whereas less skilled readers required the explicit instruction. This study supports these findings.

Some of the implications for teaching practice in this study included the expectation during the lesson series that each student was to articulate aloud the metacognitive strategies they would employ at each stage of their reading. This was carried out both at the commencement of the lesson and during the review at the end of the lesson. The purpose of this self talk is for the students to focus, reflect, control and review at each stage of the reading. It is important that this verbalising is continued within the classroom setting to allow the students to continue to make gains in their reading comprehension. The classroom teacher has observed that the students from the teaching group are using their 'Thinking Checklists' in the classroom during Guided Reading sessions.

It was important that students were able to make decisions about recalling the information that was relevant and important as opposed to information that was not

important for comprehension .The use of the Story Graph (Eilers and Pinkley; 2006) was a useful tool in assisting students with this (Appendix 2 Lesson 8). Another observation was the student's ability to recognise unknown words in the text and to take action to solve not only at a decoding level but more importantly at the meaning level. The students became quite proficient at both using their Meaning Making Motor (Munro, 1985; cited in Munro 2008) and sharing how they did this. As the teacher it was a highlight to observe during the post-testing of the Metacomprehension Strategy Index that when the students were asked question twenty one with one of the options being "underline the causes and effects" seven students from the teaching group raised their hands to ask what those words mean. None of the students did this in the pre-testing.

A possible direction for future research suggested by the results of this study would be to attempt a similar study which would involve the whole class and to implement the teaching of metacognitive skills across all curriculum areas. Results from this study indicate that students could benefit from explicit teaching of metacognitive skills across all subject areas whereby students were continually scaffolded to analyse, monitor and reflect on new learnings. The challenge of such a study would be for students to apply these skills automatically and independently whenever they are engaged in reading.

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RESOURCES

Tests

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APPENDIX

Appendix 1

Texts

Lesson	Text and Author	Genre	Fry's Readability Level	Publisher
1	Not a Nibble Elizabeth Honey	Fiction	Year 2	Allen & Unwin 1997
2	In Flander's Fields Norman Jorgensen	Fiction	Year 4	Simply Read 2002
3	Luke's Way of Looking Nadia Wheatley	Fiction	Year -	Hodder Children's 2007
4	Through the Fence Janette Johnstone	Fiction	Year 3	Macmillan 2000
5	Through the Fence Janette Johnstone	Fiction	Year 3	Macmillan 2000
6	Through the Fence Janette Johnstone	Fiction	Year 3	Macmillan 2000
7	Grandad Pauline Cartwright	Fiction	Year 3	Literacy Links1990
8	Way Out there Leonard Karuana	Non Fiction	Year 3	Macmillan 2001
9	The Red Planet Sharon Fear	Non Fiction	Year 3	Longman 2001
10	The Asteroid Hugh Price & Beverley Randell	Fiction	Year 4	Rigby 1999

Appendix 2

Teaching Unit

Metacognitive Skills

Explicit teaching of metacognitive skills to reading underachievers in year four is associated with improvement in comprehension.

Teaching unit based on material presented in John Munro –Effective Literacy Intervention Strategies (2004)

Session 1

Text: Not a Nibble

Focus: 'Before Reading' Metacognitive Strategies

Introduce the strategy:

Today we are going to learn about how our thinking can help us to get our minds ready before we start to read a book. I am going to read this book but there are a lot of things I need to ask myself before I start to read. I am going to use the title and front cover to help me get some ideas ready before I read – I am going to make a plan of action.

Teacher models self talk before reading the text

What do the title and pictures remind me of?

What do I know about this topic already?

What pictures do I make when I hear the title?

What ideas might come up in the text?

What questions might the story answer?

What words can I expect to see?

Say the reading actions that might help when I read?

AM I READY TO READ?

Teacher scribes the self-talk onto overhead and possible responses.

Teacher reads the story

While I am reading the story I will mark with a sticky note where I am 'on track' OR 'off track' in the ideas I had put together in my plan.

Teacher and students review action plan

Let us look at what I have done here. My sticky notes tell me if I included all the possible ideas in my plan. Could I have added some other information? Did my predictions help me? Discuss

Teacher reviews actions

What do I need to ask myself before I start to read – say aloud questions/prompts scribed at the start of the lesson

**WHAT AM I GOING TO THINK ABOUT
BEFORE I START READING ?**

Before we read the book, "Not a Nibble", we need to think about all the things that might help us in our reading.

We need to ask ourselves	
What do the title and pictures remind us of?	
What do we know about this topic already?	
What pictures do we make when we hear the title?	
What ideas might come up in the text?	
What questions might the story answer?	
What words can we expect to see?	
Say the reading actions that might help when we read?	
Are we ready to read?	

(Munro 2004)

Session Two

Text: In Flander's Fields

Focus: 'While Reading' Metacognitive Strategies

Teacher/student review

Let's think about the ideas we used yesterday that will be helpful to get ready for reading.

Looking at the front cover and title and say aloud responses to the 'before reading' checklist –students contribute and articulate ideas. Teacher scribes student suggestions, questions, words etc.

Before reading the story:

Today I am going to focus on all the thinking that takes place while I am reading. I am going to be asking myself lots of questions to make sure that my reading is 'on track'.

These are the questions I will ask myself:

Am I listening to myself while I read?

Am I using my Meaning Making Motor?

Have I reread and checked that it is making sense?

Have I asked myself questions?

Did I think ahead about what might happen next?

What reading actions will help me- visualising, predicting, paraphrasing.

Have I put myself into the story?

What information is important to remember?

Teacher scribes self-talk onto overhead.

Teacher models self talk while reading

While reading, teacher pauses and vocalises responses to questions raised before reading.

