



Evaluation of a Remedial Handwriting Program for Print Legibility

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ONE HOUR TO LEGIBILITY PROGRAM

First Strokes® One Hour to Legibility program emphasizes sizing and reduction of speed handwriting errors without re-teaching stroke sequencing.

Students spend approximately one hour learning sizing on the adapted notebook paper and identifying speed errors. Subsequently, students practice sizing concepts over the course of 3 days on the adapted notebook paper, 3 days on regular notebook paper and 1 day on numbers.

SIZING OF LETTERS:

- "Tall letters should touch top line"
- Body of letter should be 1/3 space
- "Sinking letters" should sink well below the writing line

1. Teach concept and student practices sizing on adaptive notebook paper.

2. After practice, student generalizes sizing to notebook paper. Visual cueing techniques and activities outlined in the *First Strokes® One Hour to Legibility Workbook*.

Adaptive Notebook Paper

Pre and Post Testing – Improvement noted in sizing

Letter formation is addressed through self evaluation of 'speed errors', or errors that occur when writing quickly.

RECOGNITION OF SPEED HANDWRITING ERRORS:

- Lakes
- Poor Closure
- Touchpoint Errors
- Tepees
- Hyper-closure
- Retracing Errors
- Grading Key

To overcome resistance to engagement in writing and increase generalization of skills, fun writing topics and activities are also incorporated into the program.

PURPOSE

The purpose was to determine if the *First Strokes® One Hour to Legibility* program was effective in improving participants' quality of handwriting immediately after and three weeks post. A single group repeated measures design was conducted in the summer of 2010. Instruction was delivered in 8 one hour sessions over a period of two weeks.

METHOD

Single group repeated measures design.

Participants: Twenty boys and six girls enrolled in the *First Strokes® One Hour to Legibility* sessions held summer 2010. Inclusion criteria were

- 1st grade completion,
- could write an identifiable lower case alphabet,
- able to attend to instruction in a small group.
- attendance of no less than 6 out of the 8 *One Hour to Legibility* sessions
- completed data collection at the pre, post, and follow-up.

Average age was 9 years, 2 months with a range of 7.5 years to one older child 14.5 years. Grades completed that summer ranged from 1 to 6.

Procedure: Handwriting samples on standard notebook paper (5/8 inch width, no midline guide) from each child pre, post, and three weeks following their participation in the program. In manuscript each child wrote the lower case English alphabet and copied from a paragraph for one timed minute. Pre and post samples were collected at *The Handwriting Clinic* as part of the program. Follow-up samples were obtained via each child's parent through the mail with telephoned instruction.

LIMITATIONS

This work was conducted in the field within a single organization. Participants were drawn from the population of clients to *The Handwriting Clinic* and may or may not have been identified by educators or other professionals as non-proficient writers. The return rate for the follow up samples was low (26/44). Summer vacations were a confounding factor and asking the parents to collect the follow up samples requires the assumption they followed the requested protocol.

CONCLUSION

This program evaluation study provided practice based evidence for the use of the *First Strokes® One Hour to Legibility* program. The findings suggest that attention to alignment and sizing are important features of overall readability and that address of these factors may produce improved overall legibility for non-proficient writers who have mastered the basics of visual memory and letter formation.

RESULTS

Readability Five elementary school teachers, blinded to the data, independently ranked each paragraph sample based on personal judgment on a scale of 1 (unreadable) to 6 (very readable). Median of the five rankings for each sample was used in the data analysis.

Wilcoxon Signed Ranks for Median Teacher Readability Ranking Scores

Pre-test		Post-test		Pre to Post	Follow-up		Post to Follow-up	Pre to Follow-up
M	SD	M	SD	p	M	SD	p	p
3.07	1.09	3.94	1.15	.001*	3.80	0.93	.527	.004*

