Evaluations of the Efficacy of MultiLit and MiniLit Programs Provided by the Exodus Foundation, 2009-2011

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MultiLit is a research initiative of Macquarie University.

Preface

Over the period 2009-2011, the Exodus Foundation provided remedial literacy instruction to socially disadvantaged and Indigenous students in their various tutorial sites in Sydney and Darwin, using the MultiLit and MiniLit programs. This report summarises overall student progress based on accumulated data collected and analysed by the MultiLit Research Unit over that period. Findings are reported based on pre- and post-test analyses of literacy performance following two term MiniLit and MultiLit interventions. Separate analyses of the results for the Ashfield and Redfern sites and for the sites in Darwin as a whole are provided as appendices.

Background

Students participating in the Exodus Foundation Tutorial Centres in Sydney and Darwin over the period 2009-2011 were assessed at the commencement and conclusion of two term periods of intensive literacy instruction using the MultiLit and MiniLit programs. The literacy assessments were carried out by testers employed and trained by MultiLit Pty Ltd and who were independent of the instructional delivery of the program. Data was double scored in the MultiLit Sydney office and analysed by a team of researchers at the MultiLit Research Unit. For a description of the assessment measures employed, see Appendix 4 for details of assessments used with MultiLit students and Appendix 5 for those used with MiniLit students. Over the duration of the project, the assessment battery for students attending the MiniLit program was changed with the addition of the Peabody Picture Vocabulary Test (PPVT-IV) and the Martin and Pratt Nonword Reading Test. For this reason, the data sets available from these two tests are attenuated.

Further background information about the original 'Schoolwise' Program at the Exodus Foundation Tutorial Centre in Ashfield is provided in:

Wheldall, K. (2009). Effective instruction for socially disadvantaged low-progress readers: The Schoolwise program. *Australian Journal of Learning Difficulties, 14,* 151-170.

MultiLit Instruction

There were 362 students who attended the MultiLit program at the various Exodus centres during the period 2009-2011 for whom data from pre- and post-testing were available. These data represent students attending for their first two terms of the program and, of those, students who attended for at least 80% of the instructional time. The sample included 209 boys and 153 girls, 14 of whom were in Year 2, 29 were in Year 3, 68 were in Year 4, 115 were in Year 5, 118 were in Year 6, 10 were in Year 7, seven were in Year 8 and one student was in Year 9. At program commencement, the average age of the students was 10 years 5 months (125 months; ranging from 80 to 162 months). MultiLit instruction was mostly delivered to these students for three hours per day, with the exception of students in the Darwin centres who received fours hours of instruction daily for both semesters in 2011.

Standardised and curriculum-based assessments of academic progress (see Appendix 4 for details) were carried out before the commencement of the program. Students were tested again at the end of their second term in the program. (Note: 19 weeks of instruction were delivered on average.)

At program commencement, the average crude reading age for reading *accuracy* was 89 months (7 years 5 months). For reading *comprehension* the average crude reading age was 85 months (7 years 1 month) as measured by the Neale Analysis. This represents three years below chronological age for reading accuracy and almost three and a half years below chronological age for reading comprehension.

The results for students attending all Exodus tutorial centres in Sydney and Darwin during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are presented in Table 1.

On average, these students made crude gains of:

- 13 months in reading accuracy
- 6 months in reading comprehension
- 14 months in single word reading
- 20 months in spelling
- 20 months in phonological recoding
- and could now read 35 (50%) more words correctly per minute.

Highly statistically significant gains (at a p-value of at least <.0005), based on analyses of raw scores, were made on all of the seven measures: reading accuracy (Neale), reading comprehension (Neale), single word reading (Burt), word spelling (SA spelling test), text reading

fluency (WARP), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures except receptive vocabulary, which had a medium effect size (0.5-0.79).

Whereas 74% of these students were in the bottom quartile (bottom 25%) for phonological recoding at the commencement of their programs of instruction, only 43% were in the bottom quartile on completion. Moreover, the mean standardised score for phonological recoding (as measured by the Martin and Pratt test) was 82 (SD 13.3) at commencement but had risen to 93 (SD 11.6) at the end.

Table 1

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MultiLit program at all Exodus centres from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Neale Accuracy	362	32.7 (13.6)	45.9 (16.6)	13.3 (8.6)	29.5	<.0005	1.55
Neale Comprehension	362	9.5 (4.6)	13.2 (5.8)	3.8 (3.6)	20.1	<.0005	1.06
Burt Word Reading Test	362	44.3 (14.8)	56.4 (16.9)	12.2 (8.3)	27.7	<.0005	1.46
Spelling – South Australian Spelling Test	362	27.8 (7.8)	34.5 (5.6)	6.7 (4.3)	29.6	<.0005	1.55
WARP (words correct per minute)	362	73.0 (35.2)	108.1 (36.1)	35.1 (15.0)	44.4	<.0005	2.33
Peabody Picture Vocabulary Test (PPVT-IV)	362	129.1 (22.6)	137.6 (21.5)	8.6 (11.9)	13.7	<.0005	0.72
Phonological Recoding Martin & Pratt	362	17.6 (9.6)	27.6 (9.6)	10.0 (6.6)	28.6	<.0005	1.50

