

Project RAISE: Preliminary Summary of Findings from Year 2

Project RAISE is a longitudinal study investigating the teaching of early literacy skills to students with significant cognitive disabilities. The *Early Literacy Skills Builder (ELSB)* curriculum was specifically designed for this study and population using a combined approach with direct instruction and systematic instruction components. These results summarize the findings from the second year of implementation.

New Students Entering the Project in Year 2

Thirty-nine new students entered the study in the Fall of 2006. Students were assigned to treatment and control groups using stratified random assignment. Students were stratified based on class type and classroom teacher such that half of the students in a classroom were randomly selected to each group. When there were an uneven number of students in a classroom, one student was paired with another student from the same class type where there was also an uneven number of students. One student was selected to the treatment group from this pair. One student who did not have another student as a pair (recall $n=39$) was assigned to a group by drawing a “treatment” or “control” card. All students had a 50/50 chance of being selected as a member of the treatment group. One student moved out of the school district shortly after the study began. Primary characteristics of the students upon which these results are based are displayed in Table 1. Chi-square analyses for gender, ethnicity, verbal status, grade, and free/reduced lunch indicate no statistical differences between the groups. T-test analyses for IQ and weekly hours in general education classes indicate no statistical differences between the groups. Comparison of group differences at pre-test found no significant differences between the groups on any of the dependent variables.

Table 1: Characteristics of Study Participants

Characteristic	Control		Treatment	
	<i>N</i>	%	<i>N</i>	%
Group Membership	19	50.0	19	50.0
Gender				
Male	15	78.9	10	52.6
Female	4	21.1	9	47.7
Ethnicity				
African American	12	63.2	11	57.9
Caucasian	7	36.8	5	26.3
Other	0	-	3	15.8
Verbal Status				
Verbal	9	47.4	11	57.9
Non-Verbal	10	52.6	8	42.1
Class Type				
SAC	9	47.4	10	52.6
Autism	8	42.1	7	36.8
Severe/Profound	2	10.5	2	10.5
Grade				
K	5	26.3	6	31.6
1	6	31.6	3	15.8
2	4	21.1	6	31.6
3	4	21.1	4	21.1
Free/Reduced Lunch				
None	4	21.1	7	36.8
Reduced	1	5.3	0	-
Free	8	42.1	7	36.8
Did Not Answer	6	31.6	5	26.3
	M	Range	M	Range
Weekly hrs in gen educ classes	.82	0-2.5	1.32	0-7.0
IQ	40.40	20-55	43.20	20-54

The nineteen elementary school special education teachers in self-contained classrooms volunteered for the study. They had an average of 7.0 years teaching experience with a range of

1 to 20 years. Thirteen teachers held a Bachelor's degree and 5 held a Master's degree (one teacher did not complete the form). Sixteen teachers had a regular special education teaching license, one had a provisional entry license and one was a lateral entry teacher. Two teachers also had a general education teaching license. Eleven of the teachers were White, 5 were African-American and one was Hispanic and one was bi-racial.

Students in the treatment group were taught emergent literacy skills using the *ELSB Building with Symbols* component. Students in the control group were taught literacy skills using *Edmark*. *Edmark* is the traditional reading program used in these types of special education classrooms in this school district. Both groups received the *Building with Stories* component. For a thorough explanation of these components, their development and validation, see Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers (in press).

The dependent variables used to gauge progress in early literacy skills consisted of the *Nonverbal Literacy Assessment (NVLA)*, the *Early Literacy Skills Assessment (ELSA)*, the *Memory for Sentences* and *Letter-Word Identification* subtests of the *Woodcock Language Proficiency Battery (WLPB)*; and *Peabody Picture Vocabulary Test III (PPVT)*. The *NVLA* was designed a standardized measure of literacy for students who are nonverbal since many of the participants would not be able to respond to the standardized administration procedures of the available literacy measures that use a verbal response format. It is comprised of two subscales, the *Conventions of Reading (CVR)* and *Phonemic Awareness and Phonics Skills (PhonSk)*. The *CVR* section assesses participation and comprehension in reading a story. The *PhonSk* section assesses phonemic awareness and early phonic skills. The *ELSA* was developed as pretest/posttest for the *ELSB* curriculum. It contained 152 items exactly matched to the skills and objectives taught in the experimental curriculum. For a thorough description of the assessments

and their technical adequacy, see Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers (in press).