Teacher models rereading and self-correcting behaviours as well as self-questioning strategies while reading. The modelling is displaying to students how the text can be manipulated. Teacher models use of sticky notes to establish important information to remember, questions raised and new words or phrases.

Teacher/student review

Discuss what was helpful in gaining the most meaning from the text. Students offer suggestions about what they think worked/didn't work. Revisit sticky notes and discuss relevance of notes made.

Teacher and student articulate aloud the self talk required 'while reading'.

**WHAT AM I GOING TO THINK ABOUT
WHILE I READ ?**

While we read the book, "Flanders Fields", we need to think about all the things that might help us while we are reading.

We need to ask ourselves.....

Are we listening to ourselves while we read?	
Are we using our Meaning Making Motor?	
Have we reread and checked that it is making sense?	
Have we asked ourselves questions?	
Did we think ahead about what might happen next?	
What actions will help us-visualising, paraphrasing, predicting.	
Have we put ourselves into the story?	
What information is important to remember?	

(Munro 2004)

Session Three

Text: Luke's Way of Looking

Focus: 'After reading' Metacognitive Strategies

Teacher/student review

Revisit checklists for 'before reading' and 'while reading,' encouraging students to say aloud the thinking strategies involved. Students contribute in activating prior knowledge and formulating 'ready to read' plan. Students and teacher say aloud what will be helpful in reading this text.

Teacher reads the text

Teacher uses shared reading strategy continuing to use sticky notes to model the self talk required to make meaning from the text. Students are encouraged to share their thoughts during this process.

After the reading teacher reflects aloud the types of thinking that needs to take place upon completion of the reading:

What actions were helpful while I was reading?

Can I pick out the main points and describe what happened in order?

Did I like the story? How did it make me feel?

Did what I expect to happen actually happen?

What new ideas have I learned from this reading? How will I remember them?

Why might the writer have written this?

What new words did I see while I was reading? When might I use these words again?

What words did I find hard to read?

Teacher scribes the self-talk onto the overhead.

Teacher/student review

It is so important to get our thinking ready at every stage of reading- 'before reading' 'while reading' and 'after reading'. Let's think and say how it is helpful to use our thinking in our reading.

Teacher places completed "Thinking Checklist" on overhead.

Students say aloud the actions they found most useful in reading and understanding the text.

**WHAT AM I GOING TO THINK ABOUT
AFTER I READ ?**

After we read the book, "Luke's Way of Looking", we need to think about all the things that helped us after we read. Did our plan of action work?

We need to ask ourselves.....	
What actions were helpful while we were reading?	
Can we pick out the main points and describe what happened in order?	
Did we like the story? How did it make us feel?	
Did what we expect to happen actually happen?	
What new ideas have we learned from this reading? How will we remember them?	
What new words did we see while we were reading? When might we use these words	
What words did we find hard to read?	

(Munro 2004)

Session Four

Text: Through the Fence

Focus: Before, While and After reading metacognitive strategies

Teacher introduces text

"Thinking Checklist" is placed on the overhead and as a group discuss skills learned and associated self-talk.

Students work in pairs to discuss what they will need to include in their reading plan.

Each pair of students is given a handout, 'What am I going to think about before I start reading? With their partner students plan and discuss prior knowledge and experience and establish a plan of action using the title, front cover and pictures.

Students record their responses.

Teacher/ student discussion

Students share responses with the group.

Teacher asks, "*Are you ready to read?*"

Students read text

Students read the first chapter and mark with a sticky note where they were correct in their predictions, where they changed their predictions, when the reading didn't make sense and any new questions, themes, topic, words etc.

Discuss findings with particular focus on the helpfulness of their reading plan.

How did your thinking help you before you started to read?

Teacher/student review

Did you need to change your ideas while you were reading?

Students share sticky note locations in the text and explain the purpose of their jottings.

Why did you need to change your ideas?

How did your thinking change from the original plan?

Revisit 'Thinking Checklist' and students say how their 'before reading' ideas about the topic, words and themes assisted their reading.

Students and teacher articulate aloud the actions that were helpful.

**WHAT AM I GOING TO THINK ABOUT
BEFORE I START READING ?**

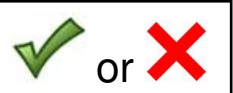
Before we read the book, "Through the Fence", we need to think about all the things that might help us in our reading.

We need to ask ourselves.....

What do the title and pictures remind us of?	
What do we know about this topic already?	
What pictures do we make when we hear the title?	
What ideas might come up in the text?	
What questions might the story answer?	
What words can we expect to see?	
Say the reading actions that might help when we read?	
Are we ready to read?	

(Munro 2004)

THINKING CHECKLIST



Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

(Munro 2004)

Session Five

Text: Through the Fence

Focus: Before, While and After Reading Metacognitive Strategies

Student/teacher discussion

Brief review of previous lesson and sharing of main ideas from 'before reading' plan. Students are introduced to the 'while reading' checklist and discuss ways that they will be able to manipulate the text. How will they be able to maintain and monitor their plan?

What will be important to think about while you are reading?

Are you prepared to use different actions to help you?

What do you need to ask yourself while you are reading?

Teacher distributes 'while reading' checklist.

Students read text

Continuing to work with the same partner, students read the next few chapters recording on sticky notes their "while reading" thoughts and ideas. These might include:

Where they paused and why?

When they used their MMM?

When they reread or took corrective action.

The actions that were helpful- visualising, paraphrasing, predicting.

New words or ideas.

Teacher/student discussion

Students share recorded responses and sticky note jottings.

What did you find helpful while you were reading?

Sharing of moments students used their Meaning Making Motor.

Sharing of reading actions that students found most helpful.