MiniLit Instruction

Of the students who attended the MiniLit program in all Exodus centres during 2009-2011, complete pre- and post-test data were available for 161 students. Again, the data represent students attending for their first two terms of the program and, of those, students who attended for at least 80% of the instructional time. Due to the partial absence of one student, however, and the refusal of another to participate in some assessments, data for only 159 students were available for the Sutherland Phonological Awareness Test (SPAT-R) and data for only 160 students were available for the Wheldall Assessment of Reading Lists (WARL). Furthermore, data on the Martin and Pratt and Peabody Picture Vocabulary Test (PPVT-IV) were available for only 105 students because

these tests were not introduced into the test battery until 2010, as mentioned earlier. There were 87 boys and 74 girls in this group. Four students were from Kindergarten/Transition, 81 students were from Year 1, 59 were from Year 2, 15 were from Year 3 and two were from Year 5 (because their performance levels were so low). The average age at program commencement was 6 years 11 months (83 months; ranging from 64 to 130 months). MiniLit instruction was delivered to these students for one hour per day, four days a week.

Standardised and curriculum-based assessments of academic progress (see Appendix 5 for details) were carried out before the commencement of the program. Students were tested again at the end of the second term in the program. (Note: 16 weeks of instruction were delivered on average.)

At program commencement, the average crude reading age for the students' reading accuracy was below 73 months (6 years 1 month) as measured by the Burt Word Reading Test. Pretest scores for this group of students were lower than the lowest level that the Burt Word Reading Test measures. Hence, the reported gains are conservative and we will not report (crude) gains in months. The results for students attending Exodus centres in Sydney and Darwin during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are presented in Table 2.

Table 2

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MiniLit program at all Exodus centres from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	p	ES
Burt Word Reading Test	161	16.0 (12.1)	25.6 (11.5)	9.6 (5.7)	21.2	<.0005	1.67
Spelling – South Australian Spelling Test	161	10.3 (8.5)	17.3 (8.4)	6.9 (4.7)	18.7	<.0005	1.47
Sutherland Phonological Awareness Test – Revised (SPAT-R)	159	22.3 (12.1)	33.8 (11.1)	11.5 (7.7)	18.8	<.0005	1.49
WARL (words correct per minute)	160	19.3 (17.8)	36.0 (23.6)	16.7 (11.0)	19.2	<.0005	1.52
Peabody Picture Vocabulary Test (PPVT-IV)	105	94.2 (24.2)	102.4 (23.1)	8.2 (9.8)	8.5	<.0005	0.83
Martin and Pratt Non-Word Reading Test	105	5.8 (6.4)	12.6 (7.7)	6.8 (5.4)	12.9	<.0005	1.26

As a group, these students made highly statistically significant gains (at a p-value of <.0005) on all six literacy measures: single word reading (Burt), word spelling (SA Spelling), phonological awareness (SPAT-R), list reading fluency (WARL), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures (ranging from 0.83-1.67).

Prior to attending the program, 67% of students were in the lowest quartile (bottom 25%) for their age in terms of phonological awareness skills. After two terms of MiniLit instruction, this was reduced to 23% of students scoring in the lowest quartile. Again, 72% of students were also initially in the lowest quartile for their age in phonological recoding and after two terms of instruction only 40% of students remained in the lowest quartile. The students could also read 90% more words correctly per minute following MiniLit instruction.

Comparing students who identified as Aboriginal or Torres Strait Islander with non-Indigenous students

The following analyses compare the progress made by Indigenous and non-Indigenous students in the MultiLit and MiniLit programs respectively.

Of the 362 students who attended the MultiLit program during 2009-2011, 154 students identified as Aboriginal or Torres Strait Islander, hereafter referred to as the Indigenous group. This group comprised 79 boys and 65 girls; 14 were in Year 2, 25 were in Year 3, 44 were in Year 4, 24 were in Year 5, 21 were in Year 6, eight were in Year 7, seven were in Year 8 and one was in Year 9. By comparison, in the Non-Indigenous group, there were 130 boys and 88 girls; four students were in Year 3, 24 students were in Year 4, 91 students were in Year 5, 97 students were in Year 6 and two students were in Year 7. The average age of students in the Indigenous group was 9 years 9 months (117 months; ranging from 80 to 162 months) and in the non-Indigenous group 10 years 10 months (130 months; ranging from 103 to155 months). As the average ages and age and grade ranges differed between the two groups, analyses of their gains in literacy and related skills were conducted separately by group rather than by direct statistical comparison.

