The hypothesis of this study is that developing the use and understanding of verb tense in sentences through the use of coloured visual prompts in grade two students with oral language difficulties, impacts significantly on their oral language and reading comprehension at a sentence level.

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ABSTRACT

Many students with literacy difficulties have pre-existing oral language difficulties. Oral language skills are required to not only support children's thinking and learning but are also fundamental in developing their knowledge of word meanings (synonyms, antonyms), grammar and sentence propositions and understanding of how ideas are linked into themes (topic/theme, pragmatic/dispositional) to support text comprehension (Munro, 2007). Current research findings state that it is both phonological awareness and oral language skills that dictates reading development.

The hypothesis of this study is that developing the use and understanding of verb tense in sentences through the use of coloured visual prompts in grade two students with oral language difficulties impacts significantly on their oral language and reading comprehension at a sentence level. Research on children's syntactic knowledge indicates that children with poor syntactic awareness perform poorly on word recognition and reading comprehension tasks and have difficulty comprehending and using complex sentences in spontaneous speech.

This study compared two groups (control and treatment) who were explicitly taught to use and comprehend verb tense (past, present and future) at a sentence level. The control group used a traditional direct therapy approach, while the treatment group was exposed to an alternative therapy approach that utilised coloured visual prompts which represent the structure of a sentence. Results did not support the hypothesis, however reinforces that children respond better when teaching is explicit, repetitive and targeted at their individual learning level.

INTRODUCTION

With the introduction in recent years of state and nationwide testing of reading levels, the Federal Government has responded by instituting several enquiries looking into the high levels of literacy failure in Australia (Hempenstall, 2006). There is a wealth of statistics available. For example, in 1997, a survey of Australian schools found that approximately 30% of all students in grades three to five do not meet national benchmarks in reading and writing (National School English Literacy Survey, 1997 as cited in Woolley, 2005). This increased to as high as 60% for disadvantaged children. A study in 2000, determined that one in five Australian children require support to master reading and writing (Federal Government Study, 2000) while Elkins (2002) found that 15% of children who fail national benchmark tests in reading, continued to have reading difficulties despite having received intervention. This has implications in regards to the types of programming and intervention we are currently providing in schools.

It was previously thought that having appropriate phonological awareness skills alone is sufficient for reading, however current research indicates that it is a combination of phonological awareness and oral language skills that dictates reading development (Nation & Snowling, 2004). Oral language skills refer to the understanding of spoken language (receptive) and the ability to use language to express yourself (expressive). Oral language skills are required to not only support children's thinking and learning but are also fundamental in developing their knowledge of word meanings (synonyms, antonyms), grammar and sentence propositions and understanding of how ideas are linked into themes (topic/theme, pragmatic/dispositional) to support text comprehension (Munro, 2007). Therefore, many children who are presenting with literacy difficulties would have pre-existing difficulties with oral language (Speech Pathology Australia, 2005).

The importance of developing oral language skills in children has been subsequently reflected in the introduction of the Language Disorder Program (LDP) (Munro, 2005) into Victorian Government schools in 2005 and the Oral Language Supporting Early Literacy (OLSEL) Pilot Program using the ICPALER Framework (Munro, 2007) by the Catholic Education Office (CEO) into thirty Catholic primary schools around Melbourne this year. The aim of both programs are to support students with language disorders and difficulties by providing specific curriculum and professional development on oral language skills to class teachers and special educators (Department of Education, State Government Victoria, 2007). Both the Department of Education and Catholic Education Office (CEO) oral language programs do not replace the current speech pathology services available to schools.

During preschool, children gain their understanding and use of language through peer and adult modeling of language patterns. Most of their adult morphology, syntax and phonology appear by the time they start kindergarten. Morphology refers to word beginnings and endings which act as grammatical markers (eg. *-ing, -ed*) while the rules in which the structure of the sentence are governed is known as syntax (Owens, 1996). Several studies have shown that teaching children to actively reflect on the syntax of sentences has a positive effect on their recoding and reading comprehension, particularly in young readers and pre-adolescents (Abrahamsen & Shelton, 1989).

A study by Gaux & Gombert (1999) analysed the links between syntactic awareness and reading in pre-adolescent readers (grade six students). They found that syntactic awareness was the main contributing factor in determining a child's performance in reading comprehension and supported the student's word recognition skills in three ways. This included the ability to:

1. Decode unfamiliar words.
2. Identify sentence structure and repair phrases to improve comprehension.
3. Learn complex rules of pronunciation and recognition of irregular words.

Similar results were also observed in a study by Mokhtari & Thompson (2006) where positive performances on reading fluency and comprehension were attributed to higher levels of syntactic awareness. 'Good readers' had strong syntactic awareness skills which enabled them to read sentences with proper intonation and comprehend text at higher levels.

Scarborough (1990) found that preschool children who were later identified with reading difficulties showed a more limited range of syntax in their speech than their controls. Poor readers will often demonstrate difficulty comprehending syntactically complex sentences and in spontaneous speech, use less complex syntactic structures and make more grammatical errors than good readers (Mann, Shankweiler, & Smith, 1984). This can also be said of students with oral language difficulties. Nation & Norbury (2005) found that students with speech and language impairment showed weaknesses in semantic (meaning) and syntactic knowledge and also performed poorly on tasks designed to assess morphosyntax.

Bishop & Adams (1990) conducted a longitudinal study of children with specific language impairment (SLI). They found that a child's syntax and expressive semantic ability was a better predictor of later reading ability than measures of phonological processing. They also explored whether students who after intervention performed within the "normal" range on language and literacy skills at the age of 8;5, continued to demonstrate appropriate literacy skills at ages 15 -16. Results showed that students performed more poorly on phonological processing and literacy assessments at ages 15-16, indicating that continued language support to supplement reading instruction was required.