Table 2 displays the descriptive statistics and effect size for the dependent measures. While both groups made gains, the gains by the treatment group exceed those of the control group in all of the measures. None of the following pretest-posttest differences resulted in a statistical difference between the groups because of relatively small sample size and large individual variance. Interpreting the effect size provides a better description than statistical significance because of these challenges with a low incidence population where small sample sizes and large variance can be expected.

For the treatment group large effect sizes were found for the *NVLA* total score, *CVR*, and *PhonSk*. Moderate effect sizes were found for the *ELSA*, *PPVT III*, *WLPB* total score, and *Letter-Word Identification*. Small effect sizes were found for *Memory for Sentences*. For the control group large effect sizes were found for *NVLA* total score and *CVR*. Moderate effect sizes were found for *PhonSk*. Small effect sizes were found for *ELSA*, *PPVT III*, *WLPB* total score, *Memory for Sentences* and *Letter-Word Identification*. The large effect sizes for the control group on the *NVLA* total score and *CVR* are not surprising considering they also received the Building with Stories component of the *ELSB*.

Table 2: Pretest and Posttest Means and Standard Deviations and Cohen's *d* for the NVLA, ELSA, WLPB and PPVT III

	<u>n</u>	<u>Pretest</u>		<u>Posttest</u>		<u>Diff</u> <u>Score</u>	<u>Cohen d</u>
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>		
<i>NVLA Total</i>							
Control	19	51.42	27.99	84.58	52.73	34.42	.80
Treatment	19	50.05	23.27	95.42	25.00	45.53	1.89
<i>CVR</i>							
Control	19	14.21	5.52	20.79	9.10	7.26	.92
Treatment	19	14.89	5.84	22.53	5.92	7.64	1.30
<i>Phon Sk</i>							
Control	19	36.95	24.70	63.79	45.28	27.16	.74
Treatment	19	34.95	18.45	72.89	22.68	37.89	1.83
<i>ELSA</i>							
Control	19	23.84	16.48	26.58	13.10	2.74	.18
Treatment	19	33.00	29.98	41.79	21.08	8.79	.34
<i>PPVT III</i>							
Control	19	13.16	17.39	16.37	19.13	3.21	.18
Treatment	19	15.32	16.74	23.53	18.52	8.21	.47
<i>WLPB Total</i>							
Control	19	12.32	16.82	16.95	19.72	4.63	.25
Treatment	19	14.00	16.46	20.63	18.60	6.63	.38
<i>Memory for Sentences</i>							
Control	19	8.20	10.86	10.11	12.19	1.91	.17
Treatment	19	10.37	12.46	13.84	13.10	3.47	.27
<i>Letter Word Identification</i>							
Control	19	3.11	4.73	5.11	6.27	2.00	.36
Treatment	19	1.74	3.49	4.79	4.65	3.05	.74

The following figures present a visual representation of the mean pretest-posttest scores for the two groups on the dependent variables.