At program commencement, the average crude reading age for reading *accuracy* for the Indigenous group was 87 months (7 years 3 months) and for the non-Indigenous group 90 months (7 years 6 months). For reading *comprehension* the average crude reading age for the Indigenous group was 83 months (6 years 11 months) and for the non-Indigenous group 85 months (7 years 1 month) as measured by the Neale Analysis. Whereas the Indigenous group were, on average, two and a half years and almost three years below chronological age for reading accuracy and reading comprehension respectively, the non-Indigenous group were an average of three and a half years below chronological age for crude reading accuracy and almost four years below chronological age for reading comprehension. This may have been influenced by the selection criteria. Although selection of students in the Sydney centres was a mixture of Indigenous and non-Indigenous populations, the students who attended the centres in Darwin were selected based not only on their literacy skills but on the basis that they identified as Aboriginal or Torres Strait Islander. This resulted in a smaller pool of students eligible for the program in Darwin and as a consequence students with higher literacy skills may have been selected to fulfill number requirements for the centres to run.

The results for Indigenous and non-Indigenous students attending Exodus centres in Sydney and Darwin during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are shown in Table 3. As may be seen, highly statistically significant gains (at a p-value of at least <.0005), based on analyses of raw scores, were made *by both Indigenous and non-Indigenous groups* on all of the seven measures: reading accuracy (Neale), reading comprehension (Neale), single word reading (Burt), word spelling (SA spelling test), text reading fluency (WARP), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes *for both groups* were large (≥0.8) for all measures except receptive vocabulary, which had a medium effect size (0.5-0.79).

Table 3

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for Indigenous and non-Indigenous students attending the MultiLit program at all Exodus centres from 2009-2011.

Literacy Variable	Ethnicity	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Neale Accuracy	Indigenous	144	30.3 (15.8)	43.0 (18.4)	12.7 (8.7)	17.6	<.0005	1.47
	non-Indigenous	218	34.2 (11.7)	47.9 (15.1)	13.7 (8.5)	23.8	<.0005	1.61
Neale Comprehension	Indigenous	144	9.0 (4.8)	12.6 (6.0)	3.6 (3.2)	13.6	<.0005	1.14
	non-Indigenous	218	9.8 (4.5)	13.6 (5.7)	3.9 (3.8)	15.0	<.0005	1.02
Burt Word Reading Test	Indigenous	144	41.8 (16.3)	53.8 (18.4)	11.9 (7.1)	20.2	<.0005	1.68
	non-Indigenous	218	45.9 (13.5)	58.2 (15.7)	12.3 (9.1)	20.0	<.0005	1.36
Spelling – South Australian Spelling Test	Indigenous	144	26.2 (8.5)	34.1 (6.0)	7.9 (4.8)	19.8	<.0005	1.65
	non-Indigenous	218	28.9 (7.1)	34.9 (5.3)	5.9 (3.8)	23.0	<.0005	1.56
WARP (words correct per minute)	Indigenous	144	63.1 (36.7)	97.8 (38.9)	34.8 (15.3)	27.2	<.0005	2.27
	non-Indigenous	218	79.5 (32.7)	114.8 (32.5)	35.3 (14.9)	35.1	<.0005	2.38
Peabody Picture Vocabulary Test (PPVT-IV)	Indigenous	144	127.8 (21.6)	134.5 (21.0)	6.7 (9.5)	8.5	<.0005	0.70
	non-Indigenous	218	130.0 (23.2)	139.7 (21.7)	9.8 (13.1)	11.0	<.0005	0.75
Phonological Recoding Martin & Pratt	Indigenous	144	18.0 (10.5)	26.9 (10.3)	9.0 (6.3)	17.2	<.0005	1.43
	non-Indigenous	218	17.4 (9.0)	28.0 (9.1)	10.7 (6.8)	23.1	<.0005	1.56

Turning now to the results for *MiniLit*, of the 161 students who attended the program at all Exodus centres during 2009-2011, 98 of these students identified as Aboriginal or Torres Strait Islander. In this Indigenous group, there were 53 boys and 45 girls; four students were from Transition (Kindergarten equivalent), 47 were from Year 1, 31 were from Year 2, 14 were from Year 3 and two were from Year 5. The average age of students in this group at program commencement was 7 years 0 months (84 months; ranging from 64 to 130 months). In the non-Indigenous group there were 34 boys and 29 girls, of whom 34 students were from Year 1, 28 were from Year 2 and one was from Year 3. The average age of students in this group at program commencement was 6 years 10 months (82 months; ranging from 66 to 101 months). As the age and grade ranges differed between the two groups and they were not directly comparable, analyses on their gains in literacy and related skills were conducted separately by group.

At program commencement, the average reading age for the students' crude reading accuracy in both groups was below 73 months (6 years 1 month) as measured by the Burt Word Reading Test. Pre-test scores for these students were lower than the lowest level that the Burt Word Reading Test measures. The results for students in the Indigenous and non-Indigenous groups attending Exodus centres in Sydney and Darwin during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are presented in Table 4.