As a Speech Pathologist working in the CEO, much of our caseload is focused on developing oral language skills in students with oral language difficulties and Severe Language Disorder (SLD). Severe Language Disorder is a diagnosis given to students who present with significant difficulties in either their receptive and/or expressive oral language skills in the absence of a cognitive or hearing impairment. It must also be established that these significant oral language difficulties are not due to having a language background other than English (LBOTE).

The CEO speech pathology service was established in 1995 and is based on an agent training model where an agent (eg. parent, integration aide) is trained to complete ongoing regular practise with the student. Research has shown that "students' communication skills are enhanced significantly when trained in their own environments" (Roberts, Ferdinando & McCusker, 2000, pg. 27) on a regular basis. Throughout the years, the service has developed various parent programs targeting fluency (stuttering), voice, articulation, phonological awareness, grammar, oral language and social language. The way in which we currently develop morphology and syntax is through a traditional direct therapy approach.

As a profession in general and a service within the CEO, we are continually referring to current research to ensure that the therapy we provide is evidence-based and reflects what is best practice. Alison Bryan, a speech and language therapist in the United Kingdom published a new therapy approach in 1997 titled "Colourful Semantics". This alternative therapy approach is based on using coloured visual prompt cards to 'show' the structure of a sentence. Each coloured card represents a word or part of a sentence. Originally, this approach was designed to support the development of verb argument structure in SLI children but has been expanded to also develop vocabulary, spoken and written language and comprehension and development of written narrative structure. Colourful Semantics continues to evolve and is being used across a wide variety of settings and schools in the UK and more recently in Australia.

A study by Ebbels & Lely (1997) used a visual coding scheme (based on Bryan's Colourful Semantics and J. Lea's 1965 Colour Pattern Scheme) to develop use and comprehension of "wh" questions and passive sentences in four students with severe language impairment. The results showed that all showed progress in these areas but the significance of the improvement and whether they maintained this knowledge was varied amongst the group.

A recent study (Bolderson, Coelho & Dosanjih – in progress, as cited in Bryan et al., 2007) explored using colour coding of verb argument structure in six children. All demonstrated significant improvements on the *Renfrew Action Picture Test* and *Bus Story* (Renfrew, 1997) which assesses expressive oral language and oral narrative skills respectively. A survey of speech and language therapist's and teacher's views of the use of colourful semantics in school settings is being currently completed in the UK.

RESEARCH QUESTIONS & HYPOTHESIS
With the recent introduction of this alternative approach into the CEO speech pathology service (which has been altered for our purposes), this action research project aims to further examine the effectiveness of this approach. This study inquires the following:

1. Does using coloured visual prompts in developing sentence structure more effective than current intervention practice?
2. Does improving the understanding and use of verb tense in sentences result in an improvement in sentence reading comprehension?
3. Do students who have average nonverbal skills perform differently to students who have below average nonverbal skills during therapy that uses coloured visual prompts?

Hypothesis : That developing the use and understanding of verb tense in sentences through the use of coloured visual prompts in grade two students with oral language difficulties impacts significantly on their oral language and reading comprehension at a sentence level.

METHOD

Design
The study used two independent groups of subjects and followed an OXO design.

Group 1 -   Control group
Group 2 -   Treatment group

Changes in receptive and expressive oral language skills and sentence reading comprehension were monitored following explicit teaching of past, present and future tense within the subject-verb-object sentence structure for grade 2 students who have oral language and reading difficulties.

Participants
Students nominated to participate in this project had not met grade 2 benchmarks on their reading level and record of oral language assessments, which were completed as part of school testing at the beginning of this year.

Students were required to complete a battery of assessments including; *Renfrew Action Picture Test* (Renfrew, 1997), *Kaufman Brief Intelligence Test – 2nd Edition* (KBIT2) (Kaufman & Kaufman, 2004) – Matrices subtest, *Clinical Evaluation of Language Fundamentals – 4th Edition (CELF-4)* (Semel, Wiig, & Secord, 2006) – Sentence Structure subtest and a Sentence Reading Comprehension Task. Students chosen demonstrated moderate to significant expressive language difficulties on the grammar part of the Renfrew Action Picture Test (i.e. more than 1.5 standard deviation below the mean).

Four control students and four treatment students, matched for chronological age (*M=7;2 years, range=7;0-7;8*), nonverbal ability, Severe Language Disorder (SLD) identification and expressive oral language skills, were selected to participate in this action research. Matching according to gender was possible for all pairs except one. All children attended the one school, located in the north-western area of Melbourne and are currently in grade 2. Both the control and treatment groups included two pairs of students with SLD (average nonverbal ability) and two pairs of students with below average nonverbal ability. Six out of the eight participants had a language background other than English. This included Assyrian, Chaldean and Arabic.

Table 1: Participants

Student	Age (yrs)	Gender	Group	Nonverbal Skill	SLD	LBOTE	Speech Therapy	Reading Recovery	Reading Level	ROL Result
A	7;1	M	C	Average	Y	N	Y	N	5	21
B	7;0	M	C	Average	Y	Y	Y	Y	0	14
C	7;0	M	C	Below Avg	N	Y	N	N	0	33
D	7;0	M	C	Below Avg	N	Y	N	N	8	23
A1	7;7	M	T	Average	Y	Y	Y	Y	0	13
B1	7;8	F	T	Average	Y	Y	Y	Y	5	26
C1	7;1	M	T	Below Avg	N	N	N	N	0	16
D1	7;2	M	T	Below Avg	N	Y	N	N	3	16

* LBOTE = Language background other than English
* ROL = Record of Oral Language

Materials

The following assessments were completed prior to and following treatment:

- The *Renfrew Action Picture Test* (RAPT) (Renfrew, 1997) is a standardised test that stimulates samples of spoken language that can be analysed in regards to the amount information given and the grammatical structures used. It includes ten action pictures and is normed up to the age of 8;5 years.