Figure 1: NVLA Total Score

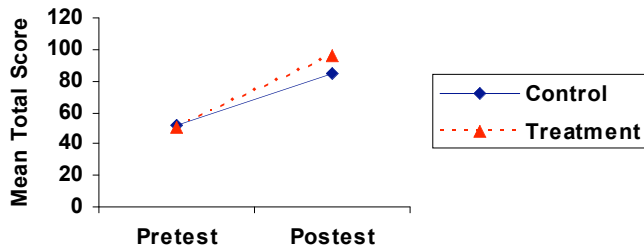


Figure 2: Conventions of Reading

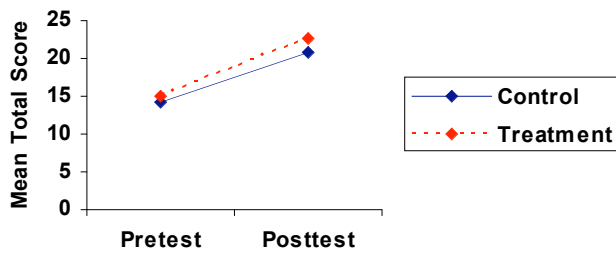


Figure 3: Phonic Skills

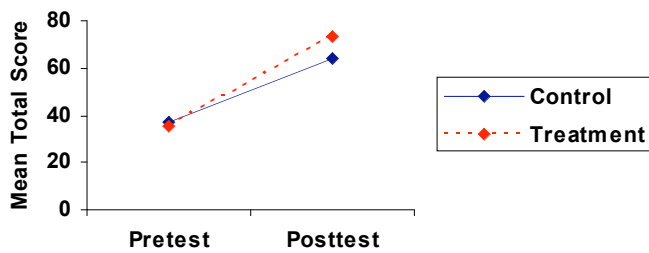


Figure 4: Early Literacy Skills Assessment

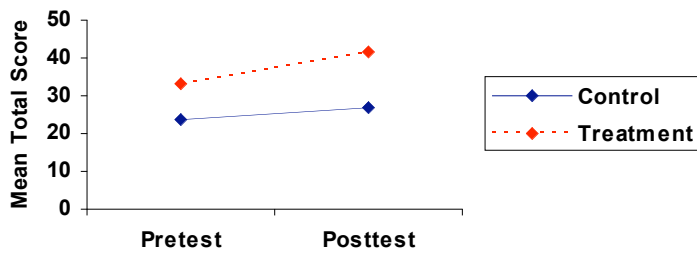


Figure 5: PPVT III

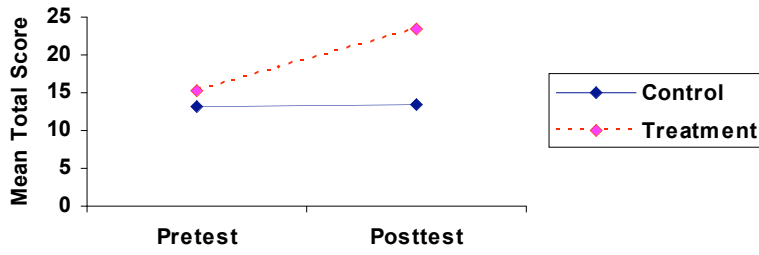


Figure 6: WLPB Total Score

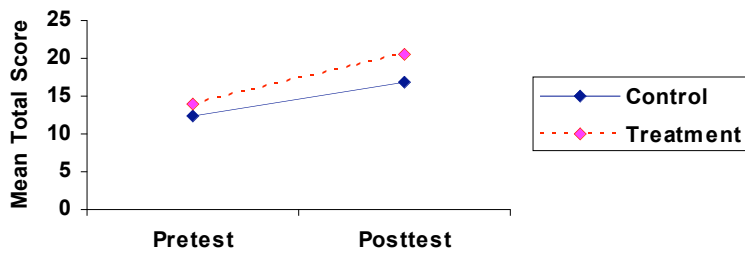


Figure 7: WLPB Memory for Sentences

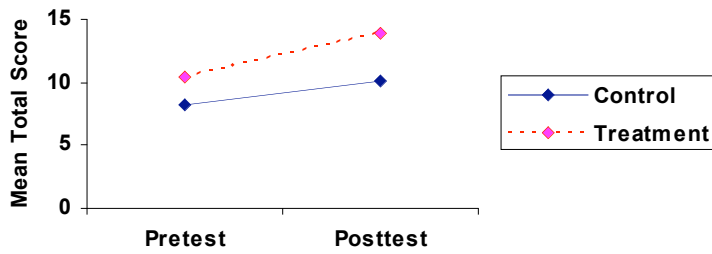
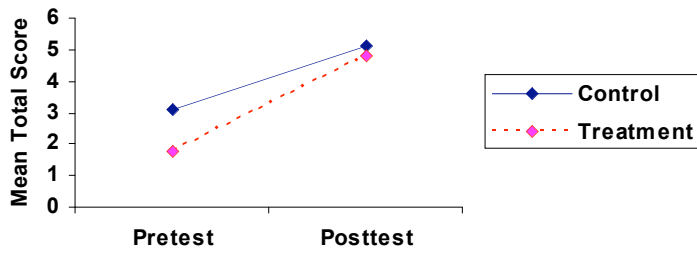


Figure 8: WLPB Letter-Word Identification



Initial Treatment Group Progress Over Two Years

The participants selected as the treatment group in the first year of the project have had two years of literacy instruction using the ELSB. The following is a summary of the progress of this group of participants. There was no attrition among this group in the second year. For information on the characteristics of the group see Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers (in press).