Table 4

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for Indigenous and non-Indigenous students attending the MiniLit program at all Exodus centres from 2009-2011.

Literacy Variable	Ethnicity	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Burt Word Reading Test	Indigenous	98	14.0 (12.2)	23.6 (12.2)	9.6 (5.2)	18.2	<.0005	1.84
	non-Indigenous	63	19.1 (11.9	28.7 (9.7)	9.6 (6.5)	11.7	<.0005	1.47
Spelling – South Australian Spelling Test	Indigenous	98	9.3 (8.7)	15.8 (8.6)	6.5 (4.2)	15.3	<.0005	1.54
	non-Indigenous	63	11.9 (8.0)	19.5 (7.6)	7.7 (5.4)	11.3	<.0005	1.43
Sutherland Phonological Awareness Test - Revised (SPAT-R)	Indigenous	96	21.0 (11.8)	31.6 (11.3)	10.6 (6.9)	15.0	<.0005	1.53
	non-Indigenous	63	24.4 (12.2)	37.3 (9.9)	13.0 (8.7)	11.8	<.0005	1.49
WARL (words correct per minute)	Indigenous	97	16.8 (17.7)	31.6 (23.5)	14.8 (9.6)	15.2	<.0005	1.54
	non-Indigenous	63	23.3 (17.4)	42.8 (22.4)	19.5 (12.3)	12.6	<.0005	1.58
Peabody Picture Vocabulary Test (PPVT-IV)	Indigenous	62	93.2 (20.5)	101.7 (19.7)	8.6 (10.4)	6.5	<.0005	0.83
	non-Indigenous	43	95.7 (28.9)	103.3 (27.4)	7.5 (9.0)	5.5	<.0005	0.83
Martin and Pratt Non-Word Reading Test	Indigenous	62	5.0 (6.0)	10.7 (7.9)	5.8 (4.8)	9.4	<.0005	1.20
	non-Indigenous	43	7.0 (6.9)	15.3 (6.5)	8.3 (5.9)	9.2	<.0005	1.41

Both the Indigenous and non-Indigenous students made highly statistically significant gains (at a p-value of <.0005) on all six literacy measures: single word reading (Burt), word spelling (SA Spelling), phonological awareness (SPAT-R), list reading fluency (WARL), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). Similarly, the effect sizes were large (≥0.8) for all measures *in both groups*.

Conclusions

For the purposes of this report, we have accumulated the test results for all students for whom we had complete data (with the exceptions already noted) who attended two term (one semester) MultiLit or MiniLit programs at the Exodus tutorial centres in Ashfield, Redfern and Darwin during the period 2009-2011. On the basis of our analyses, we may summarise the main conclusions of this project as follows:

- The gains made provide convincing, consistent evidence for the continuing high efficacy of the *MultiLit and MiniLit programs* (as delivered by the Exodus Foundation) in redressing reading difficulties in socially disadvantaged and Indigenous children.
- The gains made were consistent across the three main sites.
- Both Indigenous and non-Indigenous groups of students undertaking the MultiLit and MiniLit programs made very similar and very large gains in reading and related skills.
- The programs appear to be as effective for Indigenous as for non-Indigenous students.

Appendices

1. *The Ashfield Exodus Centre 2009-2011*
2. *The Redfern Exodus Centre 2009-2011*
3. *The Darwin Exodus Centres 2009-2011*
4. *Assessment measures for MultiLit students*
5. *Assessment measures for MiniLit students*

Appendix 1. The Ashfield Exodus Centre 2009-2011

1.1 MultiLit Instruction

There were 156 students who attended the MultiLit program at the Ashfield Tutorial Centre during 2009-2011 for whom data from pre- and post-testing were available. The sample included 91 boys and 65 girls. One student was in Year 4, 69 were in Year 5, 85 were in Year 6 and one was in Year 7. At program commencement, the average age of the students was 11 years 0 months (132 months; ranging from 114 to 155 months). At program commencement, the average crude reading age for reading *accuracy* was 90 months (7 years 6 months). For reading *comprehension* the average crude reading age was 85 months (7 years 1 month) as measured by the Neale Analysis. This is three and a half years below chronological age for reading accuracy and almost four years below chronological age for reading comprehension.

Pre-test and post-test means and standard deviations for all measures (raw scores) are shown in Table 5. Highly statistically significant gains (at a p-value of at least <.0005), based on analyses of raw scores, were made on all of the seven measures: reading accuracy (Neale), reading comprehension (Neale), single word reading (Burt), word spelling (SA spelling test), text reading fluency (WARP), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures except receptive vocabulary, which had a medium effect size (0.5-0.79).

