E3 RESEARCH

AN INDEPENDENT RESEARCH STUDY

YMCA Study

Preschool

Zoo-phonics®
The Multisensory Language Arts Program

YMCA Study

YMCA Preschool

The *Zoo-phonics Mnemonic and Multisensory Language Arts Program*® (*Zoo-phonics*) is a commercially available, comprehensive, non-textbook-based, early language arts program with specific developmentally appropriate units for Pre-school. *Zoo-phonics* uses a systematic, kinesthetic, multi-sensory approach to teach early reading in ways that maximize understanding, attention, memory, utilization and transference to all areas of the reading, spelling and the writing process. The program a "phono" (hearing), "oral" (speaking), "visual" (seeing), "kinesthetic" (moving), and "tactile" (touching)—whole brain approach.

The Pre-school program focuses on Alphabetics beginning with lower- and upper-case letters and sounds. Each letter has an animal, drawn in the shape of a lowercase letter. The alliterative name of each animal helps the child learn the sound (Pictorial Mnemonics). Pictorial Mnemonics helps children remember the shapes *and* sounds of the letters as they begin to build fluency. *Zoo-phonics* teaches the alphabet as a whole entity, teaching the lowercase letters and sounds first; capital letters are taught later. Children stand, sit on the carpet, or at their desks when signaling and sounding the alphabet and words and play physical games that connect with the alphabet, graphemes and phonemes. This improves Auditory Discrimination, especially for second language learners. Visual, auditory and overall attention increase when the child's eyes, mouth, ears, and body simultaneously support cognition and memory. Novelty is used to increase visual, auditory and overall attention; critical elements to long term memory, fluency and comprehension. Children signal and sound the letters through science, math, social studies, literature, snack, art, music, physical education, cooking, etc., thus anchoring the letter sounds in memory.

Study Description

A one-year randomized trial of 31four-year-old preschool students to determine the efficacy of the *Zoo-phonics* program. The preschools used in the study were in the Los Angeles area and operated by YMCA. The two schools used in the study were randomly selected from the four schools operated on a fee-for-service basis. Other schools operated by the YMCA, but not in the study served students who were sponsored by public agencies. Culver-Palms Family YMCA Preschool was randomly selected as the experimental group and Torrance-South Bay YMCA was selected as the control group.

Teachers and Instructional Assistants in the study all held teaching credentials or certificates from their state's licensing agency. Teacher training and materials for the experimental group were provided by *Zoo-phonics, Inc.* Teachers and school administrators agreed to use the *Zoo-phonics* program with fidelity. The teachers in the control condition continued to use Creative Curriculum, the materials and instructional methods that they had used during the previous year.

The primary assessment instrument used in the study was the PALS PreK. This instrument was developed by the University of Virginia and measures seven constructs of early literacy. Data were collected prior to the beginning of school during the first two weeks of school at the end of the school year in May.

Procedures

Prior to the beginning of the school year, all teachers in the experimental group received *Zoo-phonics* training over a 3 day period. This training included instruction and practice using the Zoo-phonics methods and instructional materials. Ongoing training in the use of *Zoo-phonics* instructional techniques and materials was available online. Additionally, direct access to Dr. Char Wrighton, the Director of the *Zoo-phonics* company was available throughout the study.

During the first two weeks of class, students in both experimental and control groups were assessed using the PALS-PreK. Students were assessed on name writing, lowercase and uppercase letter names, letter sounds, beginning sounds, printed word, rhyming and nursery rhyming in order to establish a baseline. The second assessment was conducted at the end of the school year, using the same measures as the pre-test.

Findings

The findings of this study were derived from the PALS-PreK. The data were analyzed using:

- Descriptive statistics (means, frequencies, standard deviations and gains between assessments)
- Paired Sample T-Tests to measure the significance between pre-and-post mean scores
- Group Statistics
- Levine's Test for Equality of Variances
- The significance level for all tests was set at $p<.05$.

