

Although numerous informal field trials were carried out during the development of Initialit-1, many did not involve the formal collection of data. Rather they provided information about how well the program worked in real classrooms and informed changes along the way. We did, however, conduct a preliminary efficacy trial with a draft version of the program.

### **Preliminary efficacy trial**

Three schools and a total of 155 Year 1 students were involved in the trial. Two schools were located in Sydney, one with students from higher socioeconomic backgrounds and the other with students from average socioeconomic backgrounds. The third school was located in Perth and had students of higher socioeconomic backgrounds. Both schools in Sydney had a high proportion of students with a language background other than English, while at the school in Perth approximately a third of students had a language background other than English.

Prior to the trial, the schools involved had varying approaches to initial reading instruction. One of the Sydney schools and the Perth school were using a mixed approach with some phonics instruction and some whole language instruction, while the other Sydney school took a whole language approach. Over the course of the trial year, in place of their normal instruction, two of these schools completed all 116 lessons of the Initialit-1 program and one school delivered approximately 105 lessons.

The students involved were assessed at the beginning, middle and end of the school year on the following measures.

- The York Assessment of Reading for Comprehension Early Reading (YARC; Hulme et al., 2012). This measure assesses **early reading skills** including alphabetic knowledge, single word reading and phoneme awareness.
- The YARC Passage Reading Primary (Snowling et al., 2012). This measure assesses **more advanced reading skills**, including reading accuracy, reading rate and reading comprehension.
- The Martin and Pratt Nonword Reading Test (Martin & Pratt, 2001), which assesses **phonological recoding**.
- The Wheldall Assessment of Reading Lists (WARL; Wheldall, Reynolds & Madelaine, 2015), which assesses **reading fluency**.

These assessments were carried out prior to the commencement of instruction (pre-test), following approximately 20 weeks of instruction (mid-test) and following another 17 weeks of instruction (post-test; 37 weeks in total). It should be noted, however, that some students did not complete both YARC measures at all three testing occasions, resulting in reduced numbers for these measures. Also, the format of the YARC Passage Reading test did not allow reading rate to be measured for many students across the year, which resulted in quite a reduced sample for this measure in particular.

While this trial did not involve a comparison group of students who did not receive instruction in the program, the results of all children were compared to their same aged peers at each assessment occasion, using the normative sample of the tests employed. While we cannot claim more than preliminary findings from this trial, the results provide some indication of the efficacy of the program in developing reading skills in the early years of school compared to a range of typical Australian students of the same age.

### **Did reading skills improve over the year?**

Over the year, students made significant gains with large effect sizes (partial eta squared) on all measures of early reading skills and more advanced reading skills. These analyses were carried out using raw score data and the gains are shown in Table 1.

Furthermore, these gains were significant when measured over the first half of the year (see Table 2) and over the second half of the year, except for letter sound knowledge, on which no significant gains were made in the second half of the year (see Table 3). These results indicate that the program not only developed the children's early reading skills over the course of the year, but also fostered the later reading skills required to allow them to access the rest of the academic curriculum. The lack of progress during the second half of the year in the early reading skill of letter sound knowledge is probably due to the fact that many students had already scored close to or at the highest level on this measure by mid-test, creating a ceiling effect. In fact, at mid-test 50% of students achieved the highest score possible on this measure and 90% of students scored within 2 points of the highest score.

### **Did reading skills improve compared to typical reading scores?**

Although we did not collect data allowing us to compare our results with a comparison group of students receiving instruction-as-usual, we can gain some meaningful indication of progress by comparing these results to the typical progress of students of the same age. We therefore compared students' results at pre-, mid- and post-test to the normative data provided by the tests, which indicates the range of typical performance on the test for students at a given age.

Average (or mean) standard score results, which compare student performance with their same aged peers, were analysed and are presented in Table 4. Note that as the measure of phonological recoding is only appropriate for children aged older than six, standard scores had to be estimated for students who were 5-years-old at the beginning of the year. This would have had the effect of slightly underestimating the mean standard score, meaning the results for this measure are conservative.

