

NEMP Probe Study Report

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ORAL READING ACHIEVEMENTS, STRATEGIES
AND CHARACTERISTICS OF NEW ZEALAND
PRIMARY SCHOOL STUDENTS READING BELOW
NORMAL EXPECTATION.

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ABSTRACT

NEMP 2000 oral reading videotaped data was re-analysed to investigate reading behaviours of year 4 and year 8 students reading below normal expectation. A diagnostic analysis of New Zealand primary school students reading below expectation was carried out, to increase understanding of the achievements and strategies of these students and the range of personal characteristics they bring to the learning situation.

Students tended to read very slowly, at a mean rate of approximately 57 words per minute. The error rate was just over 9%, of which substitutions were the most common error type. Students paused to employ a strategy for one in every ten words, of which "context" cues were the most utilised. In regard to oral reading fluency, students generally spoke with "little/no" expression, while exhibiting "some" degree of clarity, clause and sentence structure, and breath control. Almost half the students moved closer to the text when reading and nearly a quarter kept their place with their finger. Approximately half the students exhibited the sound work habits of "independent" reading and remaining predominantly "still" during the task, while an even higher proportion "successfully" followed instructions and applied "concentrated effort". The majority of students exhibited "moderate" levels of such personal characteristics as "sociability", "confidence", "risk-taking", and "interest". This comprehensive analysis indicates that although students reading below expectation do share some common learning difficulties, many exhibit sound work habits and a satisfactory range of personal characteristics.

INTRODUCTION

NEMP BACKGROUND AND FINDINGS

The National Education Monitoring Project (NEMP) is part of government strategy to provide information about achievement standards and the quality of education in New Zealand, in which information is gathered using carefully selected random samples of students. NEMP data provides research-based insights into what New Zealand children can do and understand. Teachers, researchers and policy makers alike have a great need for such objective information at this time, when increasingly high educational benchmarks are being set in relation to literacy goals for New Zealand students.

NEMP monitors student achievement at two key levels, year 4 and year 8, in all of the essential curriculum areas. The tasks, assessment procedures and reports are designed to reflect the richness, scope and comprehensiveness of the curriculum. "They give a detailed, task by task picture of what students know, what they can do, and how they go about it. This information has the potential to contribute substantially to the improvement of learning." (Educational Assessment Research Unit, 2001, p. 1) Data, in the form of written and taped student performances, is available for comprehensive research into a wide range of student achievements and behaviours. The NEMP 2000 oral reading record task data provides videotaped performances of students reading aloud at an instructionally appropriate level.

Oral reading is but one aspect of reading and children performing below normal expectation are but one small proportion of all primary school students. It is important, therefore, to place the findings of this study in the context of overall improvements in reading achievement by year 4 and year 8 students between 1996 and 2000. NEMP reading results have shown a very substantial improvement from 1996 to 2000 in the oral reading of year 4 students, with a smaller improvement evident for year 8 students. Maori year 4 students shared in the major improvement in oral reading between 1996 and 2000, showing a similar rate of improvement to all year 4 students. Findings also indicate, nonetheless, that some New Zealand primary school students continue to struggle to learn how to read. "While the proportion of students reading poorly has decreased considerably, however, there are still students causing concern, particularly in lower decile schools." (Educational Assessment Research Unit, 2001, p. 2)

One Educational Assessment Research Unit (EARU) internal report (Eley, undated) investigated gender differences for achievement in reading through an analysis of findings from a range of 1996 NEMP reading tasks. Eley made the important observation that boys did gain satisfactory overall results in reading, despite their mean scores being lower than those of girls. She warned against the danger of highlighting and misinterpreting the differences in achievement of boys and girls as boys failing in reading. These findings are particularly valuable as they are based on a substantial amount of recent national data and objective analysis.

LITERATURE REVIEW

International research approaches and findings regarding student oral reading strategies have focussed on the extent to which readers work out unknown words from context and/or decoding cues at different levels of text difficulty. American research studies involving children reading below expectation tend to separate the sample group into subgroups of “dyslexic” and “low ability” readers and usually involve a control group of “normal” (average) readers. Common emphases include the testing and comparing the achievements of different ability groups or studying the efficacy of specific teaching interventions with low ability or dyslexic readers.

Frankel Tal & Siegal (1996) examined the phonological processing skills of “dyslexic” readers (children whose reading was significantly lower than predicted by their IQ score), and “poor” readers (children whose reading scores were consistent with their lower IQ scores) in Grades 4-5; compared with those of “normal” readers in grades 2-3. Pseudoword reading performances were analysed according to the type of error committed. Not only were the performance of “dyslexic” and “poor” readers found to be virtually indistinguishable at both age levels, there was also very little difference among the three groups in the types of errors made. “Nearly 50% of all the oral reading errors of all three groups were vowel substitutions, followed by consonant substitution and deletion and insertion errors. Sequential, reversal, and word substitution errors were committed infrequently for all three reader groups.” (Frankel Tal & Siegal, 1996, p. 215) These findings, based only on the decoding of pseudowords, did not support the existence of a critical phonological processing difference between “dyslexic” and “poor” readers. The authors suggested that “disabled” readers lag behind “normal” readers in phonological decoding skills.

Masterson, Laxon & Stuart (1992) investigated the use of two oral reading strategies for successful decoding, "whole word recognition" for familiar words (sight words) and "assembled phonology" (sounding out) for unfamiliar words, by beginning readers in their second year at British schools. "Use of assembled phonology was evident in the children's reading-aloud responses, and proficiency in its use was related to reading ability. Printed-word comprehension appeared to involve prior retrieval of a phonological code for less frequent words." (Masterton, Laxon & Stuart, 1992, p. 1) As text difficulty increased, "normal" readers showed more proficiency in assembled phonology and were already using both strategies to form an information-processing system similar to that used by "older skilled" readers.

Young & Bowers (1995) investigated the role of word identification skills, text phrasing, and two individual difference variables (auditory analysis and digit number speed) on the oral fluency and expressiveness of "poor" and "average" Grade 5 readers. This complex Canadian research study compared oral reading strategies and achievements of the reader groups across levels of text difficulty, to determine whether specific behaviours were demonstrated only by "poor" readers or by both groups of readers in certain situations. It was found that "poor" readers were less fluent and expressive than "average" readers across all levels of text difficulty. "Clear group differences on ratings of fluency and expressiveness remained even when the performance of poor readers on the easiest text (on which they also received word identification practice) was compared with that of average readers on the most difficult text." (Young and Bowers, 1995, p. 249) Parsing, the ability to identify where a meaningful boundary occurs between phrases and clauses, was found to contribute to oral fluency in "average" but not in "poor" readers.

Comparatively little research has been carried out in New Zealand with respect to children's oral reading strategies. Several researchers have focussed on the achievements and needs of low ability readers, and a recent international study investigating the effects of "phonics" and "non-phonics" teaching approaches included New Zealand primary school students.

Kirk (2001) investigated word recognition difficulties, strategies used for word recognition and self-beliefs of 6 severely reading disabled year 9 and 10 adolescents in a New Zealand co-educational, secondary school. Each student was regularly assessed during an intensive, year-long, individualised, one-on-one reading programme. Kirk found the severe reading problems exhibited by students resulted from difficulties in using accurate and complete letter-sound information and integrating this information with the use of contextual meaning to decipher words. While all six students were deemed capable of learning

to use reading strategies successfully, Kirk established that the self-beliefs of each individual determined whether achievement gains were accelerated or more limited across time.

Greaney (1992) used a reading age-matched design to compare a group of "older poor" readers (lowest reading achievers in upper primary classes) with a group of "young normal" readers on a series of rhyme awareness measures, and an analogy task involving decoding isolated words. It was found that "young normal" readers performed as well as, and in some cases significantly better than "older poor" readers on all four rhyme awareness measures. A list of 100 words was presented, arranged either in small groups containing an identical analogical unit or rhyme pattern (eg farm, hard, card, start, part) or in random order. While the "young normal" readers performed significantly better than the "older poor" readers on both word lists, rhyme-order scores were significantly better for both groups. Using a second experimental design, Greaney also compared the effects of two different tutor procedures on the ability of "older poor" readers to decipher unfamiliar words encountered in prose reading. One procedure emphasised decoding by context cue usage (eg by reading to the end of the sentence, rereading the sentence, and/or guessing), while the other procedure emphasised decoding by analogy, where the reader was encouraged to recognise familiar letter/sound (analogical) units within the word as the initial strategy. It was found that the analogy procedure produced significantly higher accuracy rates on subsequent readings, and Greaney surmised that this strategy enabled the "older poor" readers to 'unlock' many hitherto unfamiliar words, by transferring knowledge of known words and units to an unknown word.

Connelly, Johnston and Thompson (2001) investigated whether two groups of six year old beginning readers, taught to read by a "phonics" or by a book experience "non-phonics" approach, would differ in reading comprehension as well as in word recognition processes. Scottish children who had received "phonics" instruction (involving explicit teaching about individual letter-sound correspondences, their sequences, and the pronunciation of corresponding sounds) were matched for word recognition with children from New Zealand who had received "non-phonics" instruction. While "phonics" taught beginning readers were found to read more slowly, they achieved higher comprehension scores and produced more contextually appropriate errors.

While the recent 'phonics debate' about the most appropriate teaching methods serves to raise public concern, national policy decisions must be grounded in objective research-based data. Thompson (2002)

recently stressed the need for more knowledge of the status quo practice of 'receptive phonics' teaching in New Zealand. Griffiths (2001) conducted a survey to investigate the relative importance placed on specific reading strategies by teachers of early readers which provided indirect evidence of actual teaching practices and a desire by classroom teachers for ongoing professional development in this area. A current NEMP probe study by Griffiths will provide comparative data across reading ability groups and analyse reading strategies used by New Zealand children at Years 4 and 8.

Recent research into children's reading, both in New Zealand and overseas, has commonly focussed on comparing the performance of "poor readers" with that of "normal readers", and identifying achievement deficiencies for "poor readers" in regard to comprehension, oral reading accuracy and fluency. This study carries out a diagnostic analysis of New Zealand primary school students reading below normal expectation, over a wide range of achievements and personal characteristics. As an experienced classroom teacher the researcher has worked with sufficient year 5 and 6 students who struggle to read at a basic level to recognise the critical effect this difficulty can have on academic progress, self-confidence and enjoyment of school. Students sharing difficulties in reading have generally exhibited a wide range of cognitive and academic abilities across other curriculum skills and processes, challenging the view that low achievement in reading is the result of low intelligence. Teachers providing remedial programmes for children and adults regularly help students make good progress as a result of individualised programmes. This diagnostic approach may help researchers, literacy experts and teachers better understand the specific difficulties faced by these students, the strategies that they utilise and the range of personal characteristics they bring to the learning situation. Statistical tests investigate possible differences in achievement and the use of specific strategies by students for reading level, year level, gender, ethnicity and text type subgroups. Findings may initiate further insights into the challenges facing new Zealand students and teachers alike. "If you can both listen to children and accept their answers not as things to just be judged right or wrong but as pieces of information which may reveal what the child is thinking you will have taken a giant step toward becoming a master teacher rather than merely a disseminator of information." (Easley and Zwoyer 1975, p. 25)

METHOD

NEMP ORAL READING RECORD TASK

The 2000 oral reading record task focussed on each student's ability to recognise and decipher written words, to handle different complexities of vocabulary and gain meaning from text. The six reading bands developed by NEMP are incrementally spaced according to complexity of words and ideas. Band 0 material consists of very basic text supported by picture clues, whereas Band 5 material contains the most challenging vocabulary and textual composition. Selection of fiction, non-fiction and non-book texts was carried out in consultation with teachers and literacy experts, and confirmed in classroom trials. Non-book texts included pamphlets and advertising information actually found in the community. An Elley noun count ensured that texts within each band, and across types, were parallel in terms of difficulty. "The material was selected in the expectation that year 4 students of average capability would be able to handle readings in band 2, and that year 8 students of average capability would be able to handle band 4 material." (Flockton & Crooks, 2001, p. 14) Text passages were expected to stand alone regarding context, be visually attractive and of interest to children across both age groups, and be free of gender or culture biased content. The exact length of the passage, the font size and the amount of illustrations were not considered of paramount importance in the selection process.