- The Sentence Structure subtest of *CELF-4* (Semel et al., 2006) is one of the receptive oral language subtests that assesses the student's ability to comprehend sentences of increasing length and complexity. It involves twenty-six items and is normed for students between the ages of 5 - 8 years.

- The *Sentence Reading Comprehension Task* (Appendix 3) was constructed for the use of this project. Students were presented with a picture that had three accompanying sentences written alongside it. Students were asked to identify the sentence that best matched the picture. Student's responses were analysed in regards to their knowledge of past, present and future tense and awareness of semantic versus syntactic variations within sentences.

    The following are examples of two test items. One assesses the student's semantic knowledge using the constant present progressive tense by changing the subject of the sentence, while the second assesses the student's knowledge of syntax by varying the tense of the sentence.

    Semantic Variation
    a. The mother is sleeping.
    b. The baby is sleeping.
    c. The girl is sleeping.

    Syntax Variation
    a. The boy dropped the saucepan.
    b. The boy is dropping the saucepan.
    c. The boy will drop the saucepan.

- The Matrices subtest of *KBIT2* (Kaufman & Kaufman, 2004) was only administered during pre-testing and to students who had not previously completed a cognitive assessment (e.g. *Weschler Intelligence Scale for Children –4th Edition*). The subtest measures nonverbal ability and requires the student to demonstrate an understanding of both meaningful and abstract visual stimuli. The student is instructed to identify out of multiple choice answers, the visual stimulus that relates or completes the visual problem presented.

Procedure

PRE-TESTING

Each student was assessed individually for approximately thirty minutes. Students were not given any time limit for the Sentence Reading Comprehension Task, so times for assessment varied depending on the student's reading ability. The battery of assessments were administered in the following order:

1. Sentence Structure (CELF-4)
2. RAPT
3. Sentence Reading Comprehension Task
4. KBIT2 (if cognitive assessment had not already been administered)

Following pre-testing the matched pairs were allocated to the control or treatment group.

Table 2: Summary of Pre-testing results

Pre-Testing Assessment (Raw Scores)	Control Group	Treatment Group
Sentence Structure		
M	16.5	15.3
SD	5.3	0.5
Range	12-24	15-16
RAPT – Information result		
M	24.4	21
SD	2.9	2.9
Range	18.5-28.5	17-24
RAPT – Grammar result		
M	17.3	17.8
SD	3.0	3.9
Range	14-21	14-23
Sentence Reading Comprehension Task		
M	7.8	5.8
SD	3.1	1.0
Range	5-12	5-7

TEACHING SESSIONS

There were ten teaching sessions in total. Each session lasted thirty minutes and were conducted in the morning during the student's literacy blocks. The control group was seen for the first half hour followed by the treatment group. The ten sessions were spaced out over three weeks. Sessions were conducted daily if possible, however this was not always feasible due to clashes in scheduling.

Each session followed a similar schedule and were based on the structure outlined in the *Simple Grammar Programs* developed by the Speech Pathology Department, Catholic Education Office.

a. Introduction or revision of the tense rule using a picture stimulus. The clinician modeled the structure and requested the students to repeat.

b. The tense rule was then rehearsed using a matching activity. The clinician modeled sentences and the students had to identify the picture discussed.

c. The students then completed a practise activity where they were asked questions to independently describe picture stimuli which elicited the target tense structure. These responses were recorded and comments regarding the student's learning were made.

d. The tense rule was reviewed and discussed again amongst the group.

e. At the end of each session, students were asked to articulate what they had learnt and when they thought they would use the structure taught.

Sessions for the control and treatment groups followed the same plan, however the treatment group had visual prompts representing key parts of the sentence introduced. During the ten sessions, sessions 3, 6 and 8 were dedicated to revising the tense structures taught and the last two sessions were used to review all three structures.

The following is a brief description of the session schedule. For a more detailed description, refer to Appendix 2.

Session 1	*Present progressive singular (is – ing)*
Session 2	*Present progressive plural (are – ing)*
Session 3	*Review of present progressive rule*
Session 4	*Regular past tense (-ed) – verbs ending with /t/*
Session 5	*Regular past tense (-ed) – verbs ending with /d/ and /ed/*
Session 6	*Review regular past tense (-ed)*
Session 7	*Future Tense (will)*
Session 8	*Review future tense*
Session 9 & 10	*Mixed revision of all structures*

RESULTS

TRENDS IN ORAL LANGUAGE RESULTS

Expressive Oral Language Skills (Renfrew Action Picture Test - RAPT)
Unlike their pre-testing performance, all students answered in full sentences using a subject-verb-object structure on the RAPT at post-testing. The RAPT results were analysed according to the information provided and grammar used. Both raw scores and severity ratings were calculated for each student.

Grammar Analysis on the RAPT

Table 1: RAPT Grammar Raw Score Analysis (Pre/Post Testing)

Control	Pre Grammar Raw Scores	Post Grammar Raw Scores	Treatment	Pre Grammar Raw Scores	Post Grammar Raw Scores
A	14	22	A1	23	19
B	16	19	B1	16	25
C	18	27	C1	18	20
D	21	25	D1	14	25
M	**17.3**	**23.3**	*M*	**17.8**	**22.3**
SD	**3.0**	**3.5**	*SD*	**3.9**	**3.2**
Range	**14-21**	**19-27**	*Range*	**14-23**	**19-25**

Both the control and treatment groups made gains in their grammar raw scores, with the control group making a slightly greater improvement than the treatment group. The control group had a difference of 6 points between pre and post testing, while the treatment group improved by 4.5 points (Figure 1). The standard deviation in both groups pre-post testing were similar for both groups indicating that the groups had an equal amount of spread in their scores and improved equally (Table 1).