Sharing of ideas that students considered to be relevant or important.

Teacher/student review

Revisit 'Thinking Checklist' and students articulate the 'while reading' actions and ideas that were helpful during the reading.

**WHAT AM I GOING TO THINK ABOUT
WHILE I READ ?**

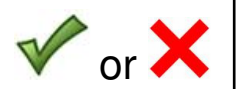
While we read the book, "Through the Fence", we need to think about all the things that might help us while we are reading.

We need to ask ourselves.....

Are we listening to ourselves while we read?	
Are we using our Meaning Making Motor?	
Have we reread and checked that it is making sense?	
Have we asked ourselves questions?	
Did we think ahead about what might happen next?	
What actions will help us- visualising, paraphrasing, predicting.	
Have we put ourselves into the story?	
What information is important to remember?	

(Munro 2004)

THINKING CHECKLIST



Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

(Munro 2004)

Session Six

Text: Through the Fence

Focus: Before, While and After reading Metacognitive Strategies

Teacher/student discussion

Revisit thinking checklist for 'before reading', 'while reading' and 'after reading'.

Before continuing with the reading of the text focus on the 'after reading' strategies and encourage students to say aloud what they will do after the reading.

Students to check the sticky notes already placed in the text and discuss the following:

Have my predictions been right so far?

How have I changed my thinking?

Which words have been difficult?

What actions have been helpful in the reading?

Students read text

While reading, students continue to place sticky notes with their thoughts, questions, understandings etc.

Students continue to use the checklist to assist the understanding of the reading.

After the text has been read students work with a partner to focus on what they need to think about after the reading. Students record their responses on the checklist hand-out.

Teacher/student review

Teacher places thinking checklist on the overhead.

Students share their 'after reading' thinking and use their sticky notes to confirm what may be important to remember. New words and ideas are listed and students suggest where these may be used again. Possible reasons for the author's decision to write this text are also discussed and students are asked to pick out the main points and describe what happened in order.

Revisit thinking checklist and students articulate aloud the strategies that were most helpful at each stage of reading.

Students are given their own personal laminated copy of the checklist for 'before reading', 'while reading' and 'after reading' to take to their classroom.



**WHAT AM I GOING TO THINK ABOUT
AFTER I READ ?**

After we read the book, "Luke's Way of Looking", we need to think about all the things that helped us after we read. Did our plan of action work?

We need to ask ourselves.....	
What actions were helpful while we were reading?	
Can we pick out the main points and describe what happened in order?	
Did we like the story? How did it make us feel?	
Did what we expect to happen actually happen?	
What new ideas have we learned from this reading? How will we remember them?	
What new words did we see while we were reading? When might we use these words?	
What words did we find hard to read?	

(Munro 2004)

THINKING CHECKLIST

Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

(Munro 2004)

Session Seven

Text: Grandad

Focus: Before, While and After reading metacognitive Strategies

Teacher/student discussion

Students are asked to bring their checklists to this session and together teacher and students revisit the types of questions that need to be asked at each stage of reading. Teacher introduces text and students activate prior knowledge and experience. It is a prior expectation that students will be main contributors to this discussion. Students articulate aloud to the group two reading actions that will help them in their reading.

Students read text

Students read the text and pause at marked pages to record responses on 'Checklist for Reading' sheet. Students complete this task independently. While reading, students continue to use sticky note reminders. Students use their personal prompt sheet as a reference to assist them to record their responses.

Teacher/student review

*What reading actions were helpful while you were reading?
How did they help you in your reading?*

Student share responses with a particular focus on what was helpful before, while and after the reading. Students also share the new understandings and use the sticky note jottings to support this
eg. New words, important things to remember etc.

Students articulate aloud the before, during and after thinking that was most helpful.

CHECKLIST FOR READING

What I did...	
Is there a part of this story that reminds you of something in your own life?	
Is there a part of this story that reminds you of something else you have read?	
Is there a part of this story that reminds you of something else?	
What will happen next?	
What is the story mostly about ?	
What are the important parts of this story?	

(Eilers & Pinkley 2006)

THINKING CHECKLIST

Before reading



- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

	or	

(Munro 2004)

Session Eight

Text: Way Out There

Focus: Before, While and After Reading Metacognitive Strategies

Teacher/student shared reading

New text is introduced and prior knowledge and experience is activated – again, most of this information is generated by students. Students continue to use their own checklists to monitor if they are asking themselves the right questions related to 'before reading' Teacher initiates discussion with particular focus on reading actions that will be most helpful – *visualising as they read, listening to themselves as they read, continually make predictions and change the prediction if they are not on the right track, paraphrase etc.* Teacher and students read the text.

After reading

Discuss which aspects of the text are important to remember.

How can we decide what is most important to remember?

What is most important?

What is least important?

Teacher shows overhead: Story Graph

Using this graphic organizer students make decisions about what was important in the reading. Teacher demonstrates how to record the student's responses and students must provide evidence to justify why they consider information to be of greater or lesser importance. Each student shares one fact from the text.

Teacher/student review

Which areas of the thinking checklist were useful in making decisions about important information to remember?

Teacher and students discuss why it is necessary to make decisions while reading about what will be important to remember. Also, how this information will be helpful in understanding what I am reading.

Review strategies used to complete the task.

Students articulate aloud the before, during and after thinking strategies used.

STORY MAP

Important



Not
Important

(Eilers & Pinkley 2006)

THINKING CHECKLIST



Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

(Munro 2004)

Session Nine

Text: The Red Planet

Focus: Before, While and After Reading Metacognitive Strategies

Teacher/student discussion

Students are introduced to the text and prior knowledge and experience is generated. Teacher explains that students will be reading the text and completing their own Story Graph.