Two major changes occurred in Year 2 of the study. First, based on the student progress of the ELSB during the first year, several objectives were revised. The changes made to the ELSB included (a) fewer vocabulary words (22 vs 15), (b) using the vocabulary word in a sentence in addition to recognition, (c) inferential comprehension questions were added to the literal comprehension section, (d) clapping letter sounds were added to the breaking words into syllables section, (e) seven additional letter sounds were added, (f) the instructional procedure for identifying first and last sounds was changed, (g) word matching and picture-word matching were added to the picture comprehension section. These ELSA was revised to reflect these changes in the curriculum. The number of items increased from 152 to 177 and the level of difficulty of some of the items may have also increased. The second major change was the increased training and monitoring of the Edmark used for the control group.

Table 2 displays the mean pretest and posttest scores for the initial treatment group on the *NVLA* total score, *CVR*, *PhonSk*, *ELSA*, *PPVT III*, *WLPB* total score, *Letter-Word Identification*, and *Memory for Sentences*. Visual representations of these means are displayed in the figures that follow Table 2. There is growth both between the pretest and first year posttest as well as between the first year posttest and second year posttest. The slope of the line between the pretest

and first posttest is greater than between the first posttest and second posttest for the *NVLA*, *WLPB* and *PPVT III*. The slope is greater for the *ELSA* between the first and second posttests.

Table 2: Pretest and Posttest Means and Standard Deviations for the NVLA, ELSA, WLPB and PPVT III

	<u>n</u>	<u>Pretest</u>		<u>Posttest Yr 1</u>		<u>Posttest Yr 2</u>	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<i>NVLA Total</i>							
Treatment	11	50.05	23.27	95.42	25.00	107.09	43.69
<i>CVR</i>							
Treatment	11	14.89	5.84	22.53	5.92	23.18	5.71
<i>Phon Sk</i>							
Treatment	11	34.95	18.45	72.89	22.68	83.91	38.38
<i>ELSA</i>							
Treatment	11	33.00	29.98	41.79	21.08	72.00	38.15
<i>PPVT III</i>							
Treatment	11	15.32	16.74	23.53	18.52	32.18	21.89
<i>WLPB Total</i>							
Treatment	11	14.00	16.46	20.63	18.60	24.91	20.43
<i>Memory for Sentences</i>							
Treatment	11	10.37	12.46	13.84	13.10	16.64	11.89
<i>Letter Word Identification</i>							
Treatment	11	1.74	3.49	4.79	4.65	5.64	6.28