The aim of the task was to identify the highest band in which a student read with 90% to 95% accuracy, when self-corrected words were counted as correct. This level of reading difficulty matches that used in instructional reading activities in schools, when a controlled level of challenge provides learning and teaching opportunities.

Students in each school participating in NEMP were randomly assigned to three groups and parallel fiction, non-fiction, or non-book reading tasks were administered in a one-to-one interview setting. Administration instructions were set out in Reading Record Manuals so that procedures and scripts were standardised. (See Appendix 1 for NEMP standardised administration procedures) A reading band indicator was used to establish an appropriate starting band quickly, as it is fundamental to NEMP that no information is provided through classroom records. (Flockton & Crooks, 2001, p. 16) This brief and enjoyable task proved highly effective, placing 80% of students at their eventual reading level band.

Teacher-administrators were expected to establish and maintain a friendly and encouraging rapport with students throughout the task. The task introduction emphasised the need for students to verbally work out words independently. Students were asked to choose and read one of a set of three parallel text passages in their starting band. A tally of errors was compared with a target error range to determine whether a student would select a second passage from the same band, or one from the next higher or next lower band. Comprehension questions were asked after each passage, beginning with three literal or factual questions for which answers were explicit in the text.

IDENTIFICATION OF STUDENTS READING BELOW NORMAL EXPECTATION

Marking of two videotaped oral reading performances for each student was carried out at a later date at the Educational Assessment Research Unit (EARU) in Dunedin. Students were identified as reading at one of the six reading level bands (0 to 5) based on the error rate, providing a brushstrokes impression of whether students read within, above or below the level expected for their chronological age. It is important to note, however, that many students on Band 5 read at fluency proficiency, and that a few students on Band 0 made more errors than were appropriate, creating a ceiling and flooring effect for these students. For the purposes of more in-depth studies, a limitation of using only 6 reading levels is that measures of achievement at each end of the scale are truncated. Normal expectation was that year 4 students would read at band 2 (8-10 year reading age) and that year 8 students would read at band 4 (12-14 year reading age). By definition, a year 4 student reading at bands 0 or 1 was considered to be reading below expectation, while a year 8 student reading at bands 0, 1, 2 or 3 was considered to be reading below expectation.

SAMPLE

Students of interest for the purposes of this study, those 501 students reading below normal expectation in 2000, formed 18.3% of the entire 2000 NEMP sample (2,729 students). EARU was asked to randomly select 45 student performances from each year level, retaining the proportion of students reading within each text type (fiction, non-fiction and non-book) and those reading at the target reading level bands. This sample of 90 students comprised 18% of the students NEMP assessed as reading below normal expectation in 2000. Table 1 shows that the probe study sample closely resembled the national sample and provides a break-down by text type, reading level band and year level groups.

Table 1: Percentages of Students Reading Below Normal Expectation in 2000 NEMP Sample and Probe Study Sample by Text Type and Reading Level Band

Text Type	2000 NEMP Sample			Probe Study Sample		
	Fiction	Non-Fict.	Non-Book	Fiction	Non-Fict.	Non-Book
Total	33	37.5	29.5	32	37	31
Year 4	28	36.5	35.5	29	38	33
Year 8	37	38	25	35.5	35.5	29

Reading Level	2000 NEMP Sample				Probe Study Sample			
	0	1	2	3	0	1	2	3
Total	21	28.5	12.5	38	22	33	9	36
Year 4	46	54	0	0	42	58	0	0
Year 8	2	8	22	68	2	9	18	71

Percentage frequency distributions were similar for fiction, non-fiction or non-book texts, confirming that texts were parallel in regard to reading difficulty. The year level of students affected their placement in reading level bands, as year 4 students reading below expectation could only be in bands 0 and 1.

Gender and ethnic characteristics of the sample were identified, but do not necessarily reflect the NEMP 2000 sample as students were randomly selected for these attributes. Of the 90 students, 53 were male and 37 were female. There were 28 boys and 17 girls in year 4, with 25 boys and 20 girls in year 8.

Students were classified as belonging to one of three ethnic groups by NEMP; Pakeha (50), Maori (34), or Pacific Islander (6). The Pakeha group encompassed students from all other ethnic groups, including five Non-English Speaking Background (NESB) students from Asia. Percentage frequency distributions for text types, gender and reading levels were similar, but those for ethnicity were significantly different to those expected ($\chi^2 = 11.96$; $df = 2$; $p < .01$), as all Pacific Island students in the sample were in year 4.

DATA CODING AND RELIABILITY PROCEDURES

A systematic sampling approach was used to select one videotaped performance from each of six stacks of tapes, which were organised by year level and text type. The researcher viewed these 6 tapes and noted outstanding factors and observable behaviours, such as administration procedures, technical issues, the slow reading rate and the high level of perseverance shown. The research assistant carried out the same procedure, noting the students' high co-operation despite evidence of tiredness or lack of confidence, and common error types. Discussion took place on a draft coding sheet, possible categories, measures of achievement and the potential for bias during coding. Consultation was based on the professional judgements of the researcher and research assistant, both of whom had experience as classroom teachers, NEMP teacher-administrators and NEMP Forum members. The researcher had also been employed as a NEMP marker on two occasions.

The six familiar videotapes were recoded across three viewings and the coding sheet format was altered to ease spacing and category concerns. Coding involved careful observation, listening, recording and checking, requiring intense concentration across time. To ensure that one quarter of the coding data was initially gathered to trial the data coding procedures, as recommended in Gay & Airasian (2000), a further 16 videotaped performances were systematically selected from across the six stacks of videotapes and coded. This proved time-consuming, especially when technical problems affected sound quality. A “can’t decipher” code was introduced for rare occasions when five replays could not produce a recognizable response.

In keeping with a qualitative approach to data gathering, observable behaviours were coded, analysed and organised into an evolving structure. The descriptive criteria for strategy types and individual characteristics were then reviewed to ensure that student behaviours could be observed within a consistent and coherent structure. (See Appendix 2 for the coding system format) The use of videotaped performances was crucial, as various observable behaviours were coded across multiple viewings. To ensure the coding framework fully reflected student achievement and attributes, several innovative coding categories were developed. For example, actual strategies used by students pausing to decipher a text word were identified, regardless of whether the strategy led to a correct, incorrect or self-corrected response. Errors and strategies were analysed and identified as separate types and sub-types. Extreme levels of work habits and personal characteristics were also identified.

All 90 tapes were then examined and coded by the researcher, 16 of them for a second and 6 for a third time. The *intra*-observer reliability was 93% across viewings, despite on-going development of the categories. To review the definitions of coding criteria and to establish the reliability of the coding procedure itself, the research assistant was involved again after coding was completed. Two student performances were independently recoded from each of the six stack of tapes (organized by year level and text type), one which was randomly selected and one which had proven exceptionally challenging to code. These included a student who made up an alternate version rather than reading the text itself, and one who scored a high number of undecipherable word attempts. The percentage level of agreement reached was 79%, reflecting the use of professional judgement for coding decisions regarding more innovative descriptors and exceptionally challenging tapes. Gay & Airasian (2000) describes 80% as a satisfactory level of *inter*-observer reliability, indicating that training can be discontinued at this level of agreement. The percentage level of agreement for student information and achievement scores was

94%, while that for achievement and impressionistic individual descriptors was 58%. Clarity of speech, clause structure, and breath control scored lower percentage levels of agreement, and an analysis of written comments on coding sheets indicated most disagreements resulted from interpretations of “some” and “little/no” and the frequency levels of target behaviours required for these coding criteria.

Four types of information, achievement scores and individual descriptors were categorised, recorded and/or calculated. (See Appendix 3 for detailed definitions of coding criteria)

- **Student information:** Student reading level, year level, ethnic group and text type were available through NEMP, and gender was classified by the researcher. This information allowed results to be collated and analysed across subgroups.
- **Achievement scores:** Student achievement scores relating to comprehension and reading rate, and rates of errors, self-corrections and strategies were measured. Error, self-correction and strategy rates were calculated as a percentage of the number of text words read to minimise the confounding effect of different text lengths.
- **Achievement Descriptors:** Specific descriptions of a student’s overall oral reading performance, relating to levels of expression, clarity of speech, clause/sentence structure and breathing control, were identified.
- **Impressionistic Individual Descriptors:** A student’s speech and visual/sensory movements were described and personal characteristics observed for signs of extreme levels of specific behaviours. Students not exhibiting extreme levels of specific behaviours were identified as exhibiting “moderate” levels. These more subjective impressions provided evidence of the work habits and personal characteristics of students in relation to speech, visual/sensory movements, verbal communication, sociability, reliance on the teacher-administrator, volume of speech, confidence, risk-taking behaviour, interest in task, effort/perseverance, wakefulness, physical well-being and movement, emotional reaction to challenge, response to text and following instructions.

RESULTS

The achievements, strategies, work habits and personal characteristics of students are reported below. Frequency distributions and mean differences for reading level, year level, gender, ethnicity and text type subgroups were tested for statistical significance as appropriate.

Three types of data, achievement scores, achievement descriptors and impressionistic individual descriptors, are examined in turn and presented in separate result tables. Achievement scores are presented in Tables 2, 3 and 4, achievement descriptors in Table 5, and impressionistic descriptors in Table 6. Correlation coefficients between the achievement scores and descriptors are presented in Table 7. In each table statistically significant differences are displayed in bold, with the level of statistical significance indicated in the line above (* for $p < .05$; ** for $p < .01$; or *** for $p < .001$). Frequency distributions were examined across all data types. Statistical tests of significance (t-test and analysis of variance) were used to determine whether the means of subgroups were significantly different from one another for each achievement score and achievement descriptor. Chi square tests were used to determine whether the observed frequencies for impressionistic individual descriptors were significantly different from those expected. Post hoc analyses were used where appropriate to determine specific statistically significant differences. The interrelationships between the achievement scores and achievement descriptors were analysed, with correlation coefficients calculated using the Pearson r .

ACHIEVEMENT SCORES

Table 2 shows the percentage frequency distribution, means and standard deviations of achievement scores of students by reading level, year level, gender, ethnicity and text type. The five achievement scores relate to a student's comprehension, reading rate (wpm), error percentage rate, self-correction percentage rate and strategy percentage rate. Tables 3 and 4 present detailed analysis of separate error and strategy sub-types and types respectively.

