

Gender Study

Preschool - Kindergarten

Gender Study

This study assesses the differences in early literacy skill development that may be present between three-, four- and five-year-old girls and boys. Participating schools were located in rural Kentucky, suburban Oklahoma, suburban Tennessee and suburban districts in California. The study represents students who were ethnically diverse with a low Socio-Economic Status (SES).

Demographics

Grade Levels	Half-day Preschool, Full-day Preschool, Kindergarten	Ethnicity	%
		African American	6
# of Schools	24	Asian	1
# of Students	2,335	Caucasian	65
Boys/Girls Ratio	50% / 50%	Latino/Hispanic	27
Assessment Instrument	Z-BRA3	Other	1
Reduced-cost Lunch	69%	ELL	229 (9.8%)

Participants

Data from four cohorts were used in the study for the school years, 2014 - 2015, 2015 - 2016, and 2016 - 2017

- Cohort 1 - 191 three-year-olds: (in a half-day program) 109 boys and 82 girls
- Cohort 2 - 538 four-year-olds (in a half-day program): 278 boys and 260 girls
- Cohort 3 - 413 four-year-olds (in a full-day program): 197 boys and 216 girls
- Cohort 4 - 1,338 kindergartners: 692 boys and 696 girls

Method and Design

The *Zoo-phonics Multisensory Language Arts Program* for preschool and kindergarten was used as the instruction program and the Z-BRA3 was used to assess 2,335 students, consisting of four cohorts in three grade levels. Cohort 1 included 191 three-year-olds, Cohort 2 included 538 four-year-olds who attended half-day public preschool programs, Cohort 3 included 413 four-year-olds who attended public, full-day preschool programs, and Cohort 4 included 1,338 kindergarten students. The study included data from three school years, 2014-2015, 2015-2016 and 2016-2017. All students were assessed on alphabetic knowledge at the beginning and the end of their alphabetic instruction periods. Kindergartners were only re-assessed on alphabet skills at the end of the first trimester in November.

Test Instrument

Data were collected using the Zoo-phonics Z-BRA3 test instrument to assess alphabetic knowledge. While this instrument measures components of the alphabet, phonics, fluency, and comprehension domains, only the alphabetic portion of the instrument was used in this study. Four components specific to *Zoo-phonics* instruction were measured for both lower- and uppercase letters: 1. Letter names and shapes, 2. Letter sounds, 3. Alliterative Animal Names, and 4. Body Signals.

Analysis

A General Linear Model with Repeated Measures was used to determine proficiency levels and gains between assessment periods for all cohorts. The significance level for all tests was set at $p \leq .05$.

- Descriptive statistics were used to compare proficiency levels within each cohort and subsequently disaggregated into gender groups.
- T-tests were used to measure the differences between pre- and post-mean scores for each variable. Gains are reported by cohort and related gender groups.
- Levine's Test of Equal Variances was used to evaluate the homogeneity of variance across gender groups.
- Data from three school years and within each cohort were aggregated for analysis.