Table 5

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MultiLit program at the Ashfield Exodus Centre from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Neale Accuracy	156	34.4 (11.1)	47.9 (14.8)	13.5 (8.7)	19.4	<.0005	1.56
Neale Comprehension	156	9.8 (4.4)	13.9 (5.7)	4.1 (3.9)	13.2	<.0005	1.06
Burt Word Reading Test	156	45.8 (13.1)	57.2 (15.3)	11.4 (9.5)	15.0	<.0005	1.20
Spelling – South Australian Spelling Test	156	29.1 (6.6)	35.0 (4.8)	5.9 (3.7)	19.8	<.0005	1.58
WARP (words correct per minute)	156	81.1 (31.9)	116.2 (32.3)	35.1 (13.9)	31.5	<.0005	2.52
Peabody Picture Vocabulary Test (PPVT-IV)	156	128.2 (23.6)	139.5 (22.0)	11.3 (14.4)	9.8	<.0005	0.78
Phonological Recoding Martin & Pratt	156	16.8 (8.8)	27.9 (8.8)	11.1 (7.1)	19.5	<.0005	1.56

1.2 MiniLit Instruction

Of the 39 students attending for their first two terms of the MiniLit program at the Ashfield Exodus Centre during 2009-2011, 38 had both pre- and post-test data and attended for at least 80% of the instructional time. Data from the Peabody Picture Vocabulary Test (PPVT-IV) and the Martin and Pratt Nonword Reading Test were only available for 24 students (due to testing battery changes as mentioned in the main report). There were 21 boys and 17 girls in the group. Twenty-four students were from Year 1, 13 were from Year 2 and one was from Year 3. The average age at program commencement was 6 years 9 months (81 months; ranging from 66 to 100 months). MiniLit instruction was delivered to these students for one hour per day, four days a week, for 15 weeks on average.

At program commencement, the average crude reading age for the students' reading accuracy was below 73 months (6 years 1 month) as measured by the Burt Word Reading Test, i.e. lower than the lowest level that the Burt Word Reading Test measures. Pre-test and post-test means and standard deviations for all measures (raw scores) are shown in Table 6. As a group, these students made highly statistically significant gains (at a p-value of <.0005) on all six literacy measures: single word reading (Burt), word spelling (SA Spelling), phonological awareness (SPAT-R), list reading fluency (WARL), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV).The effect sizes were large (≥0.8) for all six of the measures (ranging from 1.06-1.89).

Table 6

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MiniLit program at the Ashfield Exodus Centre from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	p	Effect Size
Burt Word Reading Test	38	17.6 (10.8)	28.2 (10.1)	10.6 (6.0)	10.9	<.0005	1.76
Spelling – South Australian Spelling Test	38	10.8 (7.9)	19.2 (8.1)	8.3 (5.2)	9.8	<.0005	1.59
Sutherland Phonological Awareness Test – Revised (SPAT-R)	38	21.6 (11.2)	37.0 (10.6)	15.5 (8.2)	11.6	<.0005	1.89
WARL (words correct per minute)	38	20.9 (16.5)	40.5 (22.6)	19.6 (11.8)	10.2	<.0005	1.66
Peabody Picture Vocabulary Test (PPVT-IV)	24	82.0 (25.8)	91.5 (25.6)	9.5 (8.9)	5.2	<.0005	1.06
Martin and Pratt Non-Word Reading Test	24	6.1 (7.3)	15.5 (7.0)	9.4 (5.3)	8.7	<.0005	1.77

Appendix 2. The Redfern Exodus Centre 2009-2011

2.1 MultiLit Instruction

There were 188 students who attended the MultiLit program at the Redfern Exodus Centre during 2009-2011 for whom data from pre- and post-testing were available. The sample included 58 boys and 43 girls. Ten students were in Year 3, 36 were in Year 4, 31 were in Year 5, 20 were in Year 6, one was in Year 7 and three were in Year 8. At program commencement, the average age of the students was 10 years 4 months (124 months; ranging from 95 to 159 months). At program commencement, the average crude reading age for reading *accuracy* was 89 months (7 years 5 months). For reading *comprehension* the average crude reading age was 85 months (7 years 1 month) as measured by the Neale Analysis. This is almost three years below chronological age for reading accuracy and almost three and a half years below for reading comprehension.

Pre-test and post-test means and standard deviations for all measures (raw scores) are shown in Table 7. Highly statistically significant gains (at a p-value of at least <.0005), based on analyses of raw scores, were made on all of the seven measures: reading accuracy (Neale), reading comprehension (Neale), single word reading (Burt), word spelling (SA spelling test), text reading fluency (WARP), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures except receptive vocabulary, which had a medium effect size (0.5-0.79).