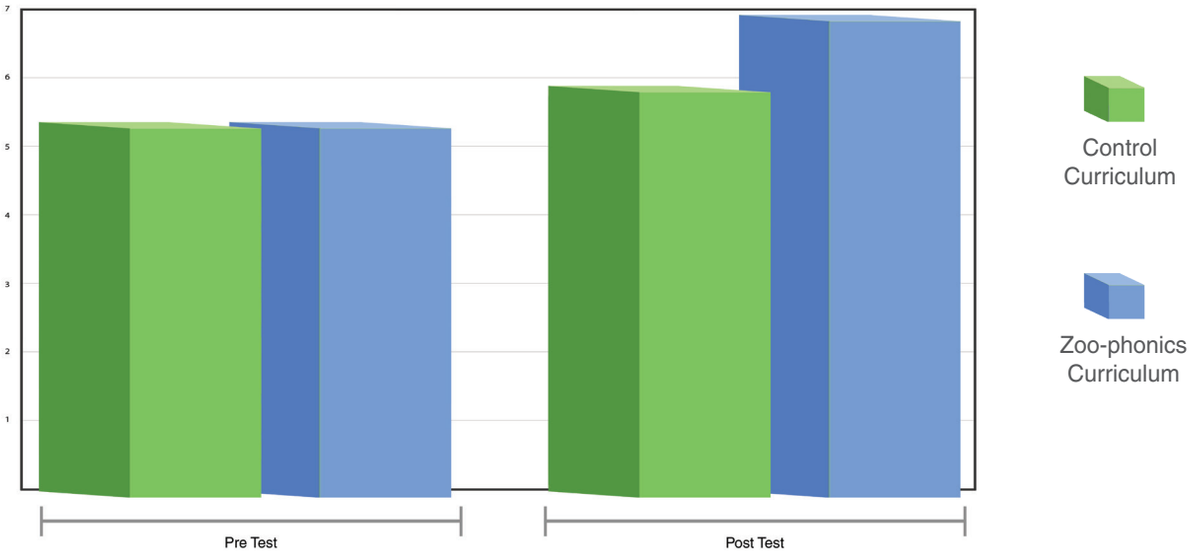

Figure 1. Name Writing. A pre-post comparison of Name Writing

Both groups started the year with similar levels of name writing proficiency. By the end of the year, the Experimental group demonstrated a significant improvement for nearly all students with a mean score of 6.93 out of 7. Proficiency is described by PALS as, "Name is correct with no backwards letters or mirror image writing."

The Control group made a small, insignificant gain of 0.6 between the assessments. However, the Control group's Post Test mean score of 5.20 is still within the developmental range of 5-7.

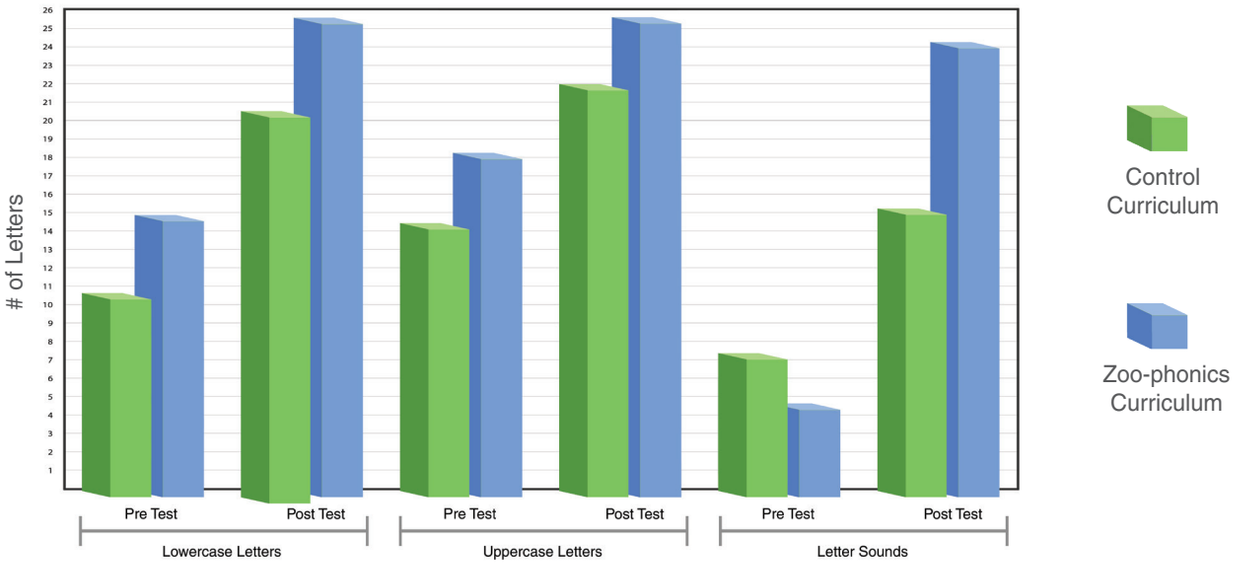

Figure 2. Alphabet and Letter Sounds. A comparison between beginning and ending mean scores of Experimental and Control groups for Upper- and Lowercase alphabets and Letter Sounds