**Figure1: RAPT Grammar (Pre/Post Average Raw Scores)**
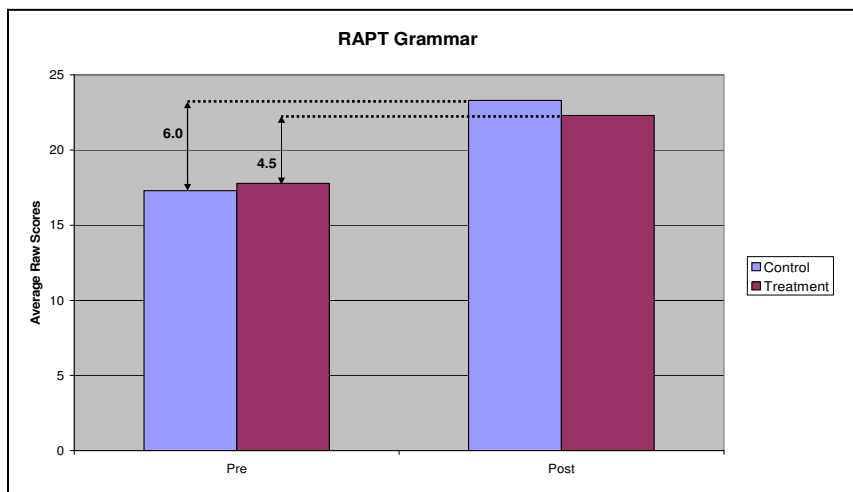
Improvements in raw scores for students A, C and D (control group) were significant enough to show a difference in their overall severity rating (Figure 2). Student A moved from being significantly below the average range for his age to being moderately below average, while students C & D went from being significantly below average to performing within the average range.

This change in severity rating also occurred within the treatment group where students B1 and D1 moved from being significantly below average to mildly below average and within the average range respectively.

It should be noted that the students who made the most significant gains and performed within the average range on post testing (i.e. students C, D & D1) were those who had not been diagnosed with a Severe Language Disorder (SLD).

Figure 2: RAPTGrammar (Pre/Post Severity Rating)

RAPT Grammar Severity Ratings Pre/Post
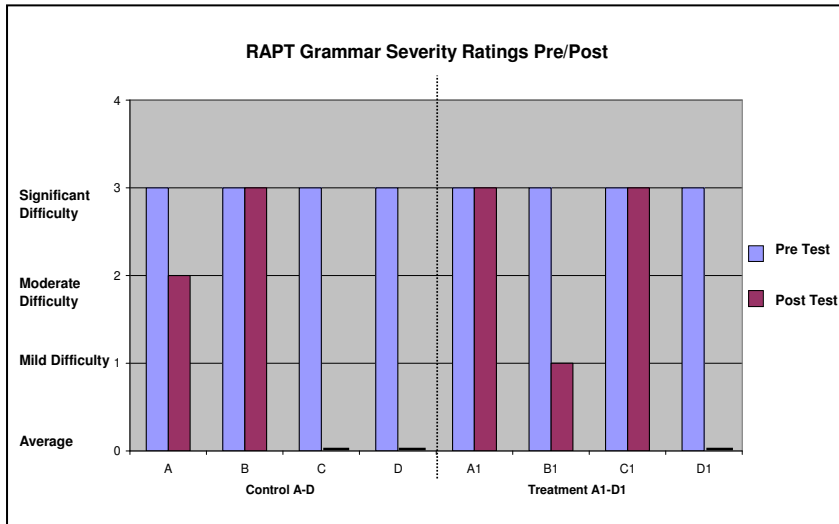
Information Analysis on the RAPT

Table 2: RAPT Information Raw Scores Analysis (Pre/Post Testing)

| Control	Pre Information Raw Scores	Post Information Raw Scores	Treatment	Pre Information Raw Scores	Post Information Raw Scores
A	22.5	25.5	A1	21	19
B	18.5	22.5	B1	17	28
C	28	32	C1	24	24.5
D	28.5	33.5	D1	22	31.5
M	**24.4**	**28.4**	*M*	**21**	**25.8**
SD	**2.9**	**5.2**	*SD*	**2.9**	**5.3**
Range	**18.5-28.5**	**22.5-33.5**	*Range*	**17-24**	**19-31.5**

Although the average score of the control group at post testing is greater than the treatment group, the groups performed very similarly. The average gain in raw score was 4 points for the control group and 4.8 points for the treatment group (Figure 3). All students made improvements with the exception of student A1 who regressed by two points (Table 2).

Figure 3: RAPT-Information (Pre/Post Average Raw Scores)
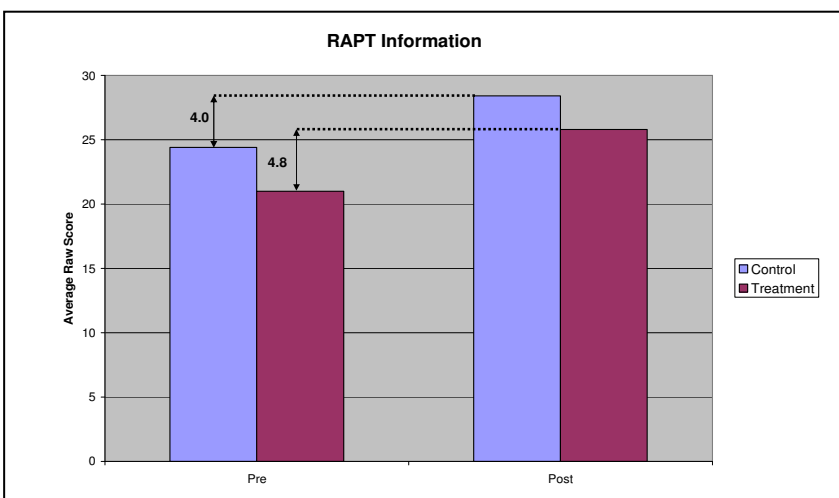
RAPT Information

Students C, D (control group) and D1 (treatment group) also performed within the average on information post testing. Despite making gains in their raw scores, students A, B, B1 and C1 continued to fall within the significantly below the average range for their ages (Figure 4).