Table 7

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MultiLit program at the Redfern Exodus Centre from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Neale Accuracy	101	33.2 (12.6)	46.6 (16.0)	13.4 (8.1)	16.7	<.0005	1.66
Neale Comprehension	101	9.5 (4.5)	12.6 (5.6)	3.2 (3.5)	9.0	<.0005	0.90
Burt Word Reading Test	101	44.9 (14.1)	58.7 (17.1)	13.7 (7.4)	18.7	<.0005	1.86
Spelling – South Australian Spelling Test	101	28.0 (8.1)	34.4 (6.4)	6.4 (4.3)	14.9	<.0005	1.48
WARP (words correct per minute)	101	73.3 (33.9)	109.2 (33.8)	35.9 (16.8)	21.4	<.0005	2.13
Peabody Picture Vocabulary Test (PPVT-IV)	101	134.3 (20.8)	140.6 (20.2)	6.3 (8.9)	7.1	<.0005	0.71
Phonological Recoding Martin & Pratt	101	19.1 (9.0)	28.0 (9.5)	8.9 (5.6)	16.0	<.0005	1.59

2.2 MiniLit Instruction

Pre- and post-test data were available for 53 students attending the MiniLit program at the Redfern Exodus Centre during 2009-201. Due to a student's refusal to participate in a test at one time point, there are complete data available for only 52 students for the Sutherland Phonological Awareness Test. Also, data from the Peabody Picture Vocabulary Test (PPVT-IV) and the Martin and Pratt Nonword Reading Test were available for only 37 students. There were 30 boys and 23 girls in the group; 31 students were from Year 1 and 22 were from Year 2. The average age at program commencement was 6 years 10 months (82 months; ranging from 67 to 101 months). MiniLit instruction was delivered to these students for one hour per day, four days a week for 15 weeks of instruction on average.

At program commencement, the average reading age for the students' reading accuracy was below 73 months (6 years 1 month) as measured by the Burt Word Reading Test, lower than the lowest level that the test measures. The results for students attending the Redfern Exodus Centre during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are presented in Table 8. As a group, these students made highly statistically significant gains (at a p-value of <.0005) on all six literacy measures: single word reading (Burt), word spelling (SA Spelling), phonological awareness (SPAT-R), list reading fluency (WARL), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures.

Table 8

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MiniLit program at the Redfern Exodus Centre from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	p	ES
Burt Word Reading Test	53	15.7 (12.4)	24.5 (10.6)	8.8 (6.0)	10.7	<.0005	1.47
Spelling – South Australian Spelling Test	53	10.0 (8.4)	16.4 (8.2)	6.5 (4.8)	9.7	<.0005	1.33
Sutherland Phonological Awareness Test – Revised (SPAT-R)	52	23.4 (12.6)	32.3 (10.3)	8.9 (8.6)	7.4	<.0005	1.03
WARL (words correct per minute)	53	19.8 (18.3)	37.0 (23.3)	17.3 (11.4)	11.1	<.0005	1.52
Peabody Picture Vocabulary Test (PPVT-IV)	37	101.8 (25.6)	109.1 (23.3)	7.3 (9.2)	4.8	<.0005	0.80
Martin and Pratt Non-Word Reading Test	37	5.4 (5.9)	11.1 (7.0)	5.7 (5.1)	6.7	<.0005	1.10

Appendix 3. The Darwin Exodus Centres 2009-2011

3.1 MultiLit Instruction

Data were available for 105 students from five school sites in Darwin, including Millner Primary School, Holy Spirit Catholic School, Sacred Heart Primary School, Nightcliff Middle School and Gray Primary School during 2009-2011. The sample included 60 boys and 45 girls; 14 students were in Year 2, 19 were in Year 3, 34 were in Year 4, 15 were in Year 5, 13 were in Year 6, eight were in Year 7, four were in Year 8 and one was in Year 9. At program commencement, the average age of the students was 9 years 6 months (114 months; ranging from 80 to 162 months). MultiLit instruction was mostly delivered to these students three hours per day (four hours per day in 2011) for 18 weeks on average. At program commencement, the average crude reading age for reading *accuracy* was 87 months (7 years 3 months) and for reading *comprehension* was 83 months (6 years 11 months); about two and a half years below chronological age.

Pre-test and post-test means and standard deviations for all measures (raw scores) are shown in Table 9. Highly statistically significant gains (at a p-value of at least <.0005), based on analyses of raw scores, were made on all seven measures: reading accuracy (Neale), reading comprehension (Neale), single word reading (Burt), word spelling (SA spelling test), text reading fluency (WARP), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures except receptive vocabulary (medium effect size, 0.5-0.79).