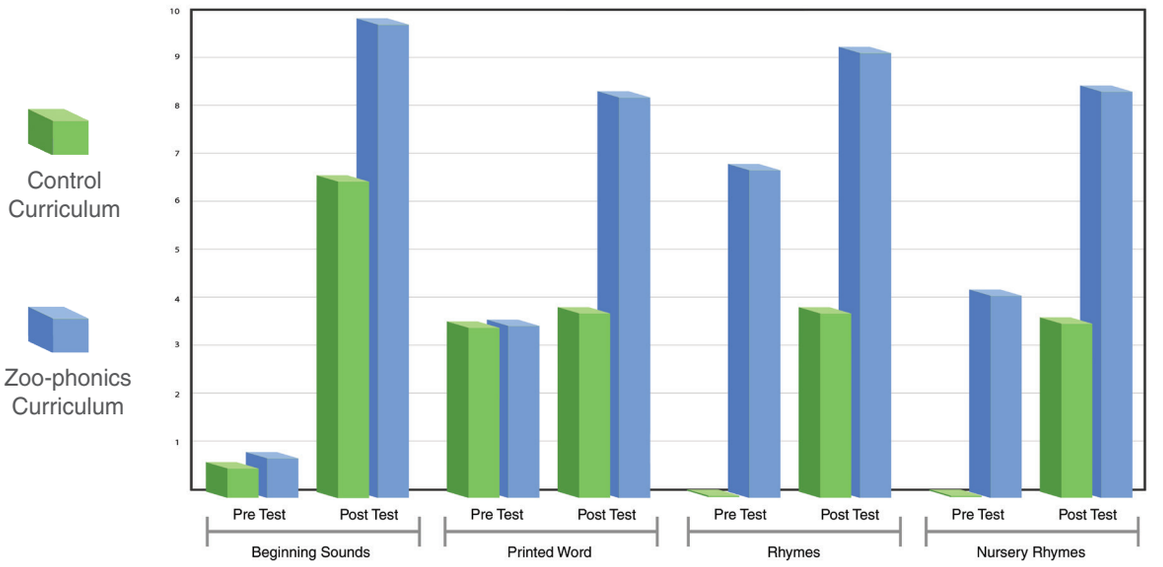

Figure 3. Use of Language. Four elements of early literacy are measured with Pre-and Post group mean scores.

Construct	Scoring Range	Post Test Developmental Range	Mean Score Control Group	Mean Score Zoo-phonics
Name Writing	0 - 7	5 - 7	5.8	6.93
Uppercase Alphabet	0 - 26	12 - 21	22	25.44
Lowercase Alphabet	0 - 26	9 - 17	20.4	25.44
Letter Sounds	0 - 26	4 - 5	15.2	24.25
Beginning Sounds	0 - 10	5 - 8	6.33	9.69
Printed Word	0 - 10	7 - 9	3.8	8.31
Rhyming	0 - 10	5 - 7	3.8	9.13
Nursery Rhyming	0 - 10	6 - 10	3.47	8.38

Figure 4. Post Test Mean Performance. Post Test mean scores are compared to PALS developmental range scores for each instructional construct.

Effect Sizes for Gains

Cohen's *d* is an expression of how large the relationship is between variables; and is independent of how many subjects were tested. This was used to compare pre-and post-mean scores to determine if the effect size of the gain on each measure was large or small. Cohen suggested that *d*=0.2 be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size.

The Experimental group showed Cohen's *d* results in the large effect range for all measures, with the exception of Gains in Rhyming, which was in the moderate range. The Control group also reported large gains in all measures with the exceptions of Name Writing (moderate) and Printed word (small).

Levine's Test for Equality of Variances

The Levene's Test for Equality of Variances is an inferential statistic. For this study, it was used to evaluate the equality of variances of the eight variables calculated for the experimental and control groups. Levene's test was used to assesses the assumption that variances of the four schools from which our samples were randomly drawn are equal.

Using Levene's Test for Equality of Variances, with a confidence level of .05, we can conclude that in the Pre Test, there was not a statistically significant difference between the means between the experimental and control groups except in Rhyming and Nursery Rhyming. For these two measures, the experimental group statistically significant advantage.

On the Post Test, there were statistically significant differences in the mean number of Beginning Sounds, Printed Words, Rhymes and Nursery Rhymes matched between the experimental and control conditions. Since our Group Statistics analysis revealed that the mean for the experimental condition was greater than the mean for the control condition, we can conclude that participants in the using *Zoo-phonics* were significantly more proficient than participants in the control condition. Uppercase Alphabet was the only measure on the Post Test where there was no statistically significant difference between the experimental and control groups.

Conclusions

The PALS-PreK assessment were not designed to specifically measure the instructional components of the *Zoo-phonics* program. Rather, it was intended to assess a wide range of programs in that was determined to include key literacy development concepts at the pre-kindergarten level. Using PALS Pre-K to assess students in the classroom environment and especially those using the *Zoo-phonics* program offers a unique insight as to how different instructional programs and teaching environments compare. Several conclusions can be drawn from this study that shed light on the *Zoo-phonics* instructional approach and how it compares to developmental scales and another program.

Conclusions:

1. Using the Paired Samples T-tests, it has been determined that the Experimental group mean gains made between the Pre Test and Post Test assessments were all significant. Figures 1-3 present this information graphically.
2. The mean scores for all constructs are within or above the developmental range established by PALS for the Experimental group but not for the Control group. Scores for the Experimental group were all above the mid-point within the developmental range and five of the seven scores were above the developmental range entirely.
3. Using the PALS PreK assessment that was not designed to test the *Zoo-phonics* program's unique instructional methodology adds credibility that the *Zoo-phonics* program prepares students in the same basic early literacy constructs as students in other programs.
4. The primary conclusion of this study is that preschool students can match or out-perform nationally accepted early literacy outcomes using the *Zoo-phonics* program.

E3 RESEARCH

For more information view the full study at:

http://www.zoo-phonics.com/research

E3 RESEARCH

AN INDEPENDENT RESEARCH STUDY

YMCA Study

Preschool

Zoo-phonics®

The Multisensory Language Arts Program