Comprehension

The mean number of questions answered correctly was 1.80. The majority of students (64%) successfully answered 2 or 3 questions while only 11% did not answer any correctly. Analyses by subgroups revealed that there were no statistically significant differences for reading level, year level, gender or text type. The differences between the means for students across ethnic groups were

Table 2: Table of Percentages, Means and Standard Deviations of Achievement Scores of Students by Reading Level, Year Level, Gender, Ethnicity & Text Type

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
Number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Comprehension#												*			
0	11	11	14	0	11	10	13	14	6	11	6	40	4	15	15
1	25	45	18	14	22	29	21	18	36	16	39	20	18	30	27
2	36	33	43	29	33.5	40	32	43	26	32	42	40	52	26	31
3	28	11	25	57	33.5	21	34	25	32	41	13	0	26	29	27
x	1.80	1.44	1.79	2.42	1.89	1.74	1.87	1.78	1.84	2.02	1.61	1.00	2.00	1.70	1.69
s	.97	.86	.99	.79	1.01	.91	1.04	.98	.97	1.02	.80	1.00	.78	1.07	1.05
Reading Rate(wpm)					***		**								
0 – 29	11	30	7	12	3	11	11	17	3	12	9	16.5	3	12	18
30 – 59	49	45	70	25	38	65	33	47	51	44	53	67	52	49	46
60 – 89	24	25	20	25	28	22	27	23	27	24	26	16.5	21	27	25
90 – 119	14	0	3	38	25	2	25	11	16	16	12	0	17	12	11
120 – 149	2	0	0	0	6	0	4	2	3	4	0	0	7	0	0
x	57.15	44.66	47.67	71.62	70.22	47.95	66.34	53.49	62.39	60.60	54.92	41.03	64.70	55.72	51.01
s	27.09	20.96	16.79	30.76	30.89	17.85	31.50	27.73	25.60	30.04	23.11	14.95	30.45	24.43	25.44
Error % Rate					*										
0 – 4	26	25	33	12.5	22	27	25	25	27	22	32	17	17	36	21.5
5 – 9	47	25	47	62.5	56	40	53	41	54	50	44	33	59	43	39
10 – 14	13	15	7	12.5	19	11	16	13	13	10	12	50	14	9	18
15 – 19	8	15	10	0	3	14	2	11	3	8	9	0	7	6	11
20 – 24	1	5	0	0	0	2	0	2	0	2	0	0	0	0	3.5
25 – 29	2	5	0	12.5	0	2	2	2	3	2	3	0	3	3	0
30 – 34	1	0	3	0	0	0	2	2	0	2	0	0	0	3	0
35 – 39	1	5	0	0	0	2	0	2	0	2	0	0	0	0	3.5
40 – 44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45 – 49	1	5	0	0	0	2	0	2	0	2	0	0	0	0	3.5
x	9.21	13.78	7.92	9.44	7.51	10.30	8.13	10.52	7.34	10.07	8.03	8.75	8.22	8.12	11.53
s	8.10	13.14	6.52	6.91	3.71	9.88	5.71	9.51	5.02	9.71	5.45	5.32	5.56	6.96	10.88

* p < .05

** p < .01

*** p < .001

only 80 students were asked the three comprehension questions

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Table 2 continued

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
Number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
S-Corr. % Rate															
0 – 4	90	95	80	88	97	87	93	89	92	92	88	83	97	91	82
5 – 9	10	5	20	12	3	13	7	11	8	8	12	17	3	9	18
<i>x</i>	2.46	2.37	2.83	2.27	2.22	2.51	2.41	2.61	2.24	2.34	2.67	2.30	1.98	2.48	2.93
<i>s</i>	1.77	1.83	2.17	1.68	1.33	1.10	1.54	1.74	1.83	1.49	2.07	2.37	1.34	1.67	2.19
Strategy % Rate									**						**
0 – 4	18	20	7	25	25	14	22	17	19	14	26	0	28	12	14
5 – 9	48	35	60	50	44	51	44.5	41	57	56	38	33	52	58	32
10 – 14	21	10	27	12.5	25	22	20	21	21	16	24	50	17	15	32
15 – 19	4	10	3	0	3	2	7	6	3	0	9	17	0	9	4
20 – 24	6	15	0	12.5	3	7	4.5	9	0	8	3	0	3	3	11
25 – 29	2	5	3	0	0	2	2	4	0	4	0	0	0	3	3.5
30 – 34	1	5	0	0	0	2	0	2	0	2	0	0	0	0	3.5
<i>x</i>	9.59	12.12	9.41	9.51	8.20	9.93	9.25	11.01	7.56	9.95	8.68	11.74	7.30	9.27	12.34
<i>s</i>	6.14	9.21	5.03	6.24	4.20	6.71	5.57	7.10	3.65	6.93	5.10	3.98	4.05	5.88	7.26

* $p < .05$ ** $p < .01$ *** $p < .001$

statistically significant ($F = 3.64$; $df = 2,77$; $p < .05$), with Pakeha students correctly answering significantly more comprehension questions ($x = 2.02$) than Pacific Island students ($x = 1.00$).

Reading Rate

The majority of students read at the “very slow” rate of 30-59 wpm. Across all students, the mean number of words read per minute was 57.15 and this remained similar for gender, ethnicity and text type subgroups. The differences between the means for students across year and reading level groups were statistically significant. While year 4 students read an average of 47.95 wpm or “very slowly”, year 8 students read an average of 66.34 wpm or “slowly” ($t = -3.406$; $df = 88$; $p < .01$). Similarly, children in bands 0 and 1 read significantly fewer words per minute than those in bands 2 and 3 ($F = 7.10$; $df = 3,86$; $p < .001$). The only two students to read at the “fast” rate, of 120-149 wpm, were all year 8 students in band 3.

Error Rates

The majority of students (73%) made up to 10% of errors, and students achieved an overall mean error rate of 9.21%. Similar means were achieved across year level, gender, ethnicity and text type subgroups but differences between the means for the four reading level groups were found to be statistically significant ($F = 3.04$; $df = 3,86$; $p < .05$). Students reading at band 0 (13.78%) made a significantly higher proportion of errors than those reading at bands 1 (7.92%) and 3 (7.51%). This was anticipated, given that students making frequent errors at band 0 could not be observed reading easier material.

Table 3 presents a detailed analysis comparing the proportions of total errors (9.21%) for 8 sub-types and 4 types of errors, “substitutions” (6.18%), “omissions” (3.21%), “insertions” (1.82%) and “other” (.27%). Students achieved a substantial overall mean substitution rate of 6.18%, with slightly more words (3.12%) being substituted or reversed than sounds (2.02%). Means remained similar across all subgroups.

Students achieved a moderate overall mean omission rate of 3.21%, with slightly more sounds (1.61%) being omitted than entire words (1.01%). Similar means were achieved for age, gender, ethnicity and text type subgroups but differences between the means for the four reading levels were significantly different in relation to the word omission rate. ($F = 5.16$; $df = 3,86$; $p < .01$) Students reading at band 0 (3.02%) omitted significantly more entire words than those reading at bands 1 (.22%), 2 (.52%) or 3 (.60%). This

Table 3:Table of Means and Standard Deviations of Mean Error % Rates of Students by Reading Level, Age, Gender, Ethnicity & Text Type

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Total Errors					*										
x	9.21	13.78	7.92	9.44	7.51	10.30	8.13	10.52	7.34	10.07	8.03	8.75	8.22	8.12	11.53
s	8.10	13.14	6.52	6.91	3.71	9.88	5.71	9.51	5.02	9.71	5.45	5.32	5.56	6.96	10.88
Omissions															
total															
x	3.21	4.27	2.06	4.77	3.23	3.12	3.30	3.61	2.63	3.57	2.98	1.50	2.81	2.59	4.34
s	3.62	6.26	1.79	4.14	2.04	4.45	2.60	4.33	2.20	4.28	2.70	1.05	2.35	2.55	5.28
sound															
x	1.61	2.00	1.50	1.92	1.42	1.73	1.49	1.78	1.38	1.62	1.59	1.73	1.57	1.19	2.16
s	1.98	3.41	1.26	2.04	1.22	2.40	1.44	2.14	1.70	2.06	2.01	.99	2.28	1.40	2.14
word					**										
x	1.01	3.02	.22	.52	.60	1.47	.54	1.27	.63	1.41	.59	0	.77	.65	1.66
s	2.80	5.47	.47	.42	.74	3.87	.67	3.57	.86	3.64	.97	0	1.55	1.07	4.62
Insertions															
total					*		*								
x	1.82	.42	1.52	2.91	2.70	.97	2.67	1.80	1.85	2.05	1.59	1.17	1.84	1.91	1.68
s	1.99	.63	1.78	2.24	2.14	1.15	2.29	1.83	2.23	2.06	1.97	1.47	3.03	2.14	1.83
sound															
x	1.04	.67	1.05	1.21	1.22	.89	1.19	1.12	.92	1.05	.96	1.39	1.01	1.03	1.08
s	1.10	1.18	1.07	.94	1.10	1.13	1.06	1.12	1.06	1.04	1.09	1.63	1.03	1.12	1.17
word															
x	.15	.07	.12	.16	.23	.10	.20	.14	.17	.23	.06	0	.05	.24	.15
s	.39	.33	.36	.35	.45	.36	.41	.39	.39	.48	.19	0	.21	.51	.35
Substitutions/Rev															
total	6.18	7.20	5.74	7.72	5.56	6.18	6.17	6.86	5.20	6.51	5.93	4.79	6.10	5.71	6.81
x	7.00	11.12	6.69	5.85	3.68	8.51	5.18	8.42	4.15	7.83	6.25	3.08	4.41	7.04	9.06
s															
sound															
x	2.02	1.49	2.36	2.08	2.02	1.80	2.25	2.09	1.94	1.86	2.21	2.34	2.07	2.01	1.99
s	2.12	2.06	2.57	1.34	1.87	2.03	2.21	2.27	1.92	2.14	2.11	2.35	2.11	2.32	1.97

* p < .05

** p < .01

*** p < .001

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Table 3 continued

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
word															
<i>X</i>	3.12	6.35	2.54	3.35	1.74	4.14	2.21	3.86	2.20	3.75	2.37	2.95	2.58	2.77	4.27
<i>s</i>	6.05	11.20	3.73	4.00	1.58	7.93	3.02	7.34	3.32	7.65	3.07	2.75	3.88	3.85	9.25
Other															
total							*								
<i>x</i>	.27	.10	.18	.32	.46	.14	.41	.35	.16	.26	.31	.17	.21	.32	.29
<i>s</i>	.60	.31	.41	.46	.84	.37	.74	.71	.37	.59	.65	.41	.41	.66	.70
alt. pronunc.															
<i>x</i>	.16	.19	.11	.12	.20	.15	.17	.21	.09	.11	.20	.35	.16	.18	.14
<i>s</i>	.38	.60	.27	.22	.34	.45	.31	.46	.21	.26	.42	.85	.39	.42	.34
can't decipher															
<i>x</i>	.04	0	.01	.07	.08	.01	.07	.07	0	.04	.05	0	0	.04	.08
<i>s</i>	.19	0	.07	.21	.30	.05	.26	.25	0	.20	.19	0	0	.19	.27

* $p < .05$ ** $p < .01$ *** $p < .001$

finding may reflect the higher error rate for band 0 students overall, or indicate that these students experienced more scanning difficulties.

Students achieved a lower mean insertion rate of 1.82%, with more sounds (1.04%) being inserted than entire words (.15%). Similar means were observed for gender, ethnicity and text type groups, but differences between the means for reading and year level were found to be significantly different. Students reading at bands 1 (1.52%), 2 (2.91%) and 3 (2.70%), reading increasingly longer texts with more complex vocabulary, made significantly more insertions than those reading at band 0 (.42%) ($F = 7.82$; $df = 3, 86$; $p < .001$). Similarly, year 8 students (2.67%) made more insertions than year 4 students (.97%) ($t = -4.43$; $df = 88$; $p < .001$).

In regard to "other" errors, students made very few alternate pronunciations (.16%), and scarcely any errors could not be deciphered after replaying the video tapes up to five times (.04%). Similar means were achieved for all subgroups except for year level, with year 8 students (.41%) making significantly more alternate pronunciations or undecipherable attempts at unknown words than those in year 4 (.14%) ($t = -2.14$; $df = 88$; $p < .05$).