Figure 4: RAPT-Information (Pre/Post Severity Rating)
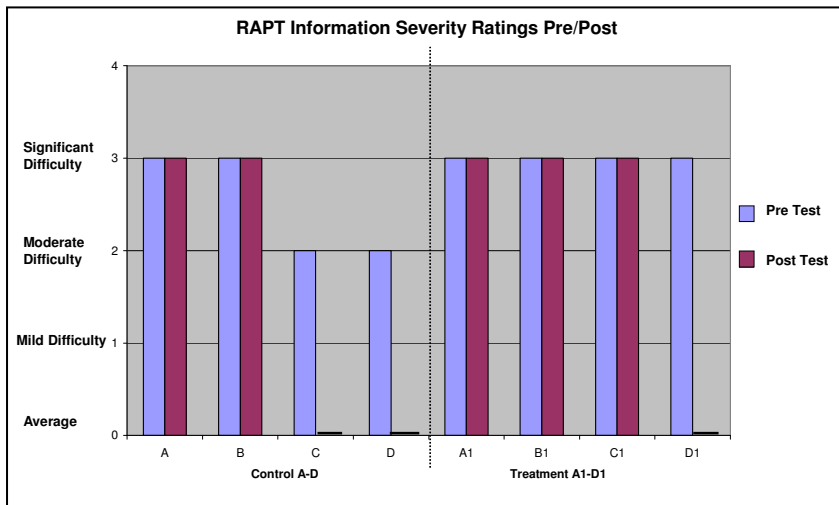
Receptive Oral Language (Sentence Structure)

**Table 3: Sentence Structure Raw Score Analysis (Pre/Post Testing)**

Control	Pre REC Raw Scores	SS	Post REC Raw Scores	SS	Treatment	Pre REC Raw Scores	SS	Post REC Raw Scores	SS
A	24	10	20	5	A1	15	2	20	3
B	16	1	17	1	B1	16	1	21	7
C	12	2	13	5	C1	15	2	16	6
D	14	2	22	2	D1	15	2	16	2
M	**16.5**		**18**		*M*	**15.3**		**18.3**	
SD	**5.3**		**3.9**		*SD*	**0.5**		**2.6**	
Range	**12-24**		**13-22**		*Range*	**15-16**		**16-21**	

*SS = Standard Score
*REC = receptive oral language (sentence structure)

Improvements on the *Sentence Structure* subtest of the *CELF-4* were minimal. The difference between the average raw scores pre-post testing was double for the treatment group compared to the control group (Figure 5). This is contradictory to their performance on the expressive oral language task (RAPT), where greater improvement was observed in the control group.

Figure 5: Sentence Structure (Pre/Post Average Raw Scores)

10
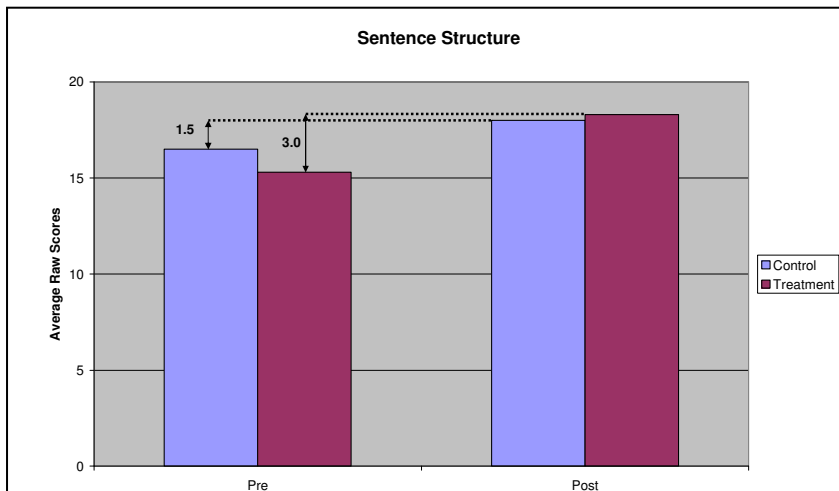
The standard scores for each student were translated into severity ratings (Figure 6). In the control group, student C moved from having significant difficulties to moderate difficulties, while in the treatment group, student B1 performed within the average range and student C1 demonstrated mild difficulties post testing.

Student A performed within the average range pre-testing, but moderately below average post-testing. This significant regression in performance was likely due to a couple of factors. It was observed during post-testing that student A was easily distracted and that he rushed his responses despite prompting from the clinician to take his time.

Figure 6: Sentence Structure (Pre/Post Severity Rating)
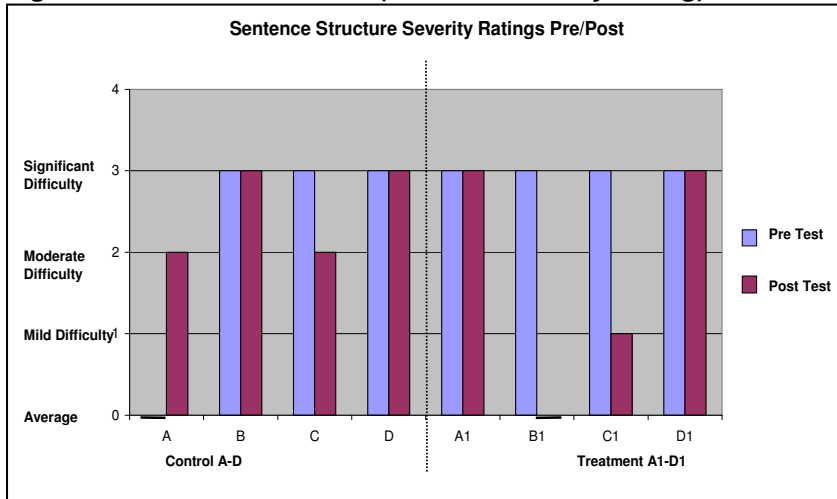
TRENDS IN SENTENCE READING COMPREHENSION

The *Sentence Reading Comprehension Task - SRCT* (Appendix 3) was created to analyse the student's ability to comprehend sentences that contained past, present and future tense. It also assessed whether the student was able to comprehend differences in semantic or syntactic variations within sentences.