If we consider the average range of performance to be between standard scores of 85 and 115 with a mean score of 100, we find that:

- **At pre-test:** Trial students were already performing above the the average score of 100 expected for their age on early reading measures (letter sound knowledge, word recognition, and phoneme awareness) and phonological recoding (non-word reading). We would, therefore, not expect to see students making much gain in these standard score measures. The students' mean scores for other measures of reading (accuracy, rate and comprehension) was in the average range at pre-test.
- **At mid-test:** By the middle of the year, trial students achieved a mean standard score that was above the average expected score of 100 for reading accuracy, reading rate and comprehension.
- **At post-test:** The upward trend seen at mid-test continued in the second half of the year. By the end of the year, trial students' mean standard scores in reading accuracy, rate and comprehension had improved again, as had their score on phonological recoding. Indeed, by post-test, scores on reading rate and phonological recoding were over 115, indicating trial students were performing above the average range on these skills.

Figure 1 shows the trial students' average progress in terms of standard scores relative to the students' peer group. The results indicate that students were, on the whole, attaining the skills of reading accuracy, rate, comprehension and phonological recoding at a greater rate than their peers.

Moreover, the estimates of growth may be conservative for reading comprehension, in particular, because at pre-test, 18% of students scored below the range of standard scores provided by the test (while 3% scored above this range). But by mid-test, only 3% of trial students scored below the range of standard scores (with 2% above this range) and at post-test, 2% remained below, while 6% now scored above this range. In other words, the reported reading comprehension gains may underestimate the actual progress of a number of individual students in this critical reading skill. Further analysis confirmed that there was a considerable shift of students out of the bottom quartile (bottom 25% of same aged students) to the average range (middle 50% of same aged students) and top quartile (top 25% of same aged students) between pre-, mid- and post-test as shown in Table 5. This was the case for measures of:

- **Reading accuracy:** At pre-test, 35% of students scored in the bottom quartile for reading accuracy and 26% scored in the top quartile. At mid-test, only 8% of students remained in the bottom quartile and 45% of students scored in the top quartile. By post-test, 6% remained in the bottom quartile and the majority (51%) of students scored in the top quartile.
- **Reading rate:** At pre-test, 15% of students scored in the bottom quartile and 12% scored in the top quartile. At mid-test, only 2% scored in the bottom quartile and 35% scored in the top quartile. By post-test, less than 1% of students remained in the bottom quartile and 44% scored in the top quartile.
- **Reading comprehension:** At pre-test, 43% of students were in the bottom quartile and 27% were in the top quartile. At mid-test, 20% scored in the bottom quartile and 30% were now in the top quartile. By post-test, only 16% remained in the bottom quartile and 47% were now in the top quartile.
- **Phonological recoding:** While students were roughly evenly spread across the average range and top quartile at pre-test, the vast majority had moved to the top quartile at post-test. At pre-test, 7% of students were in the bottom quartile and 46% were in the top quartile. At mid-test, less than 1% scored in the bottom quartile and 73% were now in the top quartile. By post-test, 1% remained in the bottom quartile and 78% were now in the top quartile.

This shows that the majority of students moved from the bottom quartile or average range at pre-test to the average range or top quartile at post-test in these skills. These results suggest that InitialLit-1 may have helped to reduce the number of students who might have struggled to learn to read (those in the bottom quartile), while not limiting the growth of higher performing students, as indicated by those moving from the average range to the top quartile. Note that the findings were similar across the three school sites when analysed independently suggesting a degree of replicability of findings across three schools.

## Conclusion

In summary, preliminary data indicate that students receiving instruction in the InitialLit-1 program over the course of their second year of schooling (Year 1) can make excellent gains in measures of early reading skills and other reading skills over and above the typical progress of their same aged peers. Data also indicate that the program may assist struggling students to catch up, as indicated by those students moving out of the bottom quartile, while not limiting the growth of higher performing students, as indicated by the movement into the top quartile.