Self-correction Rate

Almost all students (90%) self-corrected fewer than 5% of text words, with students overall achieving a mean self-correction rate of 2.46%. This reading strategy was rarely used by the students and similar means were found for all subgroups

Strategy Rates

The use of a strategy led to a correct attempt, an error, or a self-correction and 66% of students paused to employ an observable strategy to work out fewer than 10% of text words read. Overall, students achieved a mean strategy rate of 9.59%, and similar means were found for reading level, year level and ethnicity. Statistically significant differences were revealed between the means for gender and text type groups. Boys (11.01%) paused to apply a strategy significantly more frequently than girls (7.56%), with only boys employing a strategy to work out more than one in every five text words read ($t = 2.72$; $df = 88$; $p < .01$). Students reading non-book texts used significantly more observable strategies than those reading fiction or non-fiction texts ($F = 5.36$; $df = 2, 87$; $p < .01$).

Table 4 presents a detailed analysis comparing the proportions of total strategies (9.59%) for 10 sub-types and 4 types of strategies, "context" (4.23%), "decoding" (2.45%), "coping" (1.52%) and "mixed" (1.39%). Students used a substantial amount of context-based strategies, achieving an overall mean rate of 4.23%. "Guessing" (1.67%) or "clarifying the meaning" of an unknown word (1.40%) were used more frequently than "reading on" (.82%) or "rereading" an unfamiliar word (.34%). Means were found to be similar for all subgroups and strategy sub-types except for text type. Students reading non-fiction texts paused to clarify the meaning of significantly more words (1.89%) than those reading fiction (1.08%) or non-book texts (1.15%).

Students used a moderate amount of decoding strategies, achieving an overall mean rate of 2.45%. They attempted to "sound out" an unknown word (2.36%), generally only the initial letter or blend, more frequently than they tried to "break up the word" into segments (.09%). Means were similar for reading level, year level and ethnicity subgroups, but the differences between the means for students across gender and text type groups were statistically significant. Boys (2.80%) attempted to "sound out" significantly more words than girls (1.74%) ($t = 2.18$; $df = 88$; $p < .05$), and students reading non-book texts (3.91%) also attempted to "sound out" significantly more words than did those reading non-fiction (2.07%) or fiction texts (1.29%) ($F = 10.65$; $df = 2,87$; $p < .001$).

Students utilised few coping strategies, achieving a mean rate of 1.52%, depending on making an "emotional response" (.71%), followed by making "no/masked attempt" (.61%), and "seeking help" (.20%). It must be noted, however, that students had been specifically instructed to work out the words on their own for this oral reading task. Similar means were found for gender, ethnicity and text type subgroups, but differences for reading and year level subgroups were found to be statistically significant. Students reading at band 0 (3.80%) utilised all subtypes of coping behaviours with significantly more words than those reading at bands 1 (.81%), 2 (.74%) and 3 (.94%) ($F = 7.50$; $df = 3,86$; $p < .001$). Year 4 students (1.01%) expressed an "emotional response" for significantly more words than those in year 8 (.41%) ($t = 2.10$; $df = 88$; $p < .05$).

Only limited use was made of mixed strategies, where students appeared to simultaneously use context, decoding and/or coping strategies. Significantly different means for age groups were found ($t = -.3.19$; $df = 88$; $p < .01$). Year 8 students (1.95%) utilised mixed strategies to deal with significantly more words than those in year 4 (.83%).

Table 4:Table of Means and Standard Deviations of Mean Strategy % Rates of Students by Reading Level, Year Level, Gender, Ethnicity & Text Type

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Total Strategies									**						**
<i>x</i>	9.59	12.12	9.41	9.51	8.20	9.93	9.25	11.01	7.56	9.95	8.68	11.74	7.30	9.27	12.34
<i>s</i>	6.14	9.21	5.03	6.24	4.20	6.71	5.57	7.10	3.65	6.93	5.10	3.98	4.05	5.88	7.26
Context															
all															
<i>x</i>	4.23	5.21	4.41	3.79	3.56	4.47	3.99	4.61	3.69	4.49	3.78	4.65	3.24	4.90	4.47
<i>s</i>	3.32	5.44	2.72	1.69	2.20	3.97	2.55	4.05	1.76	3.89	2.48	2.39	2.10	2.80	4.57
rereading															
<i>x</i>	.34	.10	.48	.36	.36	.33	.36	.29	.42	.38	.29	.35	.35	.48	.19
<i>s</i>	.665	.47	.86	.57	.50	.77	.51	.71	.55	.75	.42	.85	.53	.88	.37
reading on/rep.															
<i>x</i>	.82	.45	.88	1.02	.95	.71	.94	.74	.94	1.00	.57	.72	.89	.86	.71
<i>s</i>	.97	.99	1.12	.74	.81	1.09	.82	.99	.94	1.03	.84	.87	.92	.90	1.10
guess															
<i>x</i>	1.67	2.61	1.64	1.53	1.13	1.85	1.48	2.16	.96	1.83	1.35	2.05	.92	1.68	2.43
<i>s</i>	2.87	5.19	2.25	1.28	1.10	3.60	1.91	3.62	.78	3.60	1.59	1.42	.98	2.21	4.38
clarify meaning															*
<i>x</i>	1.40	2.05	1.40	.88	1.12	1.58	1.21	1.42	1.37	1.27	1.56	1.53	1.08	1.89	1.15
<i>s</i>	1.40	2.33	1.03	.73	.86	1.73	.94	1.56	1.14	1.11	1.73	1.61	1.35	1.59	1.05
Decoding															
all									*						***
<i>x</i>	2.45	2.43	2.68	2.42	2.26	2.45	2.45	2.88	1.85	2.41	2.23	4.03	1.44	2.10	3.91
<i>s</i>	2.39	3.70	1.93	2.35	1.77	2.78	1.94	2.62	1.88	2.50	2.07	2.96	1.36	1.98	2.96
sounding out									*						***
<i>x</i>	2.36	2.43	2.56	2.42	2.11	2.37	2.35	2.80	1.74	2.35	2.09	4.03	1.29	2.07	3.91
<i>s</i>	2.32	3.70	1.86	2.35	1.57	2.75	1.83	2.57	1.77	2.44	1.95	2.96	1.13	1.93	2.92
br. into segments															
<i>x</i>	.09	0	.12	0	.14	.08	.10	.08	.11	.06	.15	0	.15	.03	.11
<i>s</i>	.31	0	.39	0	.34	.32	.29	.26	.36	.24	.40	0	.41	.18	.30

* p < .05

** p < .01

*** p < .001

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Table 4 continued

Achievement	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
Coping															
all					***		*								
x	1.52	3.80	.81	.74	.94	2.18	.85	1.95	.90	1.74	1.27	1.02	1.63	.84	2.20
s	2.70	4.75	1.13	1.13	1.15	3.56	1.11	3.24	1.50	3.33	1.55	2.02	2.59	1.33	3.74
seeking help					*										
x	.20	.64	.05	.24	.05	.32	.80	.30	.06	.24	.18	0	.11	.15	.35
s	.75	1.42	.20	.69	.22	.99	.34	.92	.34	.91	.51	0	.43	.50	1.15
emot. react.					**		*								
x	.71	1.73	.43	.34	.42	1.01	.41	.82	.55	.84	.58	.39	.89	.41	.88
s	1.36	2.40	.66	.54	.67	1.77	.66	1.58	.96	1.66	.88	.61	1.42	.75	1.78
no/masked att.					*										
x	.61	1.43	.33	.16	.47	.85	.36	.83	.29	.67	.52	.63	.62	.28	.97
s	1.34	2.23	.77	.31	1.00	1.67	.86	1.62	.71	1.50	1.07	1.55	1.08	.86	1.90
Mixed															
all							**								
x	1.39	.67	1.50	2.56	1.44	.83	1.95	1.58	1.12	1.31	1.39	2.04	.99	1.43	1.75
s	1.75	1.15	2.18	2.10	1.37	1.18	2.04	1.91	1.48	1.89	1.50	2.08	1.04	2.15	1.79

* p < .05

** p < .01

*** p < .001

ACHIEVEMENT DESCRIPTORS

Table 5 shows percentage frequency distributions, means and standard deviations of five achievement descriptors of students by reading level, year level, gender, ethnicity and text type. Expression, clarity of speech, clause structure, sentence structure and breath control measure separate aspects of oral reading presentation and fluency.

Oral Reading Expression

Most students read with "some expression" (54%), or "little/no expression" (40%), and only 6% read with "appropriate" expression. The overall mean fell close to "some expression" ($x = 1.66$), and all subgroups achieved a similar level.

Oral Reading Clarity

Equal proportions of students (45%) used "partly clear" and "mostly clear" speech. The overall mean fell close to "partly clear" ($x = 2.37$), and no students read with predominantly "clear" speech. Similar means were achieved for year level, gender, ethnicity and text type subgroups, but the differences between the means for the four reading level groups were statistically significant ($F = 3.18$; $df = 3,88$; $p < .05$). Students reading at band 0 read with significantly less clarity than those reading at bands 1 and 3.

Clause/Sentence Structure & Breath Control

Overall findings were similar for both clause and sentence structure, with the majority of the sample exhibiting "some control" over clause structure (67%) and "some control" over sentence structure (61%) when reading unseen text. Again, very few students read with "control" over clause (1%) and sentence structure (2%)

The mean achievement level for clause structure fell just under "some control" ($x = 1.69$), and subgroup means were similar for reading level, year level and ethnicity. The differences between the means across gender and text type groups were found to be statistically significant. Girls exhibited significantly more control over clause structure than boys ($t = -3.49$; $df = 88$; $p < .001$), and students reading non-book texts displayed significantly less control over clause structure than those reading fiction or non-fiction texts ($F = 7.48$; $df = 2,87$; $p < .01$).

Table 5: Table of Percentages, Means and Standard Deviations of Achievement Descriptors of Students by Reading Level, Year Level, Gender, Ethnicity & Text Type

Achievement Descriptors	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Expression															
little/no	40	40	40	38	41	40	40	45	32	42	38	33	34	40	46
some	54	55	53	50	56	53	56	53	57	54	53	67	59	51	54
appropriate	6	5	7	12	3	7	4	2	11	4	9	0	7	9	0
x	1.66	1.65	1.67	1.75	1.62	1.67	1.64	1.57	1.78	1.62	1.71	1.67	1.72	1.70	1.54
s	.58	.59	.61	.71	.55	.60	.57	.54	.63	.57	.63	.52	.59	.64	.51
Clarity of Speech					*										
unclear	9	15	10	0	6	13	4	13	3	8	9	17	10	6	11
partly clear	45.5	70	27	63	44	42	49	46	46	48	41	50	42	39	57
mostly clear	45.5	15	63	37	50	45	47	51	51	44	50	33	48	55	32
clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x	2.37	2.00	2.53	2.37	2.44	2.31	2.42	2.28	2.49	2.36	2.41	2.17	2.38	2.48	2.21
s	.64	.56	.68	.52	.62	.70	.58	.69	.56	.63	.66	.75	.68	.62	.63
Clause Structure									***						**
little/no control	32	35	40	12.5	28	38	27	47	11	30	35	33	28	15	57
some control	67	65	60	75	72	62	71	51	89	68	65	67	72	82	43
control	1	0	0	12.5	0	0	2	2	0	2	0	0	0	3	0
x	1.69	1.65	1.60	2.00	1.72	1.62	1.76	1.55	1.89	1.72	1.65	1.67	1.72	1.88	1.43
s	.49	.49	.50	.53	.46	.49	.49	.54	.31	.50	.48	.52	.45	.41	.50
Sentence Structure					*		*		**						*
little/no control	37	45	50	25	22	47	27	49	19	32	41	50	28	27	57
some control	61	55	50	63	75	53	69	49	78	64	59	50	69	70	43
control	2	0	0	12	3	0	4	2	3	4	0	0	3	3	0
x	1.66	1.55	1.50	1.87	1.81	1.53	1.78	1.53	1.84	1.72	1.59	1.50	1.76	1.76	1.43
s	.52	.51	.51	.64	.47	.50	.52	.54	.44	.54	.50	.55	.51	.50	.50
Breath control															*
Little/no control	27	45	7	50	28	22	31	30	21	26	26	33	17	18	46
Some control	70	50	93	38	69	76	65	66	76	70	71	67	76	79	54
control	3	5	0	12	3	2	4	4	3	4	3	0	7	3	0
x	1.77	1.60	1.93	1.62	1.75	1.80	1.73	1.74	1.81	1.78	1.76	1.67	1.90	1.85	1.54
s	.50	.60	.25	.74	.51	.46	.54	.52	.46	.51	.50	.52	.49	.44	.51

* p < .05

** p < .01

*** p < .001

The mean achievement level in relation to sentence structure fell between “little/no control” and “some control”. Statistically significant differences in the means were revealed for reading and year level, gender and text type subgroups. Students reading at band 1 showed significantly less control over sentence structure than those reading at band 3 ($F = 2.74$; $df = 3,86$; $p < .05$). Year 4 students displayed less control over sentence structure than those in year 8 ($t = -2.27$; $df = 88$; $p < .05$), and boys showed less control over sentence structure than girls ($t = -2.87$; $df = 88$; $p < .01$). Students reading non-book texts demonstrated less control over sentence structure than those reading fiction or non-fiction texts ($F = 4.10$; $df = 2,87$; $p < .05$).