**Table 4: SRCT Raw Score Analysis (Pre/Post Testing)**

Control	Pre SRCT Raw Scores	Post SRCT Raw Scores	Treatment	Pre SRCT Raw Scores	Post SRCT Raw Scores
A	8	10	A1	7	7
B	6	6	B1	5	7
C	12	8	C1	5	6
D	5	6	D1	6	9
M	7.8	7.5	*M*	5.8	7.3
SD	3.1	1.9	*SD*	1.0	1.3
Range	5-12	6-10	*Range*	5-7	6-9

Gains in individual raw scores on the sentence reading comprehension were poor. Students either continued to demonstrate pre-testing abilities or made improvements of 1 or 2 points. Student C showed a decrease in accuracy by 4 points. Overall, there was little difference in the average raw scores at post testing. The control group's average raw score decreased by 0.3 points, while the treatment group's average raw score improved by 1.5 points (Table 4).

TRENDS IN SEMANTIC VS SYNTAX VARIATION

Both groups improved nearly equally (1 point) on their ability to correctly comprehend sentences where the meaning of the sentence varied (ie. semantic variation). The control group however had difficulty recognising and comprehending the differences in syntactic structures, regressing by an average of 3 points. The treatment group improved very slightly overall by nearly 1 point (Figure 7).

Figure 7: SRCT (Semantic/Syntax)
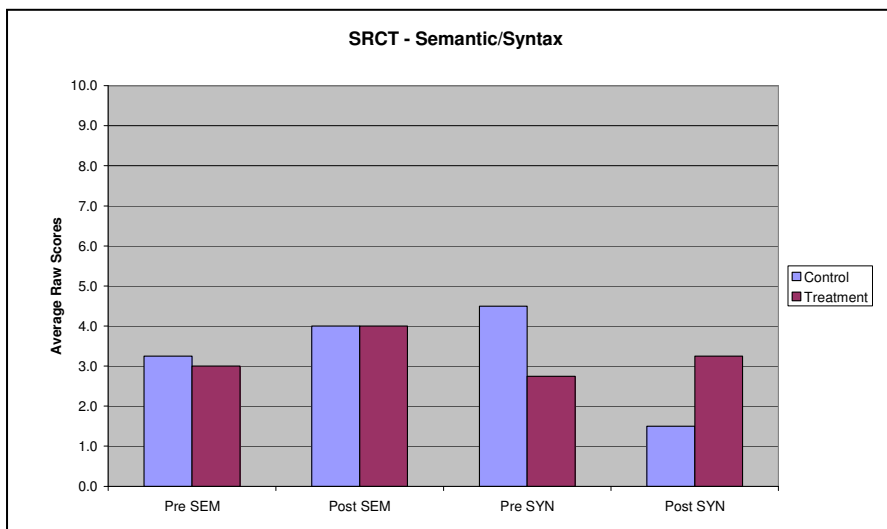
The following summary tables (Table 5 & 6) represent the student's individual performance on the sentence reading comprehension task. Cells that have been highlighted in yellow indicate a positive gain in knowledge. Blue cells indicate that the student performed similarly at pre-testing and post-testing, while zero or negative figures indicates that the knowledge was not demonstrated at all or not repeated on post-testing.

Table 5: Differences in responses on SRCT Pre/Post Testing (Control)

Student	Semantic rpt	Semantic is	Semantic are	Semantic ft	Syntax rpt	Syntax is	Syntax are	Syntax ft
A	-2	1	0	-1	1	= (1)	= (2)	3
B	2	= (1)	0	1	-1	-1	0	-1
C	-1	1	0	= (2)	-2	-2	-1	1
D	2	1	-2	1	= (1)	0	0	-1

Table 6: Differences in responses on SRCT Pre/Post Testing (Treatment)

Student	Semantic rpt	Semantic is	Semantic are	Semantic ft	Syntax rpt	Syntax is	Syntax are	Syntax ft
A1	= (1)	1	-1	= (1)	= (2)	-1	1	0
B1	1	1	0	-1	1	1	1	-2
C1	-1	2	0	-1	0	-1	-1	3
D1	1	= (1)	1	1	1	-2	0	1

* () indicate the number of questions the student answered correctly

Both groups had particular difficulty comprehending semantic variations within the *are –ing* structure and syntax variations within the *is –ing* structure. This result is not surprising as even though during the teaching sessions, present tense (*is/are –ing*) required the least amount of instruction and the students were able to demonstrate the structure in their own sentence formulations, this knowledge was not always transferred to the review - sentence reading comprehension tasks that occurred during the review sessions.

TRENDS IN NONVERBAL ABILITY

This study also aimed to evaluate whether student's performance would differ significantly depending on their nonverbal skills, particularly when the primary mode of teaching was using coloured visual prompts.

In the table below, a summary of the treatment group's performance has been divided into two; students with average nonverbal skills versus students with below average nonverbal skills.