Table 9

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MultiLit program at the Darwin Exodus Centres from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	P	Effect Size
Neale Accuracy	105	29.7 (17.1)	42.4 (19.2)	12.7 (8.9)	14.7	<.0005	1.44
Neale Comprehension	105	8.9 (5.0)	12.8 (6.1)	3.9 (3.1)	12.9	<.0005	1.26
Burt Word Reading Test	105	41.3 (17.2)	53.1 (18.6)	11.8 (7.2)	16.8	<.0005	1.64
Spelling – South Australian Spelling Test	105	25.8 (8.8)	34.0 (5.9)	8.2 (4.8)	17.7	<.0005	1.72
WARP (words correct per minute)	105	60.6 (37.7)	95.0 (40.0)	34.4 (14.9)	23.6	<.0005	2.30
Peabody Picture Vocabulary Test (PPVT-IV)	105	125.4 (22.1)	132.1 (21.2)	6.7 (9.3)	7.4	<.0005	0.72
Phonological Recoding Martin & Pratt	105	17.4 (11.1)	26.8 (10.8)	9.4 (6.7)	14.4	<.0005	1.40

3.2 MiniLit Instruction

The following analyses include data from four school sites in Darwin, including Millner Primary School, Holy Spirit Catholic School, Sacred Heart Primary School and Gray Primary School. There were no eligible data from students attending the program at Kormilda College or Nightcliff Middle School. Of the 88 students who had both pre- and post-test data after attending for their first intake into the MiniLit program at the Darwin Exodus Centres during 2009-2011, 70 had attended for at least 80% of the instructional time. However, due to a student's partial absence, there are data available for only 69 students for the Sutherland Phonological Test and the Wheldall Assessment of Reading Lists. Also, data from the Peabody Picture Vocabulary Test (PPVT-IV) and the Martin and Pratt Nonword Reading Test were available for 44 students. There were 36 boys and 34 girls in the group. Four students were from Transition (Kindergarten equivalent), 26 were from Year 1, 24 were from Year 2, 14 were from Year 3 and two were from Year 5. The average age at program commencement was 7 years 2 months (86 months; ranging from 64 to 130 months). MiniLit instruction was delivered to these students for one hour per day, four days a week for 17 weeks on average.

At program commencement, the average crude reading age for the students' reading accuracy was below 73 months (6 years 1 month) as measured by the Burt Word Reading Test, lower than the lowest level that the Burt Word Reading Test measures. The results for students attending the Darwin Exodus Centres during 2009-2011, showing pre-test and post-test means and standard deviations for all measures (raw scores), are presented in Table 10. As a group, these students made highly statistically significant gains (at a p-value of <.0005) on all six literacy measures: single word reading (Burt), word spelling (SA Spelling), phonological awareness (SPAT-R), list reading fluency (WARL), phonological recoding (Martin & Pratt) and receptive vocabulary (PPVT-IV). The effect sizes were large (≥0.8) for all measures except receptive vocabulary, which had a medium effect size (0.5-0.79).

Table 10

Means (and standard deviations) and the resultant gains on literacy variables (raw scores) for students attending the MiniLit program at the Darwin Exodus Centres from 2009-2011.

Literacy Variable	N	Pre-test (sd)	Post-test (sd)	Gain (sd)	*t*	p	ES
Burt Word Reading Test	70	15.3 (12.6)	25.0 (12.8)	9.7 (5.4)	15.0	<.0005	1.80
Spelling – South Australian Spelling Test	70	10.3 (9.0)	16.9 (8.7)	6.6 (4.2)	13.1	<.0005	1.56
Sutherland Phonological Awareness Test – Revised (SPAT-R)	69	21.9 (12.1)	33.3 (11.8)	11.3 (5.7)	16.6	<.0005	2.00
WARL (words correct per minute)	69	18.2 (18.3)	32.8 (24.2)	14.6 (9.9)	12.3	<.0005	1.48
Peabody Picture Vocabulary Test (PPVT-IV)	44	94.5 (19.4)	102.6 (19.4)	8.1 (10.8)	5.0	<.0005	0.75
Martin and Pratt Non-Word Reading Test	44	5.9 (6.5)	12.2 (8.3)	6.3 (5.3)	7.9	<.0005	1.19

Appendix 4. Assessment measures for MultiLit Students

All MultiLit assessments are completed by trained and highly experienced MultiLit testers. The tests we employ, which are administered strictly according to the procedures outlined in their respective manuals, are described below.

The Neale Analysis of Reading – 3rd Edition

The 'Neale' is a standardised assessment of performance in two of the main skills involved in reading: reading accuracy and reading comprehension. *Reading accuracy* refers to how well a child can identify and accurately pronounce words when presented in written form either as isolated words or, more usually, in the context of a short passage or story, as is the case with the Neale. In order to identify and pronounce individual words, the student will be drawing on his or her word attack skills and his or her knowledge of sight words. Being able to identify words is not enough, however, if the child is unable to understand what he has read. It is possible for a child to be able to identify and pronounce every word in a sentence and still have no idea what the sentence actually means. We need to check this by assessing reading comprehension. *Reading comprehension* assesses how well a child understands what he reads. For example, a child may be asked to read a short passage or story and then the tester asks the child questions about what has happened in the story or passage. The Neale measures, and provides reading age estimates for, both reading accuracy and reading comprehension. Note that the maximum reading age possible on the Neale is about 13 years.