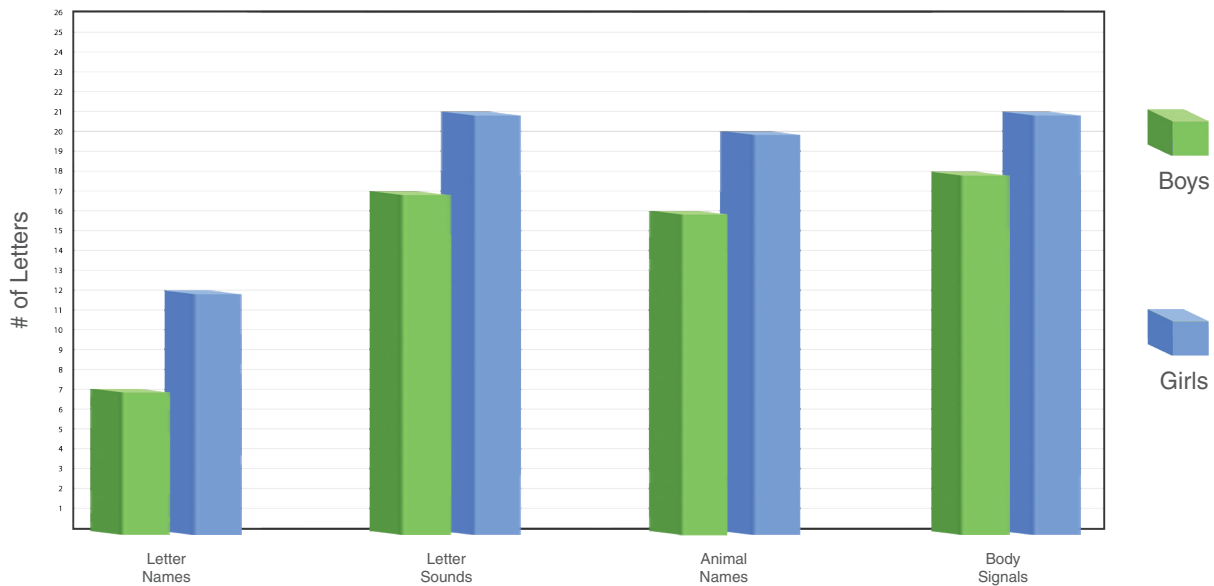


Figure 1. 3-Year-Old, Half-Day Program, Year-End Alphabetic Proficiency for Boys and Girls

Mean scores for three-year-old preschool girls showed more proficiency than boys in letter information, however the difference was not statistically significant. The specific approach Zoo-phonics uses to teach alphabetic knowledge (the Animal Letters, the Alliterative Animal Names and the Body Movement) encourages movement and fun, engages little boys, using their natural inclination to move, play, and make noise.

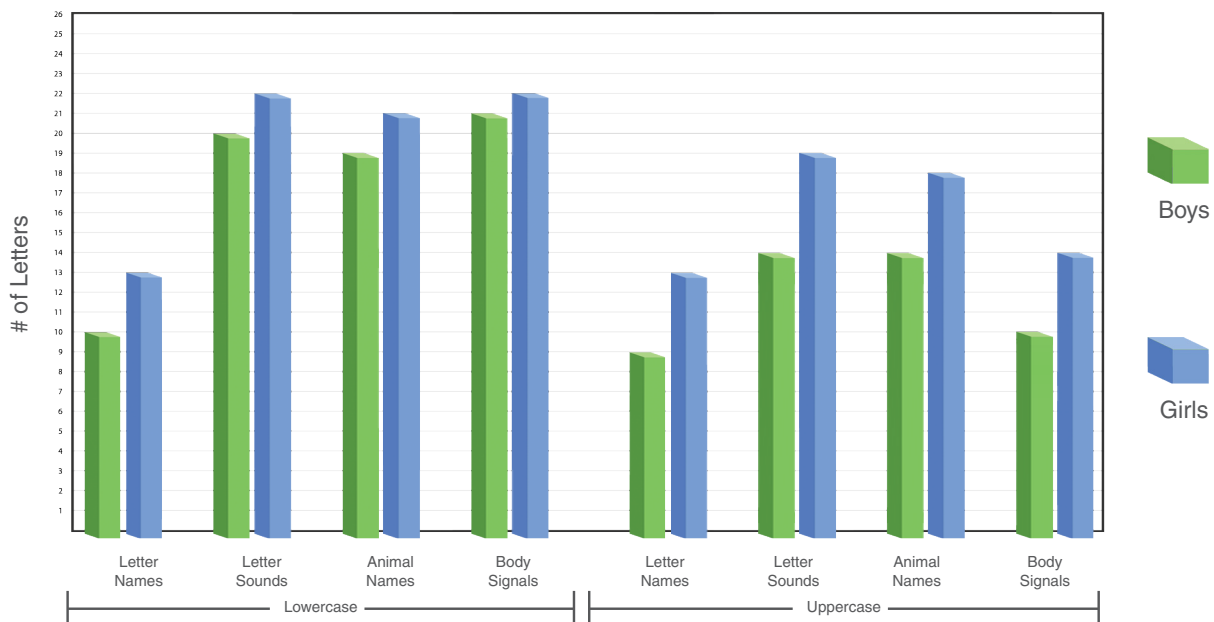


Figure 2. 4-Year-Old, Half-Day Preschool, Year-End Alphabet Proficiency for Boys and Girls