Figure 9: Initial Treatment Group Progress
NVLA

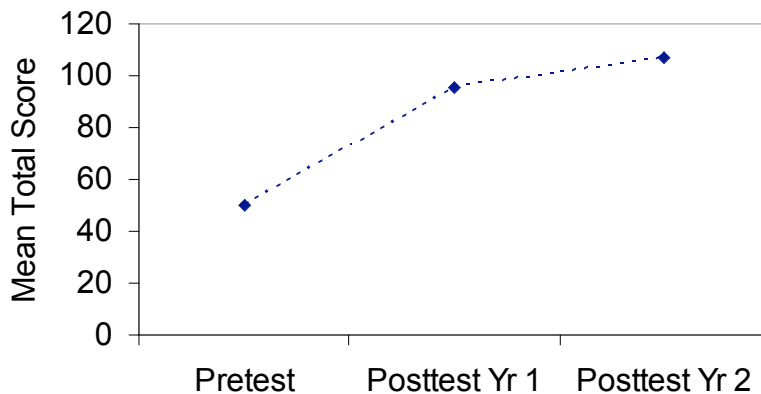


Figure 10: Initial Treatment Group Progress:
Conventions of Reading

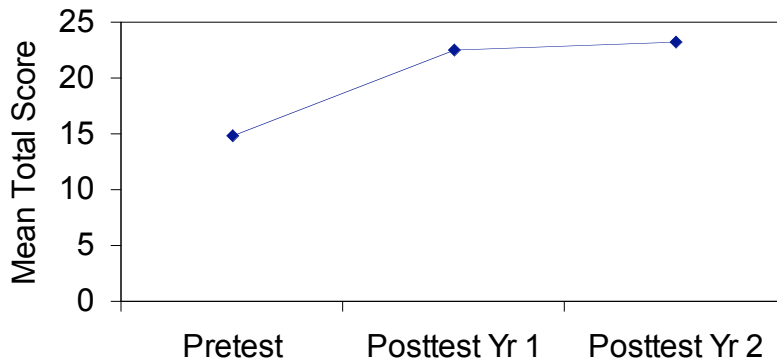


Figure 11: Initial Treatment Group Progress:
Phonic Skills

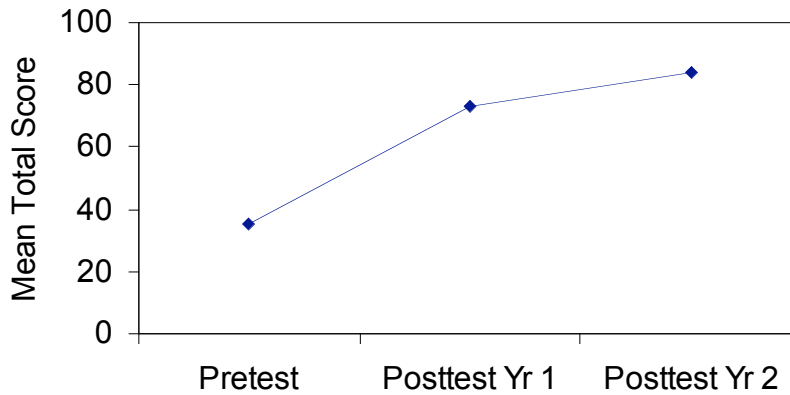


Figure 12: Initial Treatment Group Progress ELSA

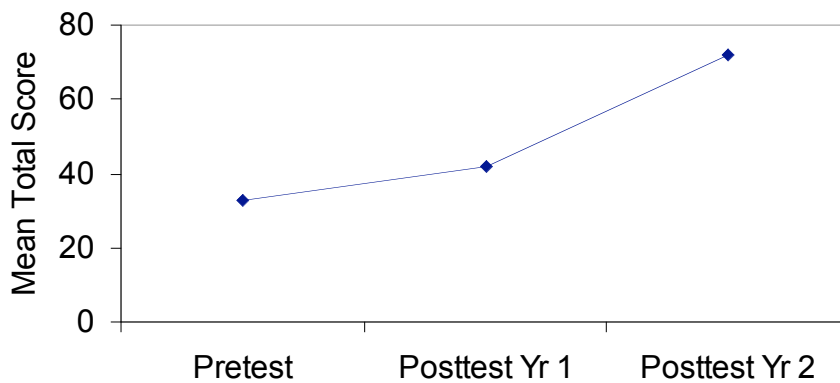


Figure 13: Initial Treatment Group Progress:
PPVT III

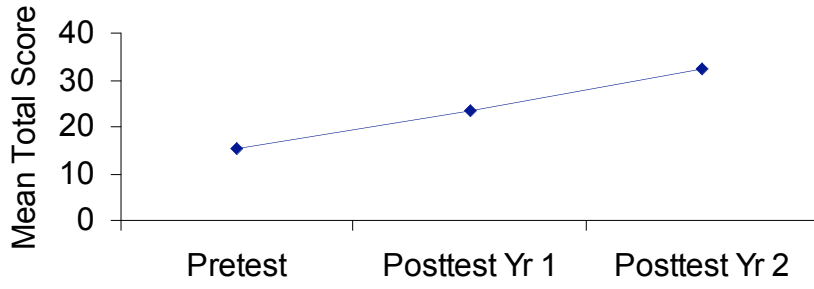


Figure 14: Initial Treatment Group Progress WLPB and Subtests

