

Paper 2. Move4words controlled trial -229 children from Year 4

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Abstract:

Data from 229 Year 4 children aged 8 ½ to 9 ½ show that large, statistically significant improvements in reading age result from using the 12 week Move4words programme in the classroom, compared to a comparison group who had normal lessons. This is a medium to large effect for below-average readers (effect size $d = 0.72$) and a medium effect for above-average readers (effect size $d = 0.57$). Children on the Move4words programme who had reading ages below their actual age improved their reading age by 10 months in a 4 month time period (2.5 months per month), compared to only 4 months for the comparison group (1 months per month).

The project:

121 Year 4 children from four Primary schools in the South East of England did Move4words in normal lesson time for 20 to 30 minutes per day, from February to May. Normal literacy support was continued throughout the programme. These are termed the “Move4words” group.

The comparison group contained 108 Year 4 children from four other Primary schools, also in the same area, who did normal lessons with their normal literacy support over same time period, planning to use M4W later in the year. These are termed the “regular teaching” group.

All schools did standardised reading tests before and after the 12 week Move4words programme, providing us with pre and post assessments of reading age.

All teachers participating in this project attended a one-day training session given by Dr Elizabeth McClelland, and ran the Move4words sessions in class-time themselves. Elizabeth McClelland visited each school once during the sessions to monitor delivery, to make sure that the correct procedures were being followed and to give advice if needed. This early version of Move4words used home-produced videos of all exercises embedded into daily PowerPoint presentations. There is less rhythm and timing and less auditory work than later versions of Move4words.

Results:

Reading age improved considerably more for the Move4words group than for those children who did not do Move4words (Figure 2.1).

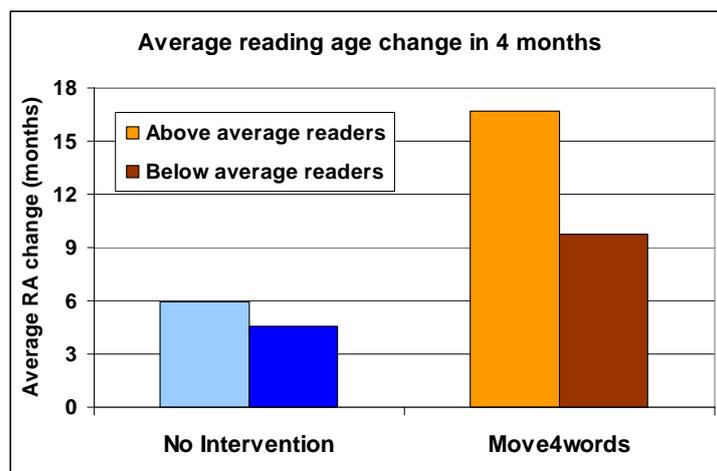


Figure 2.1: Change in group average reading ages for Year 4 children between February and May. Lighter colour bars (yellow and pale blue) indicate initially above-average readers, darker colour bars (brown and blue) indicate initially below-average readers.

Below-average readers on the Move4words programme improved their reading age by almost 10 months in 4 months, i.e. 2.4 months per month of time elapsed, in comparison to similarly below-average readers not on the Move4words programme who improved by 4 months in 4 months, i.e., at 1 month per month. Reading progress therefore appears to be 2.2 times faster with the Move4words programme than without.

Similarly, good readers on the Move4words programme improved their reading by 16 ½ months (4 months per month) while comparatively good readers not on the programme improved their reading by 6 months (1.5 months per month). Reading progress therefore appears to be 2.8 times faster with the Move4words programme than without.

Are the differences shown in Figure 2.1 statistically significant?

We have carried out statistical testing using t-tests and have calculated the effect size, Cohen’s d.

	No intervention group					Move4words group				
	N	Initial chron age	Initial reading age (SD)	RA after 4 months (SD)	change in RA in months	N	Initial chron age	Initial reading age (SD)	RA after 4 months (SD)	change in RA in months
Above average readers	60	8.53	10.01 (1.45)	10.50 (1.96)	5.95	73	8.74	10.24 (1.85)	11.63 (2.24)	16.68
Below average readers	48	8.50	7.43 (0.73)	7.80 (0.81)	4.47	48	8.55	7.48 (0.70)	8.29 (0.97)	9.75

Table 2.1: Group average reading age data for children with reading ages at or above their chronological age (above-average) and for children with reading ages below their chronological age (below-average). The standard deviation is shown in brackets.

The No Intervention and Move4words groups need to be sufficiently well matched to be able to compare their progress. To test this, we carried out t-tests comparing initial reading age between the two groups. The average initial reading ages of the No Intervention and the Move4words groups are statistically indistinguishable, for both below-average (t = 0.860, p = 0.392) and above-average (t = 0.788, p = 0.432) readers. This means that the groups are sufficiently well matched to proceed.

We then compared group average reading ages after the end of the Move4words period. Now the Move4words groups have significantly greater reading ages than the No Intervention groups: for below average readers, t = 3.175, p = 0.002; for above average readers, t = 3.047, p = 0.003.

These statistical tests tell us the effect is significant, but not how large the effect is.

To estimate the size of the effect, we can use the effect size, a simple parameter which allows us to compare between different studies and to be confident of their impact.

We used Cohen’s effect size d:

$$d = \frac{\text{difference in post-score between control and intervention groups}}{\text{Standard deviation of control group post-score}}$$

The size of the parameter d gives an indication of the size of the effect and these are the accepted ranges:

- d ~ 0.2 = small effect
- d ~ 0.5 = medium effect
- d ~ 0.8 = large effect

In our study, these are the effect size results:

For below average readers $d = 0.718$ - a medium to large effect

For above average readers $d = 0.575$ - a medium effect

Hattie has recommended that new educational interventions must have effect sizes of greater than 0.4 for them to be considered worthy of use in schools. Move4words passes that test in this study.

Conclusions:

This controlled trial demonstrates that the Move4words programme has a significant positive impact on reading ability for Year 4 children in comparison to normal teaching and literacy support. The effect is larger for lower ability pupils and has a medium to large effect.

This study shows that the addition of this early version of the Move4words programme to the school day has more than doubled the effectiveness of normal classroom literacy support methods for improving reading, for poor and good readers alike.