## References

- Hulme, C., Stothard, S. E., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E., & Snowling, M. (2012). *York assessment of reading for comprehension: Early reading test manual* (Australian ed.). London: GL Assessment Ltd.
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Table 1. Means (and standard deviations) and the resultant gains on measures of reading skills (raw scores) for Year 1 students over the entire year.

| Literacy Variable                                      | N   | Raw Score Pre-test (sd) | Raw Score Post-test (sd) | Gain (sd)     | <i>t</i> | <i>p</i> | Partial Eta Sq |
|--|-----|-------------------------|--------------------------|---------------|----------|----------|----------------|
| YARC Letter Sound Knowledge                            | 153 | 29.57 (2.94)            | 31.26 (1.06)             | 1.69 (2.89)   | 7.25     | <0.0005  | 0.257          |
| YARC Early Word Recognition                            | 153 | 21.01 (8.29)            | 28.59 (2.76)             | 7.58 (6.83)   | 13.73    | <0.0005  | 0.554          |
| YARC Phoneme Awareness                                 | 153 | 16.90 (4.15)            | 20.54 (2.82)             | 3.63 (3.63)   | 14.51    | <0.0005  | 0.581          |
| YARC Reading Accuracy                                  | 154 | 34.76 (5.83)            | 43.45 (3.98)             | 8.69 (4.47)   | 24.13    | <0.0005  | 0.792          |
| YARC Reading Rate                                      | 82  | 34.05 (13.80)           | 60.20 (8.13)             | 26.15 (26.15) | 20.66    | <0.0005  | 0.841          |
| YARC Reading Comprehension                             | 154 | 37.70 (12.03)           | 52.55 (8.67)             | 14.85 (14.85) | 21.44    | <0.0005  | 0.750          |
| Martin and Pratt (Phonological Recoding)               | 153 | 16.30 (9.50)            | 32.08 (10.48)            | 15.78 (15.78) | 25.03    | <0.0005  | 0.805          |
| Wheldall Assessment of Reading Lists (Reading Fluency) | 155 | 34.52 (22.79)           | 70.84 (21.10)            | 36.32 (36.32) | 26.45    | <0.0005  | 0.820          |

Note: Partial Eta Squared is an effect size calculation (% of variance explained). A small effect is .01 or 1%; a medium effect is .06 or 6%; and a large effect is .138 or 13.8%.

Table 2. Means (and standard deviations) and the resultant gains on measures of reading skills (raw scores) for Year 1 students during the first half of the year.

| Literacy Variable                                      | N   | Raw Score Pre-test (sd) | Raw Score Mid-test (sd) | Gain (sd)     | <i>t</i> | <i>p</i> | Partial Eta Sq |
|--|-----|-------------------------|-------------------------|---------------|----------|----------|----------------|
| YARC Letter Sound Knowledge                            | 153 | 29.57 (2.94)            | 31.12 (1.17)            | 1.55 (2.65)   | 7.23     | <0.0005  | 0.256          |
| YARC Early Word Recognition                            | 153 | 21.01 (8.29)            | 27.27 (4.02)            | 6.27 (5.60)   | 13.85    | <0.0005  | 0.558          |
| YARC Phoneme Awareness                                 | 153 | 16.90 (4.15)            | 19.36 (3.06)            | 2.46 (2.95)   | 10.29    | <0.0005  | 0.411          |
| YARC Reading Accuracy                                  | 154 | 34.76 (5.83)            | 41.31 (4.83)            | 6.55 (3.61)   | 22.54    | <0.0005  | 0.769          |
| YARC Reading Rate                                      | 82  | 34.05 (13.80)           | 53.52 (10.38)           | 19.48 (9.72)  | 18.15    | <0.0005  | 0.803          |
| YARC Reading Comprehension                             | 154 | 37.70 (12.03)           | 47.49 (8.75)            | 9.79 (8.51)   | 14.28    | <0.0005  | 0.571          |
| Martin and Pratt (Phonological Recoding)               | 153 | 16.30 (9.50)            | 27.63 (11.09)           | 11.33 (6.94)  | 20.20    | <0.0005  | 0.728          |
| Wheldall Assessment of Reading Lists (Reading Fluency) | 155 | 34.52 (22.79)           | 59.68 (22.08)           | 25.16 (14.78) | 21.19    | <0.0005  | 0.745          |