The majority of students (70%) showed “some control” over breathing and saliva flow while reading aloud. The mean achievement level in relation to breath control fell below “some control” ($x = 1.77$), and this was similar for reading and year level, gender and ethnicity subgroups. The differences between means for the three text type groups were revealed to be statistically significant ($F = 4.82$; $df = 2,87$; $p < .05$), with students reading non-book texts displaying significantly less breath control than those reading fiction or non-fiction texts.

IMPRESSIONISTIC INDIVIDUAL DESCRIPTORS

Table 6 shows the percentage frequency distributions of students across 17 impressionistic individual descriptors by reading and year level, gender, ethnicity and text type.

Speech Impediments and Accents

Physical impediments were discernable in the speech of only 10% of students who stuttered or incorrectly pronounced specific sounds, such as ‘th’ or ‘r’, due to such physical difficulties as protruding teeth. Frequencies observed across all subgroups reflected the overall distribution. Accents were discernable in 19% of students and, as anticipated, the frequencies across the three ethnic groups were significantly different (chi square = 9.75; $df = 2$; $p < .01$). A higher percentage of Pacific Island students (67%) spoke with a discernable accent, although it must be noted that only six students were included in the sample. Most of the Pakeha students who spoke with a discernable accent (16%) appeared to be Non-English Speaking Background (NESB) learners from Asia.

Table 6: Table of Percentages of Impressionistic Individual Descriptors of Students by Reading Level, Year Level, Gender, Ethnicity & Text Type

Descriptors	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Speech												**			
phys. impeded.	10	5	13	12	9	11	9	8	14	16	3	0	17	12	0
accent	19	35	13	25	12	22	16	17	22	14	18	67	24	15	18
Vis/Sens. - distance															
moves further away	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
moves closer	47	50	50	38	44	51	42	45	49	44	47	67	45	52	43
accepts set up	53	50	50	62	56	49	58	55	51	56	53	33	55	48	57
Vis/Sens. - place					*							**			
keeps with finger	22	45	20	25	9.5	29	16	19	27	6	44	33	24	24	18
keeps with hand	15	20	20	0	9.5	20	9	13	16	18	9	17	17	15	11
keeps with eyes	63	35	60	75	81	51	75	68	57	76	47	50	59	61	71
Verbal commun.															
chatty	15.5	20	17	37.5	6	18	13	11.5	22	14	21	0	21	18	7
moderate	75.5	75	73	37.5	88	75	76	79	70	74	76	83	72	76	79
reticent	9	5	10	25	6	7	11	9.5	8	12	3	17	7	6	14
Sociability															
initiates	26	20	30	38	22	22	29	23	30	26	29	0	28	30	18
moderate	74	80	70	62	78	78	71	77	70	74	71	100	72	70	82
avoids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reliance on the T.A.					*		*								
dependent	12	25	10	12	6	11	13	17	6	10	15	17	4	48	14
moderate	42	65	40	38	31	56	29	36	51	42	41	50	48	43	36
independent	46	10	50	50	63	33	58	47	43	48	44	33	48	39	50
Volume of Speech							*								
loud	9	10	17	0	3	15	2	10	8	6	15	0	7	15	3
moderate	54	70	53	63	44	58	51	60	46	50	62	50	41	61	61
quiet	37	20	30	37	53	27	47	30	46	44	23	50	52	24	36
Confidence															
over-confident	1	0	3	0	0	2	0	0	3	0	3	0	0	3	0
moderate	70	60	77	75	69	71	69	64	78	70	74	50	72	76	61
under-confident	29	40	20	25	31	27	31	36	19	30	23	50	28	21	39
Risk taking															
many wr. attempts	8	10	7	12.5	6	7	9	9.5	5.5	8	9	0	0	6	18
moderate	84	70	90	87.5	88	82	87	81	89	82	88	83	90	88	75
few/no attempts	8	20	3	0	6	11	4	9.5	5.5	10	3	17	10	6	7

* p < .05

** p < .01

*** p < .001

continued on next page

Table 6 continued

Descriptors	Total	Reading Level				Year		Gender		Ethnic Group			Text Type		
		Band 0	Band 1	Band 2	Band 3	4	8	Male	Female	Pakeha	Maori	Pac. Isl.	Fiction	Non-Fiction	Non-Book
number	90	20	30	8	32	45	45	53	37	50	34	6	29	33	28
Interest in task					*		**								
enthusiastic	15	30	16.5	12	6	24.5	7	11	22	14	21	0	21	24	0
moderate	78	50	77	88	94	64.5	91	81	73	74	79	100	76	70	89
unmotivated	7	20	6.5	0	0	1	2	8	5	12	0	0	3	6	11
Effort/perseverance					***		**								
concentrated effort	62	20	70	75	78	49	76	68	54	62	59	83	69	55	64
moderate	38	80	30	25	22	51	24	32	46	38	41	17	31	45	36
little/no effort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wakefulness															
alert	37	30	33	75	34	29	44	32	43	42	35	0	35	46	28
moderate	38	45	30	12.5	47	38	38	34	43	34	41	50	48	30	36
tired	25	25	37	12.5	19	33	18	34	14	24	24	50	17	24	36
Physical Well-being							*								
in good health	48	35	40	75	56	36	60	47	49	54	38	50	55	49	39
moderate	31	35	47	12.5	19	44	18	30	32	24	38	50	34.5	33	25
unwell	21	30	13	12.5	25	20	22	23	19	22	24	0	10.5	18	36
Physical Movement							*								
still	49	25	47	75	59	38	60	55	40	56	38	50	31	49	68
moderate	36	45	33	25	34	38	33	26	49	34	41	17	48	33	25
active	15	30	20	0	6	24	7	19	11	10	21	33	21	18	7
Emotional reaction															
frustrated	10	15	7	25	6	11	9	13	5	8	15	0	14	9	7
embarrassed	14	20	13	12.5	12.5	12	16	17	11	18	9	17	14	9	22
Using humour	14	15	17	12.5	12.5	18	11	11	19	14	17	0	20	15	7
tearful	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
moderate	61	50	63	50	69	58	64	59	65	60	59	83	52	67	64
Response to text					*		**								**
active response	29	30	40	38	16	36	22	25	35	28	35	0	28	48	7
moderate	58	50	40	50	81	42	73	62	51	60	53	67	62	49	64
little/no response	13	20	20	12	3	22	5	13	14	12	12	33	10	3	29
Follows Instructions															
successful	72	55	77	75	78	69	76	73	70	72	71	83	76	61	82
moderate success	26	40	20	25	22	27	24	25	27	26	26	17	24	36	14
little/no success	2	5	3	0	0	4	0	2	3	2	3	0	0	3	4

* p < .05

** p < .01

*** p < .001

Visual/Sensory Motor Behaviours

Fifty-three percent of students accepted the distance of the desk set-up, but 47% decreased the distance by moving the book or their head closer (47%). The frequencies across the subgroups were not significantly different from those expected by chance. The majority of students (63%) generally kept their reading place through eye contact, although 22% kept their place by running a finger under each word. Frequencies observed for year level, gender and text type subgroups were similar, but those observed across reading level and ethnicity groups were found to be significantly different. More students reading at band 0 kept their place by running their finger under each word (45%), while most students reading at band 3 kept their reading place with their eyes (81%) (chi square = 14.31; df = 6; $p < .05$). A significantly lower percentage of Pakeha students (6%) kept their place by running their finger under words (chi square = 17.65; df = 4; $p < .01$).

Verbal Communication and Sociability

The majority of students exhibited "moderate" behaviours in regard to conversing (75.5%) or making social contact (74%) with the teacher-administrator, and frequencies observed across all subgroups reflected the overall distribution.

Reliance on Teacher-Administrator

Most students displayed "moderate" (42%) or "independent" (46%) reading behaviours. Frequencies for gender, ethnicity and text type subgroups were similar, but those observed for reading and year level were significantly different. A higher percentage of students reading at band 3 exhibited "independent" reading behaviours (63%) (chi square = 14.91; df = 6; $p < .05$), as did a similar percentage of Year 8 students (chi square = 6.83; df = 2; $p < .05$). This was anticipated as all students reading at band 3 were in year 8.

Volume of Speech

Most students spoke with a "moderate" (54%) or "quiet voice" (37%). Only those frequencies for the two year levels were found to be significantly different to those expected (chi square = 7.14; df = 2; $p < .05$). Significantly more year 8 students spoke with a "quiet voice" (47%) than did year 4 students (27%).

Confidence and Risk-Taking

Most students (70%) showed “moderate” levels of confidence, with a further 29% showing observable signs of being “under-confident”. Frequencies observed across all subgroups reflected the overall distribution. Similarly, most students were prepared to take “moderate” risks at working out unknown words (84%), and frequencies observed across all subgroups reflected the overall distribution. The only student to show signs of over-confidence, a year 4 girl, stopped the teacher-administrator from completing the task instructions and claimed it would be “easy-peasy”. Upon facing an unknown word only four words into the passage, however, she lost her poise momentarily before turning away from the T.A. and holding the book at an angle such that only she could see the words. She then continued to read in an ostensibly confident manner, simply substituting any unknown words.

Interest in Task and Effort

Most students (78%) exhibited “moderate” levels of interest in carrying out the oral reading task. Fifteen percent showed signs of “enthusiasm” and only 7% appeared “unmotivated”. One year 4 boy struggled through half of a text passage before announcing that he was “nearly finished”, after which he lapsed into silence and slouched back in his chair. The teacher-administrator asked if he could see the words and used her pen to point at the next word. The passage was completed slowly, with the child making an apathetic attempt at words only when the pointer was used. Only those frequency distributions for reading level and year level groups were significantly different to those expected. A higher percentage of students reading at band 0 exhibited observable signs of “enthusiasm” (30%) (chi square = 15.67; df = 6; $p < .05$), as did a similar proportion of year 4 students (chi square = 9.29; df = 2; $p < .01$). This finding was anticipated, as most students reading at band 0 were in year 4 and it supports general NEMP findings that year 8 students exhibit less enthusiasm across various curriculum areas.