Students are reminded to look over their checklist before commencing to read. Students are also reminded to place their sticky notes on information they consider important to remember.

Students read text

Students are given their own blank Story Graph to complete. Students will need to choose six new understandings from the text and then plot this information according to its degree of importance. This task is carried out independently.

Teacher/student discussion

Students choose one new understanding from their reading to share with the group and justify why they gave it the particular level of importance. Students also share what was helpful in their reading that contributed to their decision.

When might this information be useful again?

Teacher/student review

Review strategies used to complete the task.

Students articulate aloud the before, during and after thinking that was useful in this session.

STORY MAP



Important



**Not
Important**

(Eilers & Pinkley 2006)

THINKING CHECKLIST

 or 	

Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

(Munro 2004)

Session Ten

Text: The Asteroid

Focus: Before, While and After Reading Metacognitive Strategies.

Teacher/student discussion

Teacher introduces text and students activate prior knowledge and experience.

Revisit the thinking that needs to be taking place at each stage of reading. The students are asked to articulate aloud their 'before reading' thinking.

Before students read the text the teacher reminds the students about using their sticky notes to mark any relevant information in the text.

Students read the text

Upon completion of the reading the students are shown a table containing questions to address at each stage of reading. Teacher and students read through the questions together, sharing examples of possible responses as they go.

Students complete the comprehension activity independently.

Teacher/student review

As a group discuss responses.



Students articulate the 'before', 'while' and 'after' thinking that was helpful in answering the questions.

Question Checklist

	Before reading ideas	While reading ideas	After reading ideas
Where does the story take place?			
When does the story take place?			
Who are the main characters?			
Who are other important characters?			
What was the problem in the story?			
How did Tor try to solve the problem? Explain			
Was the problem solved? Explain			
What did you learn by reading the story?			
Can you think of a different ending?			

(Munro 2004)

THINKING CHECKLIST

 or 	

Before reading

- What do the title and pictures remind me of?
- What do I know about this topic already?
- What pictures do I make when I hear the title?
- What ideas might come up in the text?
- What questions might the story answer?
- What words can I expect to see?
- Say the reading actions that might help when I read?
- Am I ready to read?

While reading

- Am I listening to myself while I read?
- Am I using my Meaning Making Motor?
- Have I reread and checked that it is making sense?
- Have I asked myself questions?
- Did I think ahead about what might happen next?
- What actions will help me- visualising, paraphrasing, predicting?
- Have I put myself into the story?
- What information is important to remember?

After reading

- What actions were helpful while I was reading?
- Can I pick out the main points and describe what happened in order?
- Did I like the story? How did it make me feel?
- Did what I expect to happen actually happen?
- What new ideas have I learned from this reading?
- How will I remember them?
- Why might the writer have written this?
- What new words did I see while I was reading?
- When might I use these words again?
- What words did I find hard to read?