Note: Partial Eta Squared is an effect size calculation (% of variance explained). A small effect is .01 or 1%; a medium effect is .06 or 6%; and a large effect is .138 or 13.8%.

Table 3. Means (and standard deviations) and the resultant gains on measures of reading skills (raw scores) for Year 1 students during the second half of the year.

| Literacy Variable                                      | N   | Raw Score Mid-test (sd) | Raw Score Post-test (sd) | Gain (sd)     | <i>t</i> | <i>p</i> | Partial Eta Sq |
|--|-----|-------------------------|--------------------------|---------------|----------|----------|----------------|
| YARC Letter Sound Knowledge                            | 153 | 31.12 (1.17)            | 31.26 (1.06)             | 0.14 (1.21)   | 1.48     | 0.142    | 0.014          |
| YARC Early Word Recognition                            | 153 | 27.27 (4.02)            | 28.59 (2.76)             | 1.31 (2.26)   | 7.21     | <0.0005  | 0.255          |
| YARC Phoneme Awareness                                 | 153 | 19.36 (3.06)            | 20.54 (2.82)             | 1.18 (2.12)   | 6.86     | <0.0005  | 0.236          |
| YARC Reading Accuracy                                  | 154 | 41.31 (4.83)            | 43.45 (3.98)             | 2.14 (2.77)   | 9.57     | <0.0005  | 0.374          |
| YARC Reading Rate                                      | 82  | 53.52 (10.38)           | 60.20 (8.13)             | 6.67 (6.82)   | 8.86     | <0.0005  | 0.492          |
| YARC Reading Comprehension                             | 154 | 47.49 (8.75)            | 52.55 (8.67)             | 5.06 (7.43)   | 8.45     | <0.0005  | 0.318          |
| Martin and Pratt (Phonological Recoding)               | 153 | 27.63 (11.09)           | 32.08 (10.48)            | 4.45 (6.03)   | 9.13     | <0.0005  | 0.354          |
| Wheldall Assessment of Reading Lists (Reading Fluency) | 155 | 59.68 (22.08)           | 70.84 (21.10)            | 11.15 (12.64) | 10.98    | <0.0005  | 0.439          |

Note: Partial Eta Squared is an effect size calculation (% of variance explained). A small effect is .01 or 1%; a medium effect is .06 or 6%; and a large effect is .138 or 13.8%.

Table 4. Means (and standard deviations) on measures of reading skills (standard scores) for Year 1 students at pre-, mid- and post-test.

| Literacy Variable                        | N   | Standard Score Pre-test (sd) | Standard Score Mid-test (sd) | Standard Score Post-test (sd) |
|--|-----|------------------------------|------------------------------|-------------------------------|
| YARC Letter Sound Knowledge              | 153 | 114.10 (14.24)               | 118.10 (10.40)               | 117.09 (10.62)                |
| YARC Early Word Recognition              | 153 | 105.52 (15.86)               | 107.41 (12.94)               | 105.32 (11.77)                |
| YARC Phoneme Awareness                   | 153 | 102.20 (13.50)               | 106.35 (13.42)               | 109.46 (14.18)                |
| YARC Reading Accuracy                    | 154 | 98.17 (13.14)                | 107.27 (10.88)               | 107.90 (9.14)                 |
| YARC Reading Rate                        | 82  | 99.27 (13.16)                | 112.91 (10.11)               | 116.15 (8.37)                 |
| YARC Reading Comprehension               | 154 | 90.49 (17.77)                | 101.71 (15.41)               | 107.07 (15.10)                |
| Martin and Pratt (Phonological Recoding) | 153 | 108.44 (12.86)               | 118.66 (13.78)               | 120.18 (13.71)                |