Table 7: Treatment Group – Average Nonverbal Performance vs. Below Average Nonverbal Performance (comparison of average raw scores)

AREA	Average NV PRE	Average NV POST	Below Average NV PRE	Below Average NV POST
RAPT - Grammar	19.5	22	16	22.5
SRCT	6	7	5.5	7.5

Figure 8: Improvements in Average Raw Scores on Grammar/SRCT
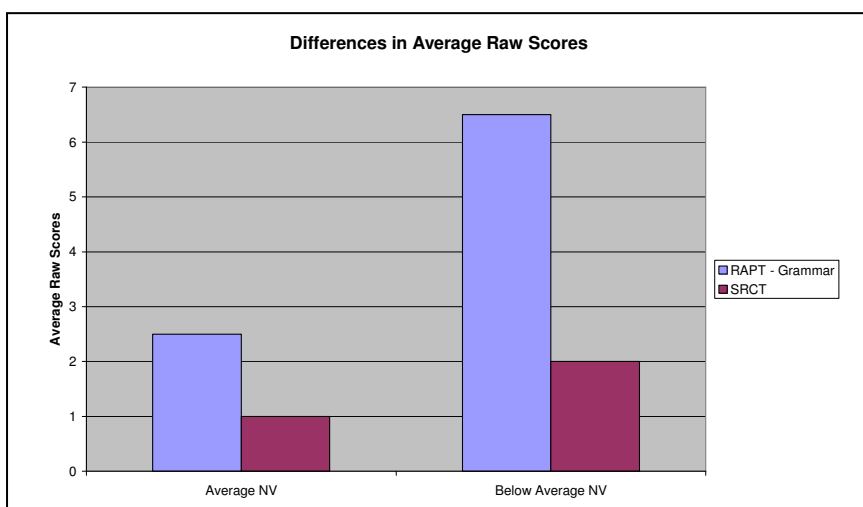
The students with below average nonverbal skills made a greater improvement in both their use of grammar and sentence reading comprehension skills, improving by 6.5 points for grammar and 2 points for reading comprehension, thus implying that having poorer nonverbal ability did not impact on their performance despite the use of coloured visual prompts to facilitate that learning (Figure 8). This conclusion however is not reliable as the students with average nonverbal skills also had SLD, which would already indicate that their performance post-testing would not have improved as significantly as a student who does not have SLD.

THERAPY PROGRESSION DURING TEACHING SESSIONS

Review sessions occurred at three points throughout the therapy block. During these review sessions, students were asked to independently use the structure (verb tense) being taught then complete a sentence reading comprehension task. The sentence reading comprehension task only contained syntactic variations or errors.

Table 8: Review Sessions – Formulating Sentences using target verb tense (Raw Scores)

Control	Is/are -ing	-ed	will	Treatment	is/are -ing	-ed	will
A	2	1	1	A1	2	1	1
B	2	1	1	B1	2	2	2
C	2	2	2	C1	1	2	2
D	2	1	1	D1	1	2	2
Total	**8**	**5**	**5**	*Total*	**6**	**7**	**7**

Table 9: Review Sessions – Sentence Reading Comprehension (Raw Scores)

Control	is/are -ing	-ed	will	Treatment	is/are -ing	-ed	will
A	1	2	2	A1	2	0	2
B	1	1	2	B1	1	1	1
C	1	1	1	C1	2	2	2
D	2	2	2	D1	2	2	1
Total	**5**	**6**	**7**	*Total*	**7**	**5**	**6**

All students in the control group were able to use the is/are –ing structure appropriately at the review session, but had difficulty transferring this knowledge into the sentence reading comprehension task (Table 8 & 9). The treatment group demonstrated more consistent use of past and future tense then their matched controls.

Both groups required greater amounts of cueing and scaffolding to develop understanding and use of regular past tense compared to the present and future tense sessions. The majority of students also had particular difficulty articulating what they had learnt during the lesson, despite being repeatedly modeled for them by the clinician.

In sessions 9 and 10, students were asked to:

- independently create sentences using appropriate verb tense.
- read sentences and identify the "time" the sentence is referring to (e.g. today, yesterday of tomorrow structure).
- sentence reading comprehension task that contained only syntax variations.

Results were grouped into expressive and reading knowledge.

Table 10: Session 9 & 10 Overall Review Results

Control	EXPRESSIVE	READING	Treatment	EXPRESSIVE	READING
A	2	12	A1	3	10
B	2	8	B1	1	9
C	1	12	C1	2	N/A
D	1	13	D1	2	11
	Out of 3	Out of 19		Out of 3	Out of 19

The treatment group demonstrated greater consistency is producing sentences using the correct very tense, but the control group showed greater knowledge of verb tense in the reading tasks. This was not reflected at post testing however, where the control group had greater difficulty comprehension syntax variations on the Sentence Comprehension Reading Task.

DISCUSSION

Supporting the Hypothesis?
The results of this study do not support the hypothesis which predicted that teaching verb tense in sentences to students in grade 2 using coloured visual prompts would significantly improve their oral language skills and reading comprehension at a sentence level.

In reviewing the results the following conclusions were drawn:

- The control group demonstrated a greater difference in their average raw scores pre-post testing on the expressive task when analysing grammatical structures used.
- Both groups made similar gains in their average raw scores pre-post testing on the expressive task when analysing information provided
- There was little difference between groups on their receptive oral language and sentence reading comprehension task results.
- Both groups had particular difficulty comprehending semantic variations within the *are –ing* structure and syntax variations within the *is –ing* structure on the sentence reading comprehension task.
- Students with average nonverbal skills did not perform significantly better than students who had below average nonverbal skills.
- Explicit, repetitive teaching brings about change.

Limitations of the Study

(1) Sentence Reading Comprehension Task (SRCT)
This task was developed and piloted on a small sample of grade 2 students. It was observed during this pilot stage that the words written in the sentences were at an appropriate level for this grade.