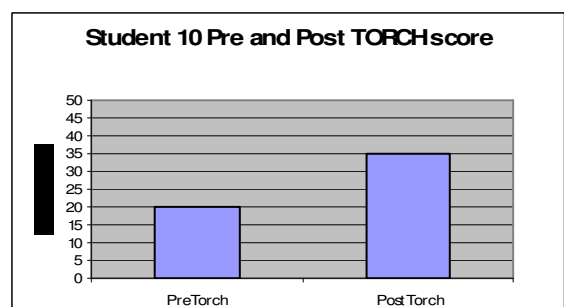
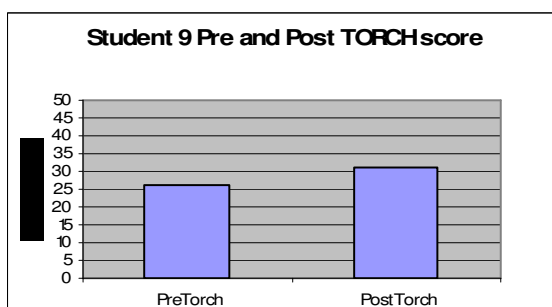
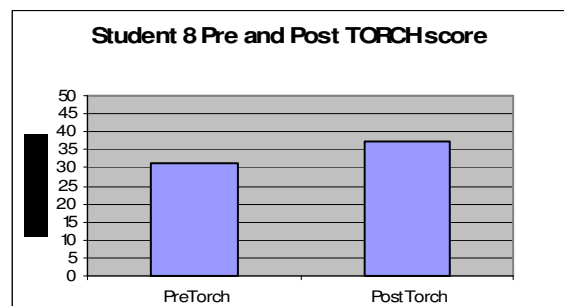
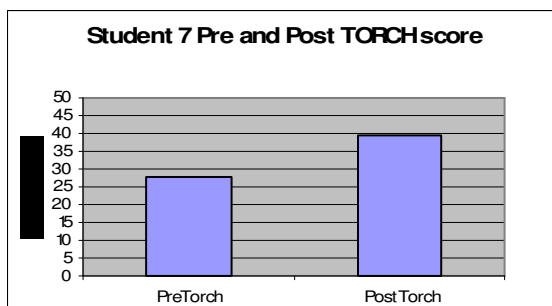
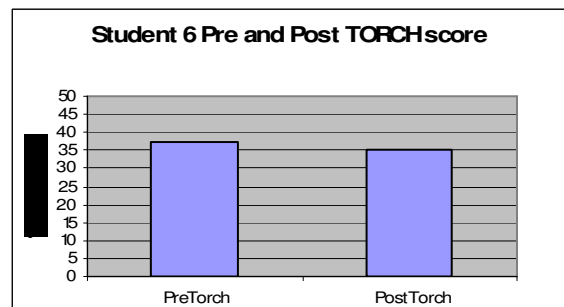
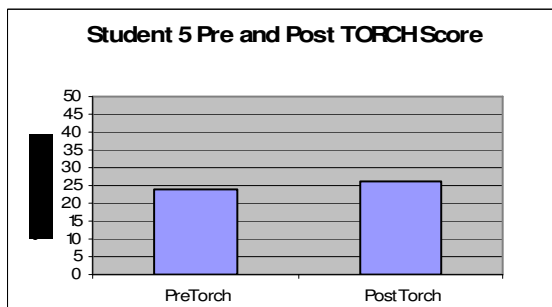
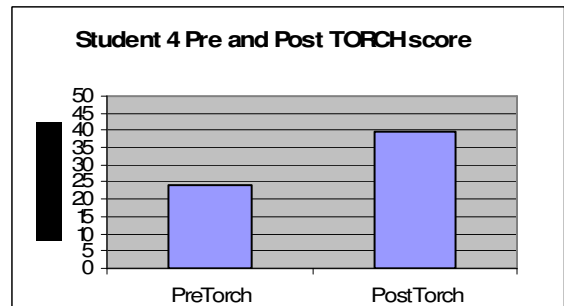
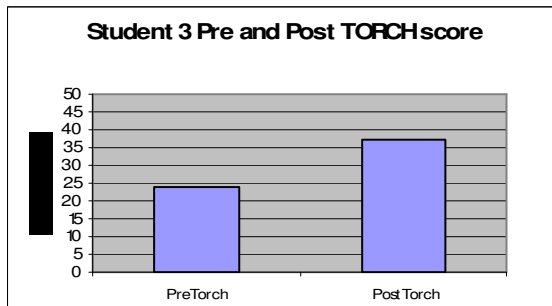
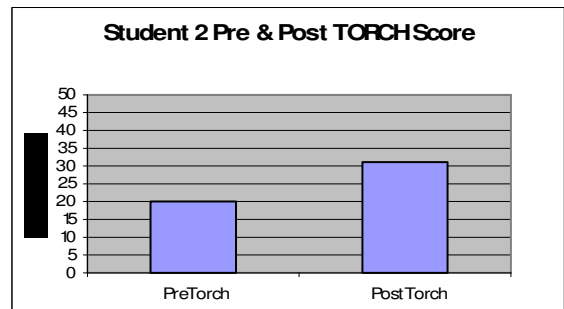
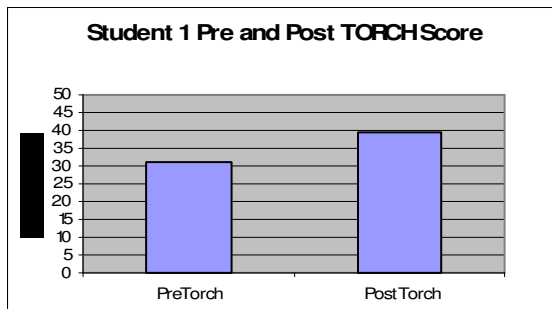
(Munro 2004)