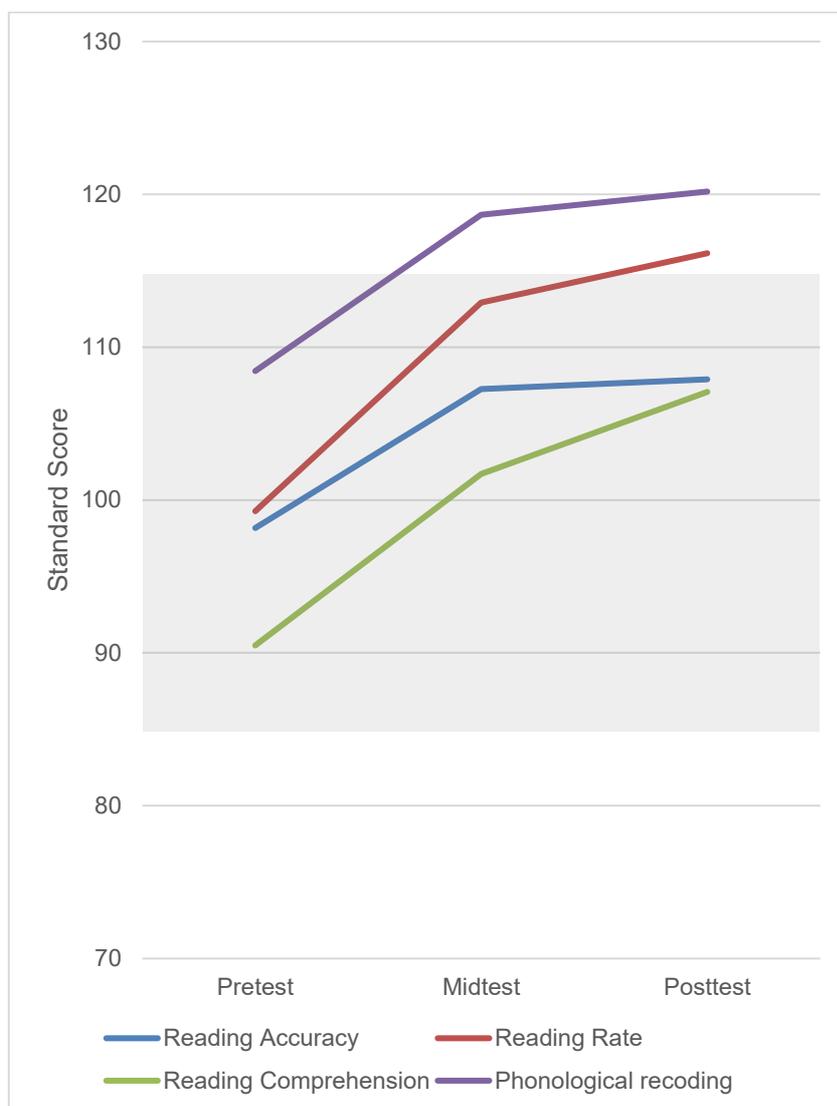


Figure 1. Year 1 students' performance relative to same aged peers on measures of reading skills at pre-, mid- and post-test. The average range of student performance, 85 to 115 in standard scores, is indicated by the grey shading.