The Burt Word Reading Test

The Burt Word Reading Test has a long history and is a measure of single word recognition. The version we employ is based on a standardisation carried out in the early 1980s in New Zealand by the New Zealand Council for Educational Research. While doubts may be expressed over the utility of reading single words in isolation, it remains a robust test especially when used as part of a battery of reading tests. Our experience with this test suggests that it now frequently *overestimates* reading age. This needs to be remembered when interpreting the results obtained with this test but it still provides a good reliable measure of *relative* reading *gain* over time. Note that the maximum reading age possible on the Burt is about 13 years.

The Wheldall Assessment of Reading Passages (WARP)

The WARP is used to measure *oral reading fluency*. Reading fluency refers to how rapidly a child can read words correctly. In essence, we are interested in how many words per minute a child can read accurately. To be a competent reader, one needs to be able to read at a reasonable speed in order to process the voluminous amount of text that high school presents, for example. There is another important reason, however. If a child takes an inordinately long time to read the individual words in a sentence, it is quite possible that s/he may have forgotten what the beginning of the sentence was about by the time s/he reaches the end of the sentence. This will be more evident in the case of a succession of sentences within a paragraph. Obviously, this will hinder reading comprehension. Consequently, the aim is not just to teach children to be able to read words accurately, but to do so at a good rate. Three passages of 200 words are used to calculate a mean at pre-test and post-test. Ten different 200-word passages are used on a weekly basis (weekly WARPs) to monitor progress over a school term (typically 10 weeks).

South Australian Spelling Test

Spelling performance is assessed using the South Australian Spelling Test. The revised norms for this simple spelling test provide estimates of spelling age based on a sample of South Australian students tested in 2004. This test assesses spelling performance from age 6 to over 15 years.

The Martin and Pratt Nonword Reading Test

The Martin and Pratt Nonword Reading Test is a measure of phonological recoding skills. Phonological recoding is the ability to match a sequence of letters to its corresponding sound (decoding) and is indicative of a student's ability to read novel or unfamiliar words in text. Students who are poor decoders are more likely to rely on contextual information when they read. The use of non-words in a test such as this allows for the detection of those students who are largely relying on compensatory strategies rather than generative decoding strategies when attempting to read. The Martin and Pratt Non Word Test comprises pseudowords, which range from simple three letter non-words to more difficult multisyllabic non-words. This test assesses performance between the ages of 6 to 16 years.

Peabody Picture Vocabulary Test – IV (PPVT)

This test provides us with an estimate of verbal ability, expressed as a standardised score and as a percentile rank. This allows us to explore, for example, whether a child's reading comprehension problem may be the result of difficulties with listening comprehension.

Appendix 5. Assessment measures for MiniLit students

All MiniLit assessments are completed by trained and highly experienced MultiLit testers. The tests we employ, which are administered strictly according to the procedures outlined in their respective manuals, are described below.

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South Australian Spelling Test

Spelling performance is assessed using the South Australian Spelling Test. The revised norms for this simple spelling test provide estimates of spelling age based on a sample of South Australian students tested in 2004. This test assesses spelling performance from age 6 to over 15 years.

Sutherland Phonological Awareness Test - Revised (SPAT-R)

The SPAT-R is a simple test designed to assess the phonological awareness skills required for literacy development of 5 to 8 year olds in the first few years of school. It identifies children who have difficulties with phonological awareness and gives an overview of their strengths and weaknesses. The test assesses syllabification, rhyming, phoneme identification, phoneme segmentation, sound blending, deletion of consonants, non-word reading and non-word spelling.

Peabody Picture Vocabulary Test – IV (PPVT)

This test provides us with an estimate of verbal ability, expressed as a standardised score and as a percentile rank. This allows us to explore, for example, whether a child's reading comprehension problem may be the result of difficulties with listening comprehension.

The WARL

The WARL (The Wheldall Assessment of Reading Lists) is a curriculum-based measure currently in its experimental edition. Devised for use with younger children than the WARP (Wheldall Assessment of Reading Passages), the WARL consists of a series of words to be read individually. Children are presented with three stimulus pages (one page at a time) and asked to read as many words as quickly and carefully as they can, for 60 seconds. An average rate of words read correctly per 60 seconds is then calculated.

The Martin and Pratt Nonword Reading Test

The Martin and Pratt Nonword Reading Test is a measure of phonological recoding skills. Phonological recoding is the ability to match a sequence of letters to its corresponding sound (decoding) and is indicative of a student's ability to read novel or unfamiliar words in text. Students who are poor decoders are more likely to rely on contextual information when they read. The use of non-words in a test such as this allows for the detection of those students who are largely relying on compensatory strategies rather than generative decoding strategies when attempting to read. The Martin and Pratt Non Word Test comprises pseudowords, which range from simple three letter non-words to more difficult multisyllabic non-words. This test assesses performance between the ages of 6 to 16 years.