One of the factors that impacted on the lack of improvement in the student's results on the SRCT was the student's pre-testing reading levels. It is clear from the table below, that most of the students were not able to decode the words used in the task and therefore were giving responses that were unreliable and invalid at pre and post-testing.

Students	Reading Level
A	5
B	0
C	0
D	8
A1	0
B1	5
C1	0
D1	3

In hindsight, the majority of these students were not appropriate subjects because they did not have high enough reading levels. Future studies would require a predetermined minimum reading level.

(2) Sample Size
As with most studies, using larger sample sizes, allows for stronger evidence in supporting or not supporting one's hypothesis. This study was developed in conjunction with two other CEO speech pathologists in the Southern Area Office. The intention was to have the data from all three studies collated and analysed, hence creating a larger sample size. However, when considering the variability of student abilities and backgrounds across the three studies and how students were matched, it was decided that analysis and discussion would occur separately.

(3) Practice Effects
Most formal assessments would have a period of time after testing where the assessment cannot be repeated (eg. CELF-4 cannot be readministered within twelve months). This is due to the possibility that gains made are due to practice effect. This effect may have occurred as pre-post testing was accomplished within a very short period of time.

(4) Teaching Sessions & use of coloured visual prompts

In designing the teaching sessions, the three coloured visual prompts were all introduced within the first session simultaneously then reinforced with the verb tense being modeled during each session (Appendix 2 & 2a). Typically when using colourful semantics, one coloured visual prompt is introduced and established before the next is introduced. Due to time constraints, the teaching sessions did not allow for this which would have impacted on the student's post-testing results.

(5) Inclusion of students with SLD

This study reinforces current research findings that students presenting with literacy difficulties often experience deficits in their oral language skills, thus needing more explicit instruction and opportunities to practise.

One of the limitations of including students with severe language disorder into the study is that the gains made by these students were minimal and not always reflected in their overall severity rating. For example, student B's raw score on the RAPT Grammar improved by 3 points, but he continued to be classified as being significantly below the average range for his age. Reporting his severity rating alone would imply that no gains were made. This difficulty was similarly acknowledged in Ebbels & Lely's (1997) study which also used a visual coding scheme to develop oral language skills in students with severe language impairment. Their results showed that progress was made but the significance of the improvement and whether they maintained this knowledge was varied amongst the group.

Implications for Teaching in the Classroom

As previously stated, students with oral language and literacy difficulties require explicit teaching and multiple practise opportunities. In order to measure a student's progress, the classroom teachers can be developing individual learning plans which contain realistic, achievable and measurable, long and short term goals. These goals should build upon the strengths and the skills of the student. This document is not static rather is constantly reviewed and altered to suit the learning requirements of the student. It acts as a quantitative measure for teachers to show progress in students who would maybe not demonstrate considerable gains on formal benchmark assessments. This working document is expected by the CEO to be developed when schools are submitting applications for funding (eg. support for students identified with SLD or an intellectual disability).

Differential Diagnosis - Dynamic Assessment

As a speech pathologist, we in conjunction with psychologists, are the primary professionals in identifying children with Severe Language Disorder (SLD). Along with completing language assessments, the onus lies on the speech pathologist to rule out LBOTE (language background other then English) factors as being the cause for why a student presents with significant receptive and/or expressive oral language difficulties. Sometimes, despite detailed case history information collated from both the parents and school, more information is required making differential diagnosis challenging.

A useful approach that was first developed in the 1970s by Feuerstein in Israel to assess progress of learning disabled on his cognitive education program (Matson & Burgess, 2007), is the Dynamic Assessment Program. Dynamic assessment is where you "evaluate a child's learning potential by comparing the child's performance with and without support" (Maekawa & Storkel, 2006, pg. 103). This process allows the clinician to make observations regarding the amount of cueing and instruction required during teaching and provides quantitative information which to compare. The dynamic assessment is essentially therefore uses an OXO design.

For this action research project, the school had concerns regarding students C, D & D1. All students present with language and literacy difficulties and have a LBOTE. Looking at their final results, it is clear that with explicit teaching of verb tenses in sentences, those three students are now performing within the average range on the expressive oral language task (RAPT). Thus, these student's language difficulties were purely due to LBOTE factors. Recommendations to the school regarding these students would be to provide them with explicit oral language experiences that allow for opportunities to practise.

In contrast, it is recommended that student C1, whose first language is English, be referred for formal language assessment as he did continued to present with significant language difficulties, despite explicit teaching.

Possible Directions for Future Research

Considering the limitations of this study, the author has reservations regarding the reliability of the results obtained. It is recommended that future investigations consider increasing sample size, extending the number of teaching sessions and altering the way in which the coloured prompts are introduced as well as determining a minimum reading level at pre-testing.

The hypothesis itself was very broad in that it was trying to examine multiple areas. It would be interesting to evaluate using coloured visual prompts in relation to oral language skills alone. Three separate studies could be completed but one focused on developing vocabulary, the other receptive oral language and the final study expressive oral language.

In this study, half of the groups contained students with SLD while the half had students with LBOTE. Examining different populations in developing oral language through coloured visual prompts would be interesting (eg. students with SLD, LBOTE, below average nonverbal ability).

Many of our Catholic schools have been receiving professional development in relation to the use of Colourful Semantics as a teaching resource in schools. It would be informative to our services to measure the effectiveness of using this resource to develop oral language skills in schools.

Our service also works in conjunction with many other service providers in Victoria. EPIC (Early Programme for Infants and Children) offers specialised teaching and therapy programs for young children with developmental disabilities, such as Down syndrome (website 1). For a few of these students, EPIC has been recommending the use of colourful semantics to develop their receptive and expressive oral language skills. Single case studies tracking the progress of these students using the resource would provide more evidence as to what is best practice for treating children with Down Syndrome.

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TEACHING RESOURCES

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