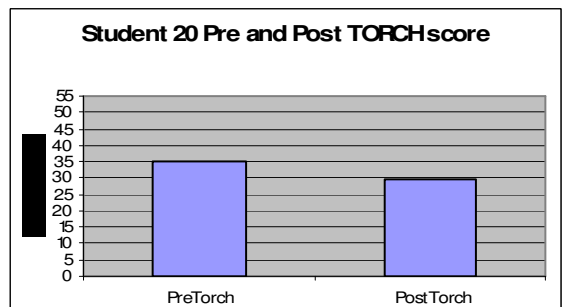
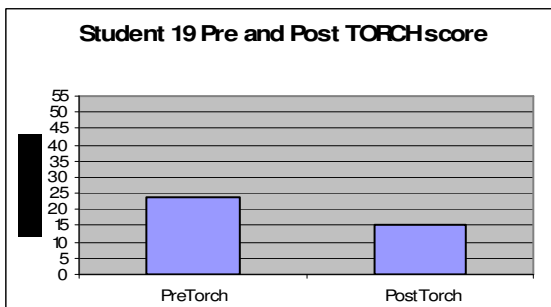
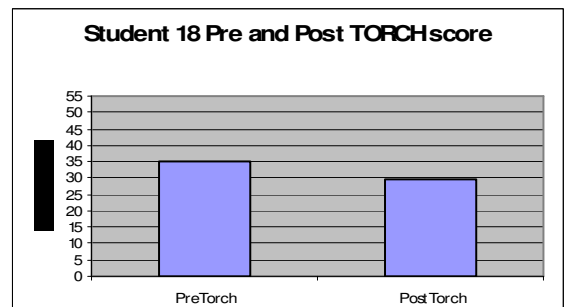
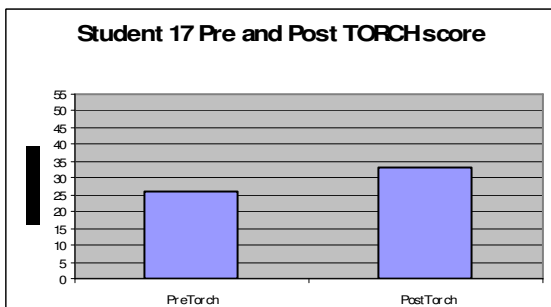
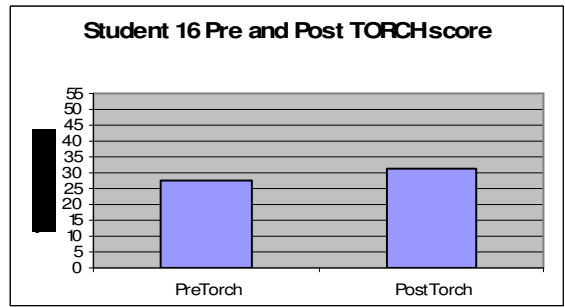
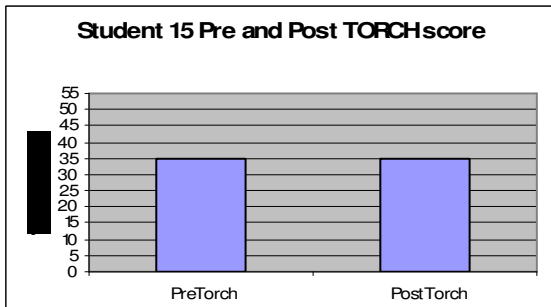
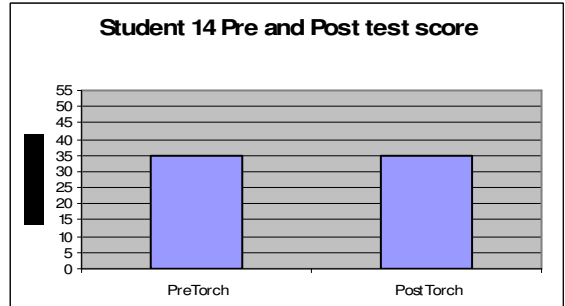
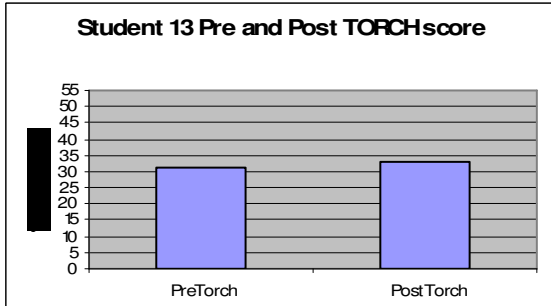
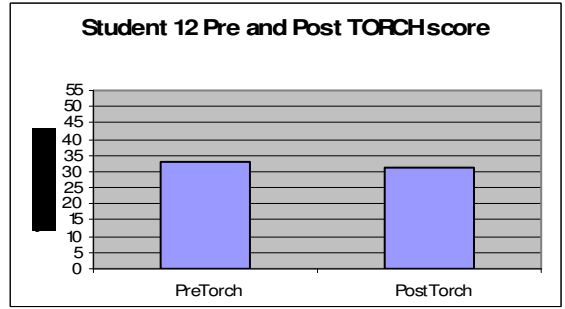
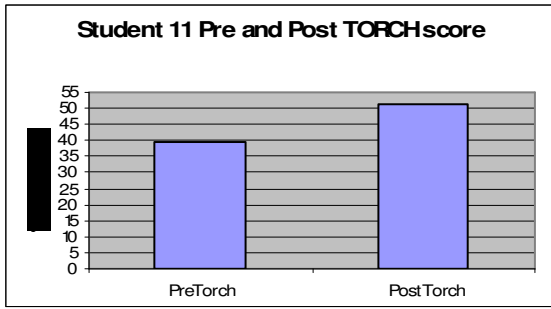
Appendix 3**Attendance Record**