Table 5. Year 1 students performing in the bottom quartile (bottom 25% of students), middle 50% of students and top quartile at pre-, mid- and post-test.

|                        |           | Bottom Quartile | Middle 50% | Top Quartile |
|------------------------|-----------|-----------------|------------|--------------|
| Letter Sound Knowledge | Pre-test  | 5.2%            | 35.5%      | 58.1%        |
|                        | Mid-test  | 0.6%            | 20.6%      | 77.4%        |
|                        | Post-test | 0.6%            | 23.9%      | 74.2%        |
| Word Recognition       | Pre-test  | 17.4%           | 37.4%      | 43.9%        |
|                        | Mid-test  | 11.0%           | 41.3%      | 46.5%        |
|                        | Post-test | 12.3%           | 52.3%      | 34.2%        |
| Phoneme Awareness      | Pre-test  | 21.3%           | 50.3%      | 27.1%        |
|                        | Mid-test  | 10.3%           | 54.8%      | 33.5%        |
|                        | Post-test | 9.0%            | 44.5%      | 45.2%        |
| Reading Accuracy       | Pre-test  | 34.8%           | 38.7%      | 25.8%        |
|                        | Mid-test  | 7.7%            | 46.5%      | 45.2%        |
|                        | Post-test | 5.8%            | 42.6%      | 51.0%        |
| Reading Rate           | Pre-test  | 14.8%           | 25.8%      | 12.3%        |
|                        | Mid-test  | 1.9%            | 16.1%      | 34.8%        |
|                        | Post-test | 0.6%            | 8.4%       | 43.9%        |
| Reading Comprehension  | Pre-test  | 42.6%           | 29.7%      | 27.1%        |
|                        | Mid-test  | 20.0%           | 49.7%      | 29.7%        |
|                        | Post-test | 15.5%           | 37.4%      | 46.5%        |
| Phonological Recoding  | Pre-test  | 7.2%            | 47.1%      | 45.8%        |
|                        | Mid-test  | 0.7%            | 26.8%      | 72.5%        |
|                        | Post-test | 1.3%            | 20.9%      | 77.8%        |

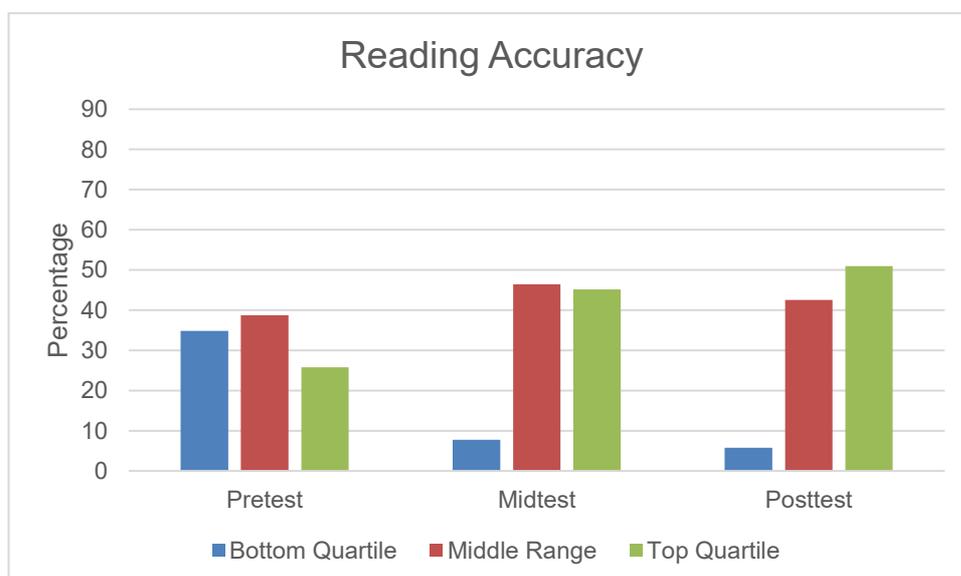


Figure 2. Percentages of students scoring in the bottom quartile, average range and top quartile in reading accuracy at pre-, mid- and post-test.



Figure 3. Percentages of students scoring in the bottom quartile, average range and top quartile in reading rate at pre-, mid- and post-test.