The majority of students (62%) exhibited “concentrated effort” across time, with the rest showing a “moderate” level of focussed attention. This may reflect either the fact that students were required to read unseen text at a challenging level or the one-on-one interview setting. Only those frequency distributions for reading and year levels were found to be significantly different to those expected. A higher percentage of students at band 3 (78%) showed ‘concentrated effort’ (chi square = 19.94; df = 3; $p < .001$). as did a similar percentage of year 8 students (chi square = 6.81; df = 1, $p < .01$). This finding may simply reflect that only year 8 students read at band 3 in this sample, and longer more difficult texts provided more opportunities to exhibit perseverance.

Physical Well-Being, Physical Movement and Wakefulness

While most students (79%) exhibited signs of being “in good health” or in “moderate” health, 21% exhibited signs of being “unwell”. Only the frequencies for the two year levels were revealed to be significantly different, in that more year 8 students exhibited observable signs of being “in good health” (chi square = 8.01; df = 2; $p < .05$). The frequencies of students exhibiting symptoms of being “unwell”, however, was similar for both year 4 and year 8 students. Similar percentages of students exhibited observable signs of “moderate” wakefulness, being “alert” or “tired”. Frequency distributions observed across all subgroups were also similar. Forty-nine percent of students remained predominantly “still”, with a further 36% exhibiting “moderate” movement throughout the reading task. Only the frequencies observed for the two year levels were found to be significantly different (chi square = 6.97; df = 2; $p < .05$). Significantly more year 8 students remained predominantly “still” (60%).

Emotional Reaction to Challenge

The majority of students (61%) exhibited “moderate” emotional reactions when working through difficulties. Similar percentages showed signs of being “frustrated”, “embarrassed” or “using humour”. The only child to become “tearful”, a year 4 boy, became increasingly agitated when faced with unknown words. A short burst of angry tears followed his pronouncement that he didn’t want to complete the task because it was too hard, “I don’t know them!”. Frequencies observed across all subgroups reflected the overall distribution.

Response to Text

Over half the students (58%) exhibited a “moderate” response to text message, theme or mood. A further 29% of students exhibited an “active response” by scanning illustrations to enhance their involvement with the text, sharing emotional responses with the teacher-administrator, or talking about a related life experience e.g. “we’ve been to a farm like that”. Frequency distributions observed for reading and year level and text type subgroups were revealed to be significantly different. A higher percentage of students reading at band 3 (81%) exhibited a “moderate” response to text (chi square = 12.60; df = 6; $p < .05$), as did a similar percentage of year 8 students (chi square = 10.49; df = 2; $p < .01$). A significantly lower percentage of students reading non-book texts (7%) made an “active response” (chi square = 17.48; df = 4; $p < .01$).

Following Instructions

Most students (72%) were “successful” at following general instructions concerning selection procedures and the starting place for reading, and only 2% of students had “little/no” success. Frequencies observed across all subgroups reflected the overall distribution.

CORRELATIONS

The interrelationships between the achievement scores and achievement descriptors are reported in Table 5. (n = 90 in all cases except for comprehension where n = 80)

The inter-correlation coefficients of the five achievement scores were almost all statistically significant. There were significant negative relationships between reading rate and three other achievement scores; strategy rate ($r = -.68$; $p < .001$), error rate ($r = -.41$; $p < .001$), and self-correction rate ($r = -.33$; $p < .01$). These correlations were anticipated, as were the significant positive relationships between the strategy rate and two other variables; error rate ($r = .81$; $p < .001$) and self-correction rate ($r = .36$; $p < .001$), as all these behaviours involve pausing to work out words. There was, however, no significant correlation between self-correction rate and two other variables, error rate ($r = .04$) and comprehension ($r = .08$). There was a significant negative correlation between error rate and comprehension ($r = -.22$; $p < .05$). It appears that students making more errors also applied more strategies, read more slowly and achieved a lower comprehension score. There was a significant positive relationship between reading rate and comprehension rate ($r = .36$; $p < .01$) with students reading more words per minute also gaining higher comprehension scores.

There were fewer significant relationships amongst achievement scores and achievement descriptors. No significant correlations existed between either comprehension or self-correction rate and any of the five achievement descriptors. There was no significant relationship between breath control and any of the five achievement scores, with correlation coefficients ranging from .05 to .17. There were significant negative relationships between strategy rate and four variables; expression ($r = -.35$; $p < .001$), clarity ($r = -.22$; $p < .05$), clause structure ($r = -.55$; $p < .001$) and sentence structure ($r = -.50$; $p < .001$). Students pausing to employ more strategies achieved lower levels of control over these aspects of oral performance. There was a significant positive correlation between reading rate and the same four achievement descriptors; expression ($r = .26$; $p < .05$), clarity ($r = .25$; $p < .05$), clause structure ($r = .43$; p

Table 7: Correlation coefficients between Achievement Scores and Achievement Descriptors

Correlation Coefficients between Achievement Scores: comprehension, reading rate, error rate, self-correction rate and strategy rate

Correlation Coefficient	Reading Rate	Error Rate	Self-Correction Rate	Strategy Rate
Comprehension Rate	.36 **	-.22 *	.08	-.33 **
Reading Rate (wpm)		-.41 ***	-.33 **	-.68 ***
Error Rate			.04	.81 ***
Self-Correction Rate				.36 ***
Strategy Rate				

* p < .05 ** p < .01 *** < .001

Correlation Coefficients between Achievement Scores (comprehension, reading rate, error rate, self-correction rate and strategy rate) and Achievement Descriptors (expression, clarity of speech, clause structure, sentence structure and breath control)

Correlation Coefficient	Expression	Clarity of Speech	Clause Structure	Sentence Structure	Breath Control
Comprehension	.12	.13	.20	.10	.12
Reading Rate (wpm)	.26 *	.25 *	.43 ***	.48***	.05
Error Rate	-.25 *	-.16	-.46 ***	-.38 ***	-.17
Self-Correction Rate	-.09	.11	-.10	-.10	.14
Strategy Rate	-.35 ***	-.22 *	-.55 ***	-.50 ***	-.14

* p < .05 ** p < .01 *** < .001

Correlation Coefficients between Achievement Descriptors: expression, clarity of speech, clause structure, sentence structure and breath control

Correlation Coefficient	Clarity of Speech	Clause Structure	Sentence Structure	Breath Control
Expression	.43 ***	.37 ***	.31 **	-.05
Clarity of Speech		.44 ***	.35 ***	.34 **
Clause Structure			.76 ***	.21
Sentence Structure				.29 **
Breath Control				

* p < .05 ** p < .01 *** < .001

< .001) and sentence structure ($r = .48$; $p < .001$). Students achieving higher levels of control over these aspects of oral performance also read more words per minute. There were significant negative correlations between error rate and several oral performance descriptors; expression ($r = -.25$; $p < .05$), clause structure ($r = -.46$; $p < .001$) and sentence structure ($r = -.38$; $p < .001$). This was anticipated, given the significant positive correlation between strategy and error rate ($r = .81$).

The achievement descriptors were specific measures of overall oral performance, so the preponderance of significant positive correlations was not surprising. There was a significant positive relationship between clarity of speech and expression ($r = .43$; $p < .001$), clause structure ($r = .44$; $p < .001$), sentence structure ($r = .35$; $p < .001$) and breath control ($r = .34$; $p < .001$). Students achieving higher levels of control over language structure also read more clearly. There were, however, no significant correlations between breath control and two other variables, expression ($r = -.05$) and clause structure ($r = .21$).

SUMMARY OF FINDINGS

Major findings regarding achievements, working habits and personal characteristics of New Zealand primary school students reading below normal expectations are summarised below.

Achievements

- Students read at a “very slow” mean reading rate of 57.15 words per minute.
- Students achieved a mean error rate of 9.21% when reading at an instructionally appropriate level of difficulty. The most common error type was substitutions, followed by omissions and insertions.
- Students achieved a mean strategy rate of 9.59%. The most common strategy type was “context” strategies, especially “guessing” or “clarifying the meaning” of words, followed by “decoding”, “coping” and “mixed” strategies.
- Over half of the students were able to answer at least two of the three literal comprehension questions correctly.
- Self-corrections occurred only rarely ($x = 2.46\%$) and almost all students self-corrected fewer than 1 in every 20 text words read.
- There were statistically significant correlations amongst achievement scores. Students who paused to employ more strategies also made more errors, self-corrected more words and read

more slowly. Students reading more words per minute also made fewer errors and gained a higher literal comprehension score.

- Forty percent of students read with “little/no” expression, most used “partly clear” or “mostly clear” speech, and over half displayed “some” control over clause/sentence structure and breath control. Ninety percent of students showed no discernable physical speech impediments. About half spoke at a “moderate” volume level, and a further third used a “quiet” voice.
- There were statistically significant correlations amongst achievement descriptors. Students achieving higher levels of control over expression, clause/sentence structure and breath control also read more clearly. Students making more errors, or pausing to employ more strategies, achieved lower levels of control over expression, clarity, clause structure and sentence structure. Students achieving higher levels of control over these aspects of oral reading fluency also read more words per minute.

Work Habits

- Almost half the sample decreased the reading distance by moving either the book or their head closer. Although 63% of students kept their reading place through eye contact, nearly a quarter ran their finger under words.
- Approximately half the sample remained predominantly “still” throughout the oral reading task and exhibited “independent” reading behaviours.
- The majority of students were “successful” at following general instructions about selection procedures and starting places for reading, and applied “concentrated effort” to the task.

Personal Characteristics

- The majority of students exhibited “moderate” levels of “verbal communication”, “sociability”, “confidence”, “risk-taking” and “interest”. Half exhibited a “moderate” response to the text.
- Over half the students exhibited “moderate” emotional reactions to challenge. Those who did react displayed “embarrassment”, “humour” or “frustration”.
- Just under half showed signs of being “in good health”, but one in five students showed symptoms of being “unwell”.

Differences for Reading and Year Level, Gender, Ethnicity and Text-type Subgroups

The number of statistically significant differences for both reading and year level groups were to be expected, as all students reading at reading level bands 2 and 3 were all in year 8, and only 10% of year 8 students read at bands 0 and 1. There were several significant differences for text type, but very few for ethnicity and gender.

- Students reading at the two highest bands read significantly more words per minute, but still read at a “slow” rate. More students reading at band 3 exhibited “independent” reading behaviours and “concentrated effort”. They kept their place with their eyes and made more insertion errors. Those reading at the lowest reading band made significantly more errors, but less “omissions”. These students exhibited less “clarity of speech”, relied more on keeping their place with their finger, employed more “coping” strategies, especially “emotional responses”. Students reading at band 0 showed more “enthusiasm” for the task, but less response to the text, and those reading at band 1 exhibited less control over sentence structure.
- Year 8 students utilised significantly more “mixed” strategies than year 4 students, and made more “alternate pronunciation” and undecipherable errors. They spoke “quietly”, and exhibited more observable signs of being “in good health”. Year 4 students were more active during the oral reading task.
- Students reading non-book texts exhibited less control over clause structure, sentence structure and breath control than those reading fiction and non-fiction texts, and more exhibited “little/no response” to the text. They paused to employ significantly more strategies, especially decoding strategies, by attempting to “sound out” more words. Students reading non-fiction texts relied more on the context strategy of “clarifying the meaning” of unknown words.
- Almost all Pakeha students speaking with an accent appeared to be Asian immigrants from Non-English Speaking Backgrounds (NESB). The majority of Pakeha students kept their reading place using eye contact, and achieved significantly better comprehension scores than the Pacific Island students. Significantly more Pacific Islanders spoke with an accent.
- Boys paused to employ significantly more strategies than girls by attempting to “sound out” more words. Boys also displayed less control over clause and sentence structure.

DISCUSSION

This diagnostic analysis offers insights into the common difficulties faced by these students, the strategies that they commonly utilised, and the work habits and personal characteristics they brought to the oral reading task.