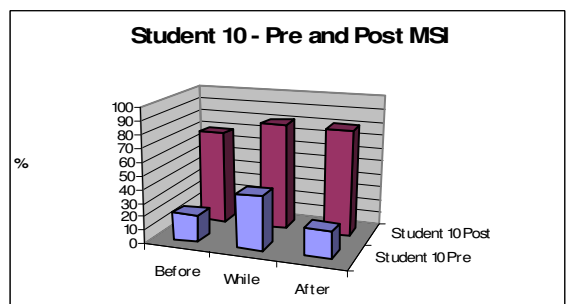
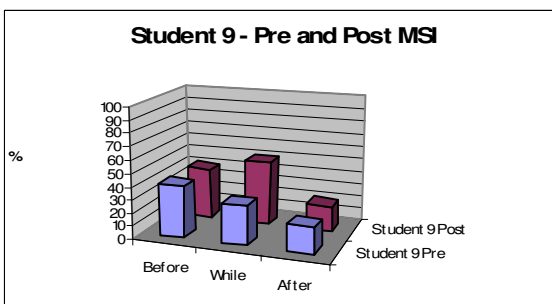
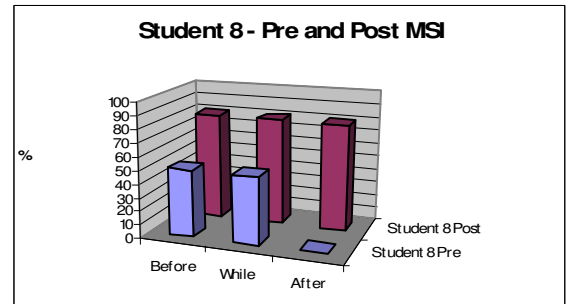
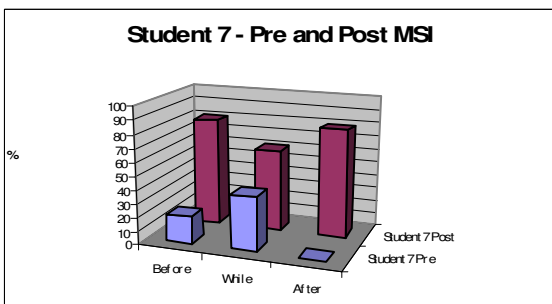
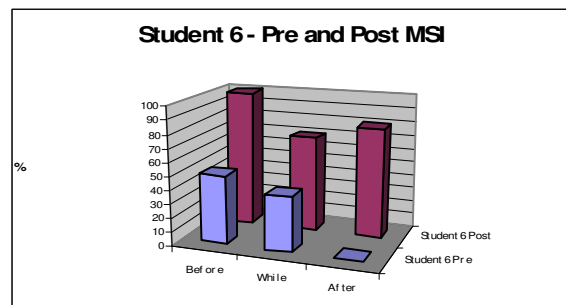
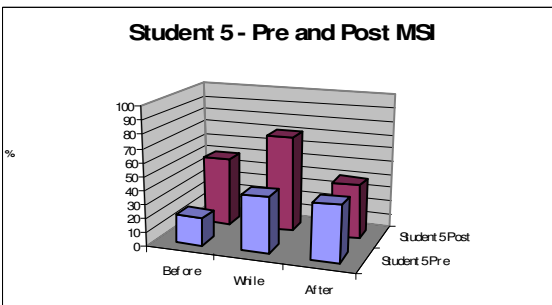
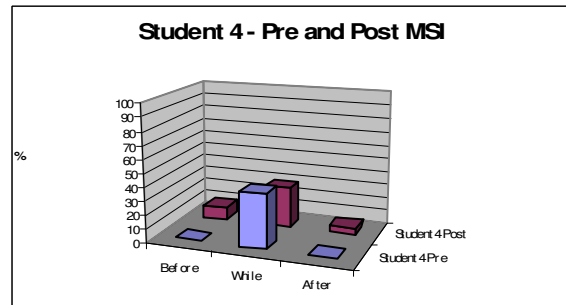
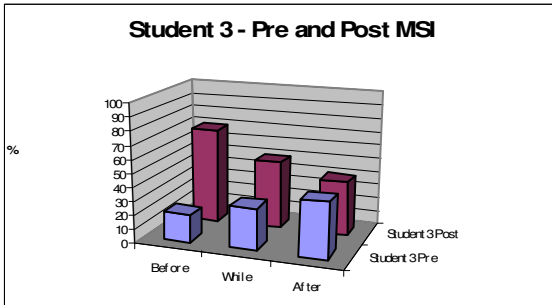
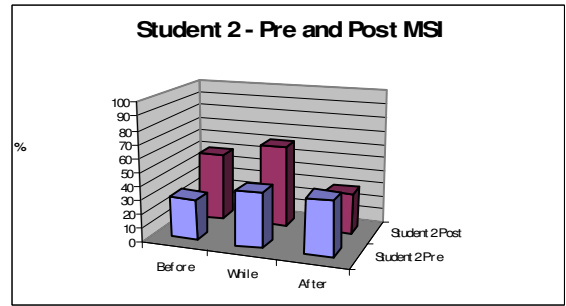
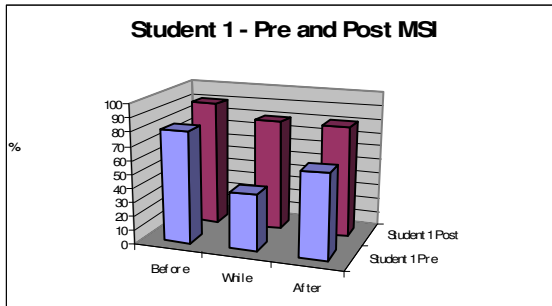
Session	1	2	3	4	5	6	7	8	9	10
Student 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 6	✓	✓	abs	abs	abs	✓	✓	✓	✓	✓
Student 7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 9	✓	✓	✓	✓	✓	abs	abs	✓	abs	✓
Student 10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student 20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