The four-year-old half-day program saw a difference in 1 to 3 letters between boys and girls across the four lowercase variables. However, the difference was not statistically significant. As with the three-year-old cohort, letter name and uppercase letter information was not emphasized until students had mastery over lowercase letter shapes, sounds, Alliterative Animal Names, and Body Signals. Girls were notably stronger across the four uppercase measures, most likely because of parental instruction at home.

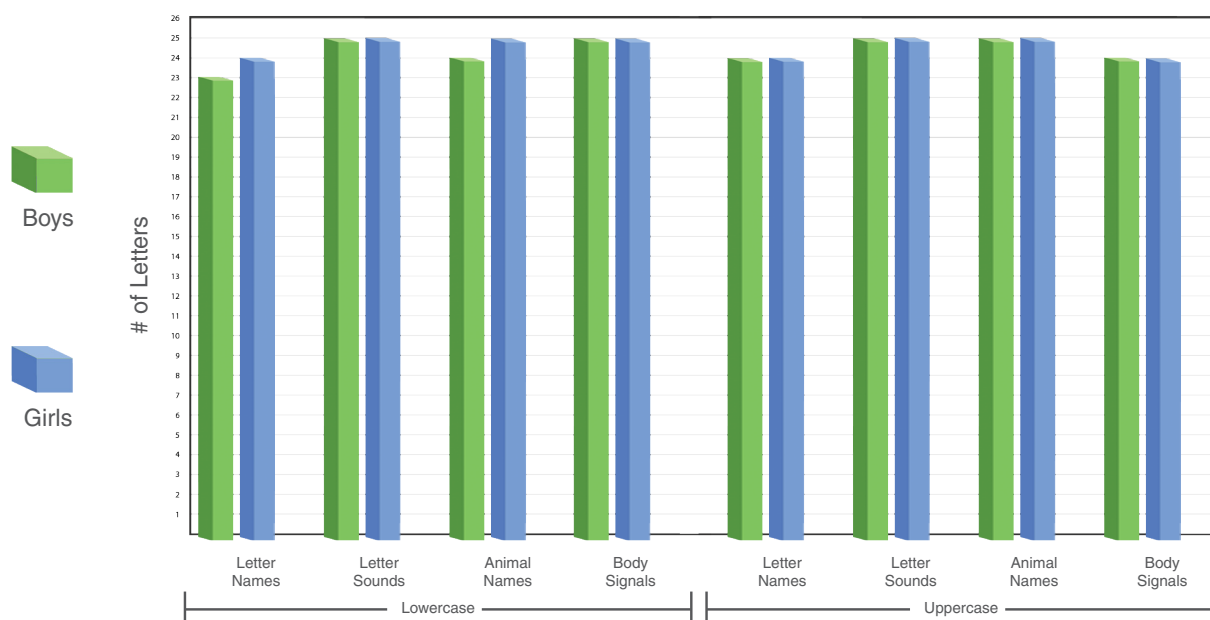


Figure 3. 4-Year-Old, Full-Day Preschool, Year-End Alphabet Proficiency for Boys and Girls

The trend of girls performing better than boys is essentially eliminated with less than one letter difference in lowercase letters and no differences across the uppercase variables. Boys and girls effectively performed equally by the end of the year. Because students had early mastery of lowercase letter shapes and sounds, the uppercase alphabet, including letter names, were also taught. Mean scores indicate that near-mastery in all alphabetic knowledge was achieved for almost all four-year-old students regardless of gender or low SES.