Students read at the “very slow” mean reading rate of approximately 57 words per minute. An earlier study by Lesgold, Resnick & Hammond (1985) investigated the reading rates of “phonics” and “non-phonics” taught groups of “normal” beginning readers in America. It was reported that both groups achieved a mean rate of 40 to 45 wpm by the end of Grade 1, although the “phonics” taught group took longer to achieve this. The “very slow” mean reading rate achieved by students reading at band 0 (44.46 wpm) equate with the younger readers in the earlier study. The positive relationships between reading rate and oral reading performance descriptors (expression, clarity, clause structure and sentence structure) suggest that these variables are separate aspects of the bigger problem of reading difficulties. These findings do not support the sole use of interventions to increase reading rate in an attempt to bring about corresponding improvements in reading proficiency or comprehension.

The error percentage rate was just over 9%, of which substitutions were the most common error type, followed by omissions and insertions. Frankel Tal & Siegal (1986) investigated errors made by “dyslexic” and “poor” grade 4-5 readers, compared with “younger normal” Grade 2-3 readers, in Canadian schools. Although the results of this study coincide with Frankel Tal & Siegal’s findings that nearly 50% of errors were vowel substitutions, followed by consonant substitutions, and deletion and insertion errors, differences in the type of substitution errors, however, are worthy of further consideration. Vowel and consonant substitutions formed a substantial proportion of errors made by students in the earlier Canadian study, while whole word substitution errors were made only infrequently. For the purposes of this NEMP probe study, substitutions of a sound in a sound were identified as “sound substitutions”, regardless of whether a vowel, consonant or blend was involved. This sample of New Zealand primary school students reading below expectation achieved a mean substitution rate of 6.18% of words read (the mean error rate was 9.21%), but more words were substituted than sounds. It is probable, however, that this difference stems from the choice of reading material as lists of pseudowords were read in the Canadian study. Texts in the NEMP oral reading task words were presented within an authentic fiction, non-fiction or non-book context, providing an opportunity for students to use context-based cues when

deciphering unfamiliar words. This difference may reflect the greater emphasis placed on the use of context cues in reading programmes used in New Zealand schools.

Students paused to employ an observable strategy for fewer than 1 in every 10 text words read. Context-based strategies, especially “guessing” or “clarifying the meaning” of words, were the most common strategies used, followed by decoding (typically “sounding out” of the initial letter sound only). Coping strategies (typically an “emotional response” or “no/masked attempt”) and mixed strategies were used infrequently. The British study by Masterton, Laxon & Stuart (1992) found that “normal” beginning readers in their second year at school used a mixture of “word recognition” and “assembled phonology” strategies to read familiar and unfamiliar words, in a similar way to “older skilled” readers. This NEMP probe study observed New Zealand students employing a much wider range of strategies when pausing to work out unfamiliar words. The tendency for the students in this sample to rely on contextual cues may indicate a lack of ability in the use of “assembled phonology”. This view is supported by the tendency for students to “sound out” only the initial letter of words.

These findings may reflect differences in teaching approaches across countries. Greaney (1992) carried out a New Zealand study which found that “young normal” readers achieved better on rhyme awareness and analogy tasks than did “older poor” readers matched for word recognition achievement, but that both groups scored significantly better when a reading list of words was ordered by rhyme patterns. Greaney also found that teaching “older poor” students to use analogy-based cues was a more effective tutoring procedure than emphasising the use of context-based cues. Kirk (2001) found that the severe reading problems exhibited by the 6 severely reading-disabled students in her study resulted from difficulties in using accurate and complete letter-sound information and integrating this information with the use of contextual meaning to decipher words. The findings of both these New Zealand studies support the view that students reading below expectation are deficient in the knowledge that allows them to effectively apply decoding strategies based on letter-sound information. Similarly, Frankel Tal & Siegal (1996) concluded that “disabled” readers, regardless of whether they were “dyslexic” or “poor” readers, lag behind “normal” readers in phonological decoding skills.

Comprehension scores achieved by students in the NEMP probe study were satisfactory, given the majority of students (64%) answered at least 2 of 3 questions correctly. These results, however, reflect only literal comprehension as the answers were explicit in the text. Connelly, Johnston & Thompson

(2001) used a more extensive assessment (Neale Analysis of Reading Ability-Revised, 1989) to measure recall of the main idea, sequence of events, other details, and some limited inference. It was found that “phonics” taught Scottish beginning readers (6 year olds) read more slowly than “non-phonics” taught New Zealand students matched for age and word recognition skills, but that they achieved higher comprehension scores and produced more contextually appropriate errors. Further international studies are needed in this area to determine whether these differences remain in older students.

Students achieved a low self-correction rate of 2.46%. Thompson (1984) cautioned against too ready acceptance of the common interpretation that a high incidence of self-corrections is associated with high reading attainment. “An alternative interpretation is that self-corrections to some extent reflect incomplete processing that occurs with premature responding.” (Thompson, 1984, p. 53) Self-corrections were reported in this study as a percentage of text words read to avoid the confounding effect of measuring incidence as a proportion of errors.

In regard to oral reading fluency, students generally spoke with “little/no” expression, while exhibiting “some” degree of control over clarity, clause structure, sentence structure and breathing. Young & Bowers (1995) studied the role of text phrasing skills of “poor” and “average” Grade 5 readers (mean age of 10.8 years) and found that “poor” readers were less fluent and expressive than “average” readers across all difficulty levels. It was indicated that parsing, the ability to reflect sentence structure through phrasing and inflexion, contributed to fluency in “average” but not in “poor” readers. Twenty-seven percent of students in this study exhibited “little/no” control over breathing or saliva flow, making noticeably loud noises as they gasped for air and/or sucked up excess fluids. The finding that more year 8 students spoke quietly may indicate that speech volume control and the awareness of appropriate speech volume levels for one-on-one interview settings increases with age and experience. Speech language therapy is a relatively specialised field of study and until recently many classroom teachers have accepted that oral language will develop naturally for most students through practice and maturation. Although links between speech problems and subsequent reading, writing and spelling difficulties are recognised, more research and professional development for classroom teachers is needed to help students overcome these barriers to literacy.

The proportion of students exhibiting symptoms of being unwell (21%) in this sample appears high for those well enough to attend school. If 21% of students attending school were showing similar symptoms, this would involve a minimum of six students in a class of thirty with congested nasal or breathing passages. Given that NEMP testing takes place late in Term three for Year 8 students and early in Term four for year 4 students, the most common symptom of nasal congestion (with students frequently needing to blow or wipe their nose) may reflect the incidence of seasonal allergies. Blocked nasal passages exacerbates difficulties relating to speech clarity and breathing control.

The findings regarding visual/sensory movements suggest that visual problems may complicate reading difficulties for this sample of students. It is not known whether the 47% of students who decreased the distance, or the 22% of students who physically kept their place with their finger, experienced visual problems, but conventional seating arrangements are presumably based on the distance that suits most students with normal or corrected vision. It is possible that students decreased the distance in an attempt to improve their visual perception, eye-tracking or concentration. Anecdotal evidence, backed by the researcher's own teaching experience, does indicate that students diagnosed by optometrists with visual perception and tracking problems make reading progress as a result of corrective lenses and/or eye muscle exercises.

Students were identified as exhibiting extreme or moderate levels of a range of personal characteristics. Kirk (2001) established that self-beliefs determined the level of gains achieved by remedial readers across a year of intensive one-on-one tutoring. Descriptions of student behaviours in regard to "reliance", "confidence", "risk-taking", "effort", and "emotional reaction" all reflect student self-belief. The satisfactory levels of these work habits and personal characteristics found in the NEMP one-on-one assessment setting suggest that individualised instruction away from the classroom environment provides optimal opportunities for students reading below expectation to apply themselves fully to the learning task.

A number of statistically significant differences across both reading and year level groups suggest that changes in reading behaviours may be the result of maturity, increased reading proficiency or both. It was interesting that students reading non-book texts employed significantly more strategies and exhibited less control over clause structure, sentence structure and breath control. It is possible that students lacked experience in reading this text type or that the fiction and non-fiction texts provided more contextual cues. While boys did employ significantly more strategies than girls and exhibit less control

over clause and sentence structure, the comprehensive findings of this study challenge common assertions that reading difficulties are principally a gender issue. Just as Eley (undated) warned that differences in reading achievement should not be interpreted as boys failing, the results of this study warn against treating reading difficulties as a gender, behaviour or attitudinal issue. Students in this sample, regardless of gender, achieved similar achievement scores and brought a satisfactory range of attitudes and work habits to the learning task.

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APPENDICES

Appendix 1

Standardised NEMP Administration Procedures

Reading Band Indicator

(NEMP Reading and Speaking Report, 2000, p. 16)

This bright, attractively illustrated laminated chart includes colour-coded patches from yellow (band 1) to purple (band 5), three at each level. The theme of the chart provides an authentic context of activities that New Zealand children might like to do outside of school. There are three parallel patches for each colour band and increasingly complex vocabulary is used at each level. For example:

I like to....

Band 1 - see the big fish swimming around the pool

Band 2 - please my best friends by sharing fun things with them

Band 3 - talk on the telephone to people whose company I especially enjoy

Band 4 - glue myself to the television set whenever the occasion occurs for complete relaxation

Band 5 - gyrate to the ecstatically weird rhythms of pulsatingly powerful synthesiser orchestrations for symphonic percussion

The teacher-administrator selects one patch to be read at each progressive band/colour until one or more word reading errors occurred. When an error is made, the student is directed to read the other patches at the same band/colour to ascertain whether this is the appropriate starting band – the one where the students makes one or more errors on at least two of the three patches for a band/colour. (Reading Record Manual: Fiction, 2000)

First Reading Passage

Teacher-administrators are expected to establish and maintain a friendly and encouraging rapport with students throughout the task, and to allow the student to choose a passage from the set of three. A brief introduction is read by the teacher-administrator in a conversational rather than formal manner, to explain the background to the chosen text.

Eg Band 1 fiction text - Moana's Island (Andrew Campbell)

"This book is called Moana's Island" (point to the title)

“The story is about a girl called Moana who lives in the city but who was born on an island far away. On her seventh birthday her father takes her back to the island to meet all her cousins.” (Flockton & Crooks, 2001, p. 17)

A standardised and clear explanation of the activity parameters is then read to all students. “I want you to read this passage to me from this dot to the next dot and to think about what it is about as you read.

If you come to words you don’t know, do what you usually do when you try out new words. Try to work out the words aloud so that I can find out how you do it.

Don’t worry about mistakes but stop and correct them if you can.

I will keep quiet and let you work things out unless you are badly stuck.

Think about the story/information as you read. When you have finished I will ask you to tell me about it and I will ask you some questions.”

During the reading, teacher-administrators are expected to be positive and encouraging without influencing the student’s reading. They are trained to avoid rush, not give prompts, and to only give help if requested or if the student is confused and cannot proceed – after allowing the student time to try the word again.

The passage checklist allows the teacher-administrator to record the number of errors and self-corrections during the reading. The preferred word accuracy rate is 90% or one error (including self-corrections) in 10 running words, to gain information about the student’s reading strategies. A target error range appears on the passage checklist to provide a quick guide.

Comprehension

Comprehension questions are asked for each passage read. Three literal or factual questions are asked first, for which the answers are explicit in the text. Then two or three inferential questions are asked, for which answers are not explicit in the text but can be deduced through understanding of the text and generalised knowledge.

Eg: from Moana’s Island:

1. What were the animals that went with them on the ship?
2. As they came near to the island what did they see first?
3. Who came from the island to meet Moana?
4. What did Kimi mean when he said to Moana, “You’ve gone soft!”?
5. Name some other things that Kimi might show Moana on the island.