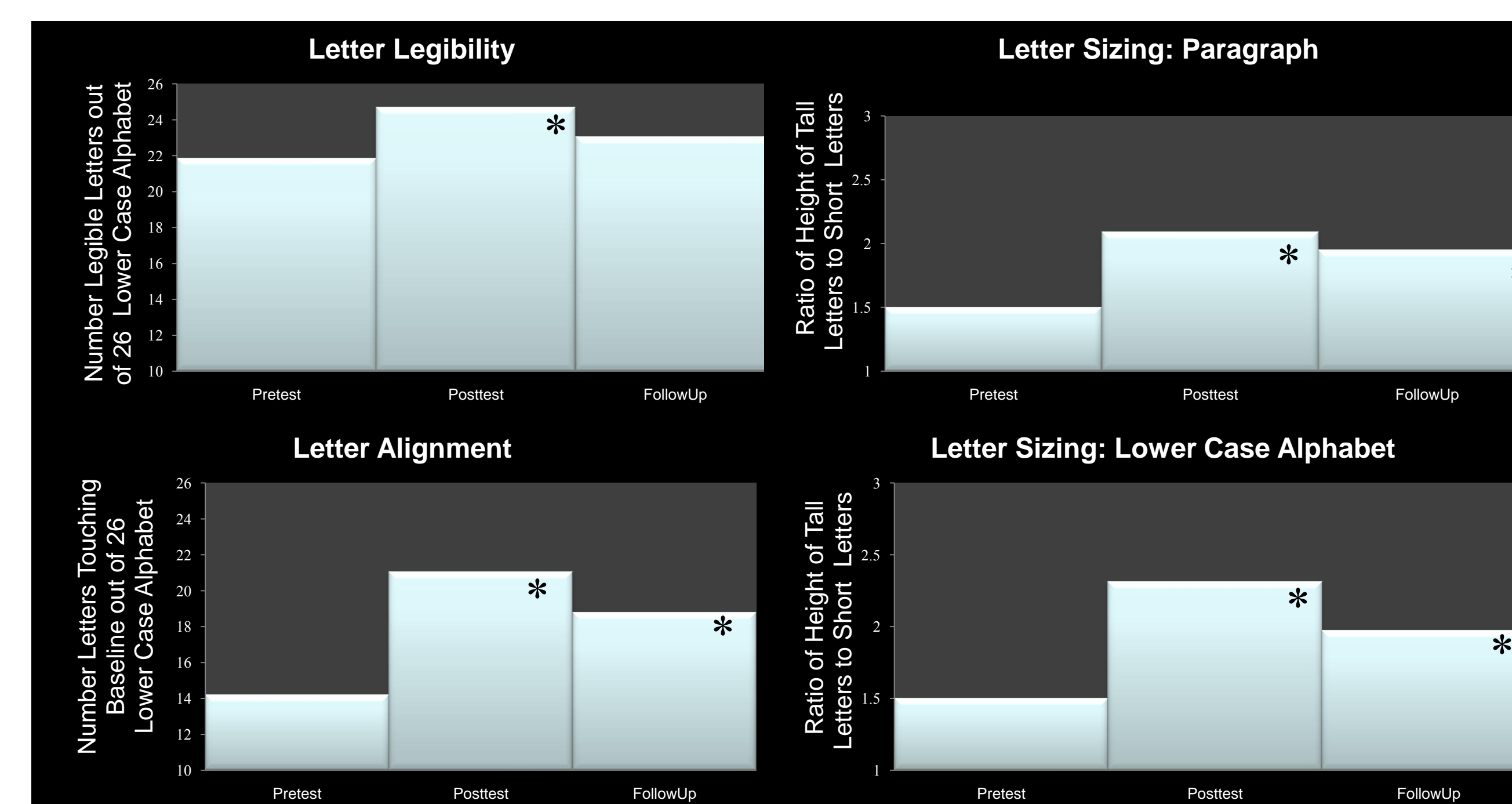
Readability improved by 1 rank between pre and posttest and this was retained at follow up.

Letters and Spatial Organization Letter legibility rated by *Minnesota Handwriting Assessment* criteria. Alignment, sizing, spacing, measured in millimeters, rate measured by word count.

Repeated Measures ANOVA

Measure	Pre-test		Post-test		Follow-up		p
	M	SD	M	SD	M	SD	
Legibility Alphabet	21.84	2.88	24.69	1.01	23.04	2.99	.001*
Alignment Alphabet	14.19	5.06	21.03	4.22	18.79	4.23	.001*
Sizing Alphabet	1.50	0.21	2.31	0.32	1.97	0.37	.001*
Sizing Paragraph	1.50	0.24	2.09	0.30	1.95	0.40	.001*
Spacing Paragraph	4.20	3.25	6.76	8.83	7.85	13.84	.10
Rate Paragraph	11.92	2.29	10.46	2.58	11.34	3.21	.08

Letter legibility improved but not retained at follow-up. Alignment, Sizing retained improvement at follow-up. Spacing and Rate were unchanged.



*post hoc paired t-tests alpha = .017