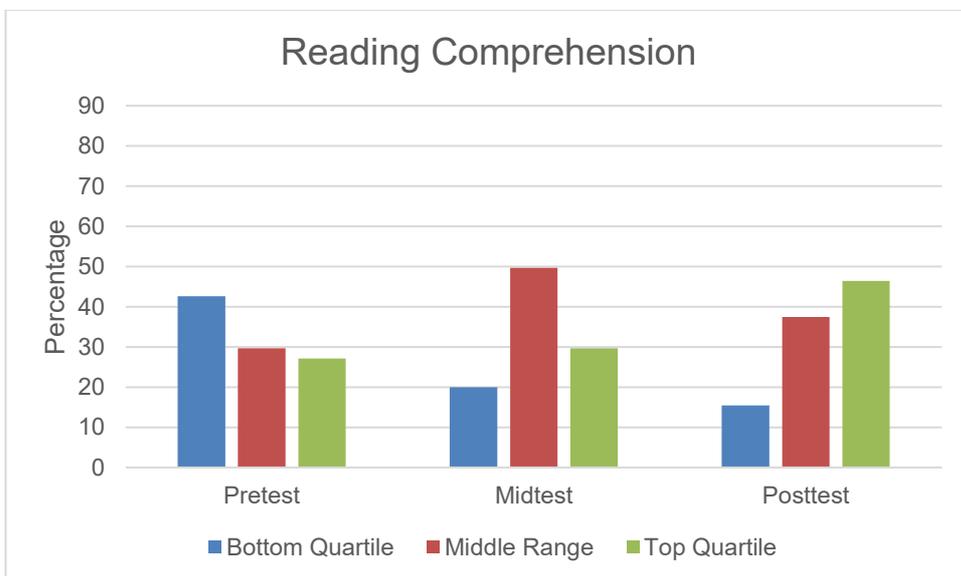


Figure 4. Percentages of students scoring in the bottom quartile, average range and top quartile reading comprehension at pre-, mid- and post-test.

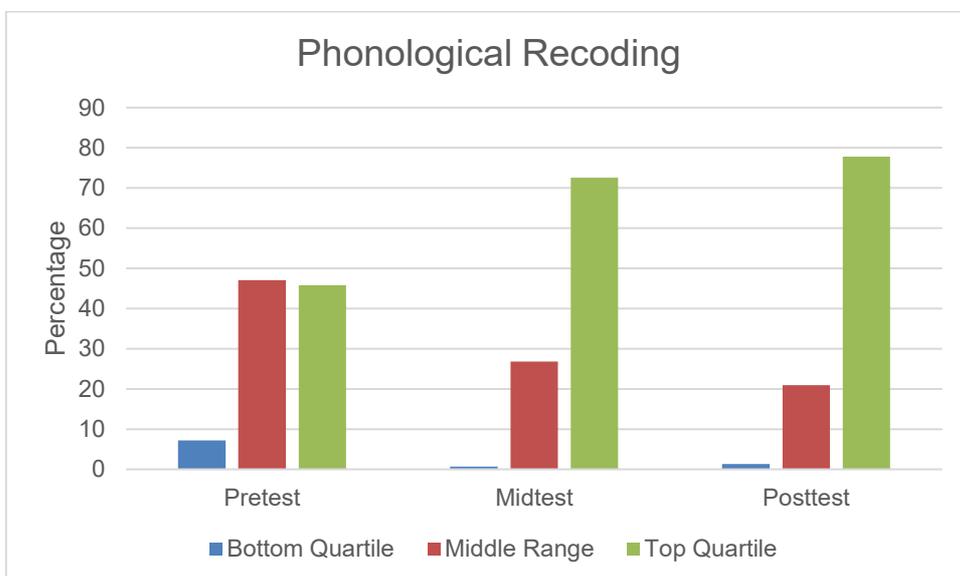


Figure 5. Percentages of students scoring in the bottom quartile, average range and top quartile in phonological recoding at pre-, mid- and post-test.