Second Reading Passage

After the first passage, the teacher-administrator determine the band level of a second passage, based on the error rate. If the student read with word accuracy of 93% or higher – go to the folder for the next higher reading band (unless already on band 5 so stay on that); if the student read with word accuracy of 85% or lower – go to the folder for the next lower reading band (unless already on band 0 so stay on that); if the student read with word accuracy of between 86% and 92% – ask the student to choose a second passage from the same band. However, discretion should be used. The teacher-administrator may or may not ask the questions of the first passage if it is too easy or hard. If the student was struggling, drop down to the next lower band. (NEMP Reading Record Manual: Fiction, 2000) Teacher-administrators therefore had the opportunity to use their professional judgement based on their classroom experience.

Appendix 2
Coding System Format

Student Number: _____

Year 4	Year 8		Buff 0	Yellow 1	Pink 2	Green 3		Male	Female
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Group	Text Type	0	1	2	3
A	Fiction	1 2 3	1 2 3	1 2 3	1 2 3
B	Non-Fiction	1 2 3	1 2 3	1 2 3	1 2 3
C	Non-Book	1 2 3	1 2 3	1 2 3	1 2 3

Oral Reading Comprehension:

Factual or Literal from Text				Inferential			
1: 1 0	2: 1 0	3: 1 0		4: 2 1 0	5: 2 1 0		

Oral Reading Rate:

No. Words in Text	Time Taken	Words Read per Minute
	mins secs	

Oral Reading Expression:

appropriate	some	little/none
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Oral Reading Clarity:

clear	mostly clear	partly clear	unclear
physical impediment:		accent:	other:
Comment:			

Phrasing/Breath control:

clause structure	some structure	little or none
sentence structure	some structure	little or none
breath control	some control	little or none

Visual/Sensory Motor Aspects:

accepts distance as per set up	moves text/head closer	moves text/head further away
keeps place with eyes	physically keeps page place	physically keeps word place

Comments:

Error Analysis (last attempt)

said:						
is:						
said:						
is:						
said:						
is:						
said:						
is:						

Error Rate:

No. of errors	No. of words read in text	Error % rate:

Error Types (last attempt):

Tally

Tot

omission – letter - word		
insertion – letter - word		
substitution – letter or reversal - word		
alternate pronunciation		
can't decipher after 5x		

Comments:

Self-Corrections Analysis:

1st try:						
sc:						
1st try:						
sc:						

Self-Correction Rate:

No. of Self-corrects.	No. of Errors + sc:	Self-Corr. % Rate:

Comments:

First Strategy when Facing a Challenge:

	Tally	Total
Context/sense:		
rereads up to point of diff.		
reads on/reruns on from point of difficulty		
takes a guess		
seeks to clarify		
Decoding:		
sounds word out		
breaks word up into segments		
Coping Behaviour:		
seeks help from T/A		
expresses emotional reaction		
No/masked attempt		
Mix of above/other		

Impressionistic Individual Descriptors:

chatty	reticent	over-confident	under-confident
dependent	independent	follows instructions	ignores instructions
initiates communication	avoids communication	alert	tired
enthusiastic	unmotivated	focused effort across time	no effort
frustrated	embarrassed	humorous/cheerful	tearful
too many wrong attempts	won't attempt if unsure	seeks learning	avoids task
loud voice	quiet voice	physically still	physically active
responds to text message	no response to text message	in good health	health concerns

Comments:

Appendix 3

Definitions of Coding Criteria

Four types of information, achievement scores and individual descriptors were categorised, recorded and/or calculated.

Student Information

Student reading level, year level, ethnic group, and text type were available through NEMP data, and the gender of students was identified by the researcher. This information allowed results to be collated and analysed across subgroups.

- **Reading level** – students were identified as reading at bands 0, 1, 2 or 3
- **Year level** – students were identified as being in year 4 or year 8
- **Ethnicity** – students were identified as being Pakeha, Maori or Pacific Islander.
- **Text type** – students read fiction, non-fiction or non-book texts. Non-book texts included pamphlets, tape covers and signs available in the wider community.
- **Gender** – students were identified as male or female

Achievement scores

Student achievement scores relating to comprehension and reading rate, and percentage rates of errors, self-corrections and strategies were measured. Error, self-correction and strategy rates were calculated as a percentage of the number of text words read to minimise the confounding effect of the different text lengths across passages.

- **Comprehension** - The NEMP-determined comprehension score for three literal questions was recorded for each student.
- **Reading Rate** - The reading rate for each student was calculated as the percentage of words read per minute (wpm), to allow for differing text passage lengths. Five levels of reading rate were established by the researcher, based on years of teaching experience listening to students read unseen instructional texts aloud and by personally carrying out reading trials at the five reading rates. Students were identified as reading at an “extremely slow” oral reading rate (up to 29 wpm); a “very slow” reading rate (30-59 wpm); a “slow” oral reading rate (60-89 wpm); a “moderate” oral reading rate (90-119 wpm); or a “fast” reading rate (120 –149 wpm).

- **Error Rates** – The error rate for each student was calculated as a percentage of the number of text words read, to enable comparison of performances across text passages of differing lengths. The last inaccurate attempt for each error was transcribed, along with the actual text word, to enable the student's best attempt to be analysed. Each transcribed error was identified as an "omission", "insertion", "substitution", or "alternate pronunciation" or as "can't decipher". An attempt that could not be understood after five replays was identified as "can't decipher". Errors involving reversals were classified as substitutions. Omissions, insertions and substitutions were further analysed and identified according to whether they involved a "sound" or the entire "word". A "sound" error involved only one letter or blend contained within a word. Rates were calculated for each separate error sub-type and for omissions, insertions and substitution/reversals.
- **Self-Correction Rate** - The self-correction rate for each student was calculated as a percentage of the number of text words read, to enable comparison of performances across text passages of differing lengths. A student's first incorrect attempt was also transcribed, along with the actual text word.
- **Strategy Rates** - A student's initial response to any word not evoking a prompt attempt was recorded. All strategies used were identified, regardless of whether they led on to correct, incorrect or self-corrected attempts. The strategy rate was calculated as a percentage of the number of text words read. Each strategy was classified as a "context", "decoding", "coping" or "mixed" strategy. Context strategies were identified as 'rereading" up to the point of difficulty, 'reading on/repeating" the point of difficulty, taking a "guess", or seeking to "clarify meaning" from illustrations, the text, or their own experience. Decoding strategies were identified as either "sounding out" or "breaking the word into segments". Attempts to sound out a word might involve only the initial letter or blend and attempts to segment a word might involve only the initial syllable. Coping behaviours were identified as "seeking help" from the teacher-administrator, making an "emotional reaction" through body language or speech, or making "no/masked attempt". A masked attempt was usually undecipherable but it was unclear whether a student was trying to achieve this result. A "mixed" strategy occurred when a student used two strategies simultaneously. Rates were calculated for each separate strategy sub-type and for context, decoding, coping and mixed strategies.

Achievement Descriptors

Specific descriptions of a student's overall oral reading performance, relating to expression and clarity of speech, clause/sentence structure and breathing control, were identified.

- **Oral reading expression** - students were identified as reading with "appropriate expression" for a particular text, "some expression" or "little/no expression".
- **Oral reading clarity** - students were identified as using "clear", "mostly clear", "partly clear" or "unclear" speech.
- **Sentence/phrasing structure and breath control** - students were identified as exhibiting "structure", "some structure" or "little/no structure" in regard to clauses and sentences. Clause structure related to the student's ability to read meaningful groups of words in a connected manner eg The tree...had...long, thin branches; whereas sentence structure related to the student's ability to pause between sentences and to indicate sentence endings through changes in tone. Students were also identified as having "control", "some control" or "little/no" breath control. Breath control related to the student's ability to maintain sufficient breathing control to read the text without needing to gasp for air or slurp up excess saliva.

Impressionistic individual Descriptors

Coding categories were established by the researcher to provide information about a wide range of observable personal characteristics of students, based on the viewing and discussion on the initial 6 tapes. These descriptors related to a wide range of behaviours: speech, visual/sensory movements, verbal communication, sociability, reliance on the teacher-administrator, volume of speech, confidence, risk-taking behaviour, interest in task, effort/perseverance, wakefulness, physical well-being and movement, emotional reaction to challenge, response to text and following instructions. A student's speech and visual/sensory movements were described and personal characteristics observed for signs of extreme levels of specific behaviours. Students not exhibiting extreme levels of specific behaviours were identified as exhibiting "moderate" levels.

- **Speech** - The presence of "physical impediments" (stutter, protruding teeth etc), or "accent" was recorded.
- **Visual/sensory motor behaviour** – the predominant reading distance between the student and the book was identified as "accepts set-up", "moves book/head closer", or "moves book/head

further away". The predominant place keeping behaviours of students were identified as "keeps place with eyes", "keeps page place with hand", or "keeps word place with finger".

- **Verbal communication** – students were identified as being "chatty", making "moderate" levels of conversation, or being "reticent".
- **Sociability** – observable signs that a student "initiates" or "avoids" reciprocation of social contact with the teacher-administrator through verbal or non-verbal behaviours were recorded, such as making eye-to-eye contact or sharing a response to the text.
- **Reliance on the teacher-administrator** – students were identified as "dependent", "moderate" or "independent" in regard to handling the reading task. Dependent behaviours included seeking assurance or help during the task.
- **Volume of speech** - The volume of a students' oral reading voice was identified as "loud", "moderate" or "quiet". Allowances were made for technical issues such as microphone placement.
- **Confidence** – students were observed for physical or verbal signs of being "over-confident" or "under-confident". Actions such as covering the face or submissive posture were identified as "under-confident", while behaviours such as boasting were identified as "over-confident".
- **Risk-taking** – students were identified as making "many wrong attempts" at unknown words, making a "moderate" attempt, or making "few/no attempts".
- **Interest in task** – students were observed for signs of being particularly "enthusiastic" or "unmotivated" by the oral reading task, or were identified as exhibiting "moderate" behaviours in this regard. Facial expressions and/or body language provided clues, with an "enthusiastic" student leaning forward expectantly and an unmotivated student slumping back apathetically.
- **Effort/perseverance** – students were coded as exhibiting "concentrated effort" across time, "moderate" effort or "little/no effort". Students exhibiting "concentrated effort" stayed on task and continued to apply themselves through consecutive difficulties across several minutes.
- **Wakefulness** – students were observed for signs of being "alert", "moderate", or "tired" while listening to instructions or carrying out the oral reading task. Regular yawning, leaning on the desk, and stretching were identified as tiredness; whereas sharp reactions and a wide-awake expression were identified as alertness.

- **Physical well-being** – students were identified as being "in good health", in "moderate" health or "unwell". Observable symptoms such as nose blowing or wiping were viewed as signs of concern, along with evidence of injury e.g wearing a bandage.
- **Physical movement** – students were observed for exceptional levels of physical movement and identified as "active", "moderate" or "still". "Active" children regularly moved their bodies and/or limbs as they read the text passage, while "still" children predominantly stayed in one physical position throughout the task.
- **Emotional reaction to challenge** – students were identified as "frustrated", "embarrassed", "using humour", being "tearful" or "moderate" when faced with an unknown word. Exasperated facial expressions, physical gestures or verbal expressions were identified as frustration; covering of the face or physically cringing as signs of embarrassment; making fun of the difficulty as humour; and actual tears or sobs as tearfulness.
- **Response to the text** – students were identified as making an "active response", a "moderate" response or "little/no response" to the message, theme or mood of the text. An "active response" included such behaviours as scanning illustrations to enhance involvement with the text and sharing emotional responses or a related life experience with the teacher-administrator e.g. "we've been to a farm like that." Students making "little/no response" displayed no outward sign of having read a particularly funny or dramatic piece of text.
- **Following instructions** – students were observed carrying out general instructions regarding selection procedures and starting place for oral reading. They were identified as being "successful", having "moderate success", or as having "little/no success".