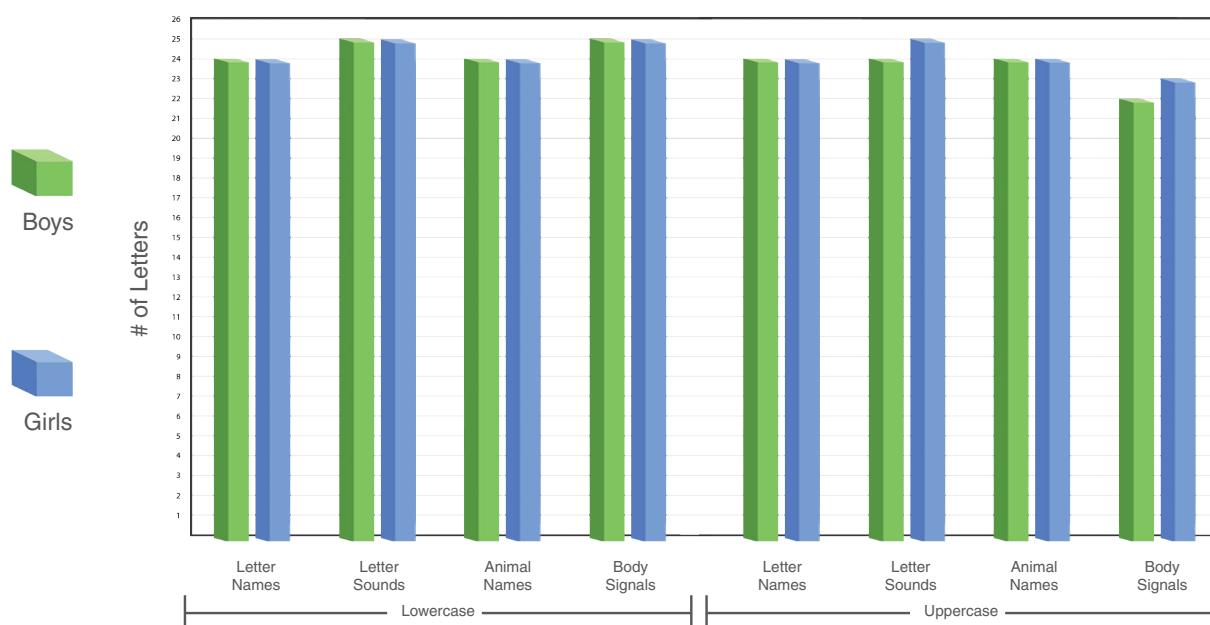


Figure 4. Kindergarten - Boys and Girls - Alphabetic Proficiency. This graph shows alphabetic proficiency using four lower- and uppercase measures at the end of the first trimester.

By the end of the first trimester (November) in kindergarten, there was no difference in alphabetic performance between boys and girls on all but two uppercase variables. And, these variables were less than one letter apart. Mean scores ranged between 24 and 25 letters, indicating near mastery of both lower- and uppercase alphabet letters and sounds for nearly all students.

As a result of all enrolled students being included in the study population, a case can be made that by the **end of the first trimester** in kindergarten, all students, no matter what their gender, SES, ethnic background, or other demographic characteristics, quickly learned the alphabet through the *Zoo-phonics Multisensory Language Arts Program*.

Conclusion

While girls performed slightly better than boys in preschool, by the end of the first trimester in kindergarten, there was no statistical difference between girls' and boys' alphabetic knowledge level when the *Zoo-phonics Multisensory Language Arts Program* was used.

Because of the methodology of the *Zoo-phonics Multisensory Language Arts Program* (lowercase shapes and sounds taught first; teaching through sound patterns; mnemonic presentations; fun, playful, and physical activities) all students rapidly gained the essential alphabetic and early fluency skills necessary for reading, spelling, and writing. The long-standing, traditional belief that girls outperform boys in literacy skills was not supported by this study. In fact, demographic characteristics, including gender and low SES appeared to play no role in students' mastery of alphabetic knowledge. Boys and girls both gained alphabetic skills at the same rate as well as achieving the same levels of mastery in each variable when using the *Zoo-phonics Program*.



For more information view the full study at:

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



Gender Study

Preschool - Kindergarten