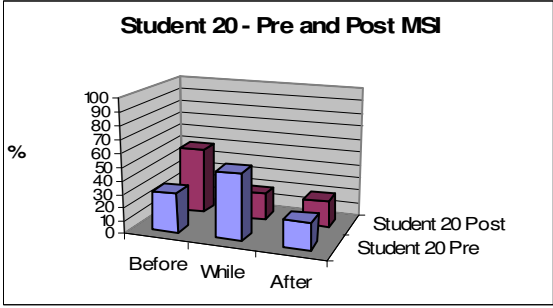
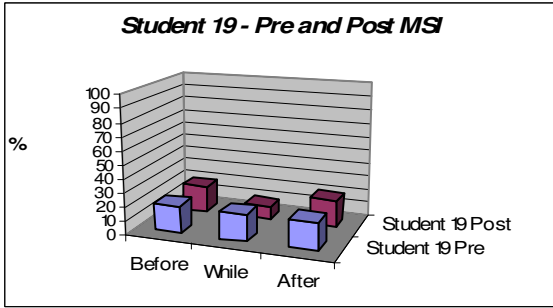
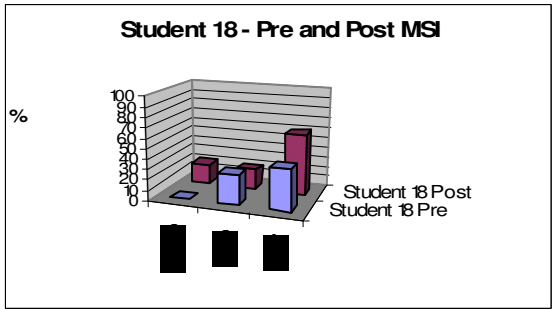
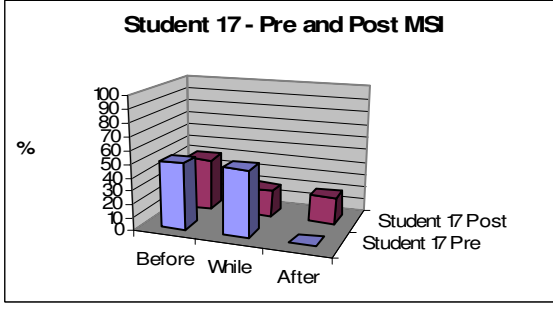
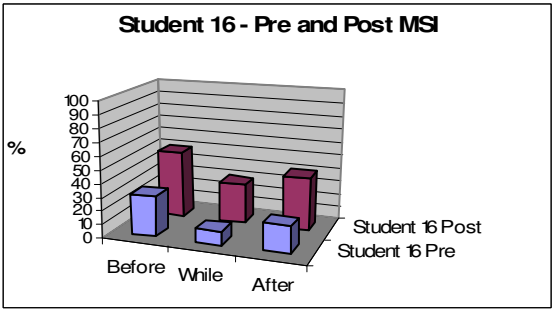
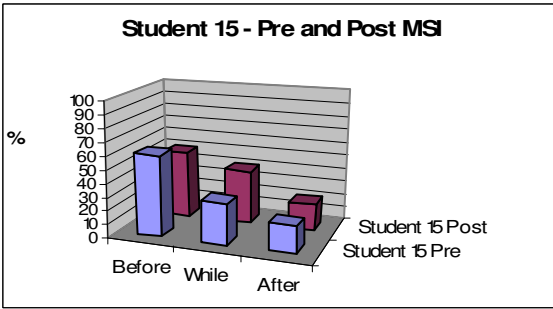
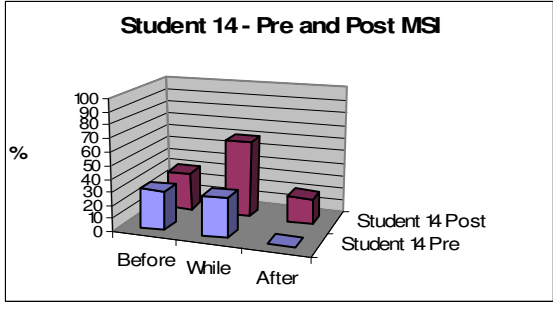
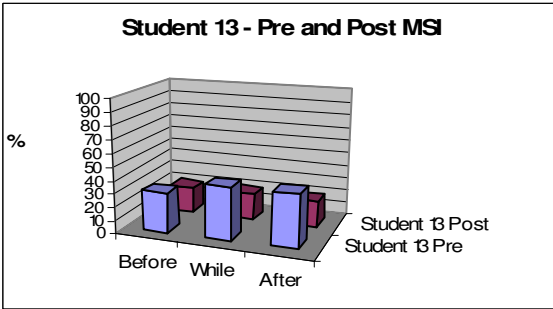
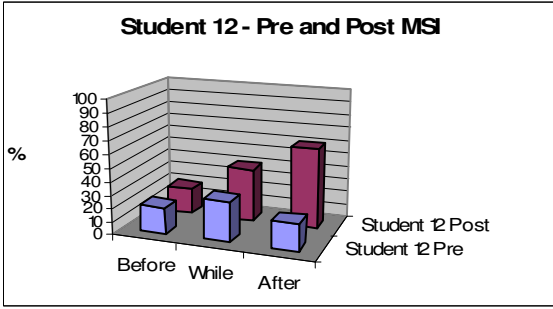
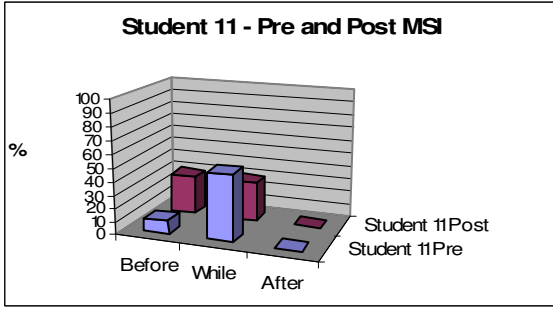
Appendix 4

Results









Pre and Post TORCH Score for Teaching Group and Control Group		
	PreTorch	PostTorch
Student 1	31.2	39.6
Student 2	20.1	31.2
Student 3	24.1	37.2
Student 4	24.1	39.6
Student 5	24.1	25.9
Student 6	37.2	35.1
Student 7	27.7	39.6
Student 8	31.2	37.2
Student 9	25.9	31.2
Student 10	20.1	35.1
Student 11	39.6	51.4
Student 12	33.1	31.2
Student 13	31.2	33.1
Student 14	35.1	35.1
Student 15	35.1	35.1
Student 16	27.7	31.2
Student 17	25.9	33.1
Student 18	35.1	29.5
Student 19	24.1	15.2
Student 20	35.1	29.5

Percentage Score for Pre and Post Metacomprehension Strategy Index for Teaching Group and Control Group								
	Before	While	After	Total	Before	While	After	Total
Student 1	80	40	60	60	90	80	80	84
Student 2	30	40	40	36	50	60	30	56
Student 3	20	30	40	28	70	50	40	56
Student 4	0	40	0	16	10	30	5	20
Student 5	20	40	40	32	50	70	40	56
Student 6	50	40	0	36	100	70	80	84
Student 7	20	40	0	24	80	60	80	72
Student 8	50	50	0	40	80	80	80	80
Student 9	40	30	20	32	40	50	20	40
Student 10	20	40	20	28	70	80	80	76
Student 11	10	50	0	24	30	30	0	24
Student 12	20	30	20	24	20	40	60	36
Student 13	30	40	40	36	20	20	20	20
Student 14	30	30	0	24	30	60	20	40
Student 15	60	30	20	40	50	40	20	40
Student 16	30	10	20	20	50	30	40	40
Student 17	50	50	0	40	40	20	20	28
Student 18	0	30	40	20	20	20	60	28
Student 19	20	20	20	20	20	10	20	20
Student 20	30	50	20	36	50	20	20	32