



Abstract

Citation: Powers, S., & Price-Johnson, C. (2006). *Evaluation of the Waterford Early Reading Program in kindergarten 2005-06*. Tucson, AZ: Creative Research Associates.

Background: The Waterford Early Reading Program (WERP) is a comprehensive technology-based educational program developed by the non-profit Waterford Institute in 1995 based on national and state standards and best practices research. It aims to provide early intervention for potentially at-risk students by using technology to individualize instruction and help all students build strong reading skills.

Studies by Tracey (2000), Cope and Cummings (2001), Walberg (2001), Hecht and Close (2002), Cassady and Smith (2005) found positive effects for the program but were not able to disaggregate the study sample to analyze subgroups, nor relate gains to levels of usage.

Purpose: This study evaluated the reading achievement of kindergartners in school with the WERP and in a Comparison group in the same district, analyzed varying effects in subgroups, and related achievement to program dosage.

Setting: The Tucson Unified School District (TUSD) is a large urban district in which 66.2% of the student population has free/reduced lunch status and 11.2% of students are English language learners.

Study Sample: Fifteen Title I schools with the highest percentages of students on free/reduced lunch were selected for the intervention. WERP usage data was not available from all schools, reducing the number of schools in most of the analyses to 10 and the number of students to 358. WERP students with six months of WERP usage were used in this evaluation.

The Comparison group was composed of the 15 schools with the next-highest rates of free/reduced lunch status. The number of students in the Comparison group was 1480.

Intervention: The WERP (version 3.13) was provided to kindergarten students in the treatment schools in the 2005-06 school year with the expected usage of 15 minutes a day, four times per week.

Research Design: This evaluation design was a comparison-group study (quasi-experimental design).

Comparison Condition: The Comparison group of 15 schools selected from the next highest percentages of students on free/reduced lunch did not receive the WERP.

Data Collection and Analysis: Both matching techniques and statistical controls were used to make the groups similar in the analysis.

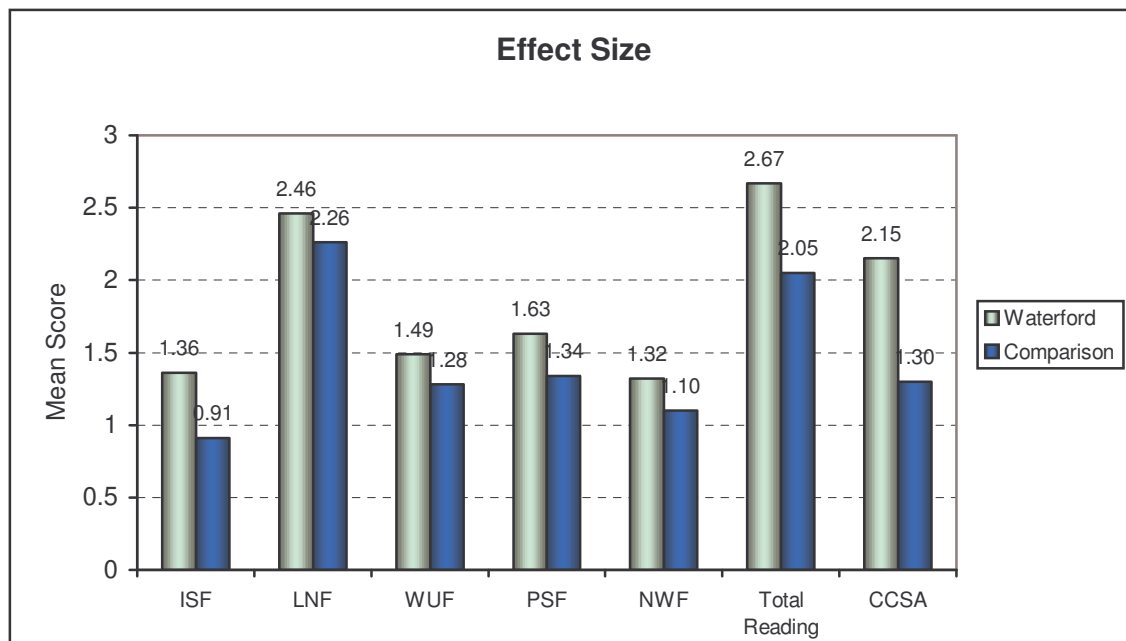
The Dynamic Indicators of Basic Early Literacy Skills (DIBELS, University of Oregon) Initial Sound Fluency, Letter Naming Fluency, Word Use Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency and the TUSD's Core Curriculum Standard Assessment (CCSA) Reading Test were given as pretests and posttests during the school year by classroom teachers. For analysis of the DIBELS, the five subscales were averaged for a Total Reading Score at pretest and posttest. In addition, the amount of time that each kindergartner used the WERP computer software was extracted from the software and used in the analysis.

Dependent samples t-tests were used to determine gains for the WERP and Comparison groups, and gain score analysis was used to compare these gains for the WERP and Comparison schools. Effect size analysis and analysis of covariance were used to adjust the posttest means for differences on the pretest means of the students.

Data were disaggregated by school, gender, ethnicity, pretest achievement quartiles, primary home language, and English language learner (ELL) status in order to determine patterns of achievement among these groups.

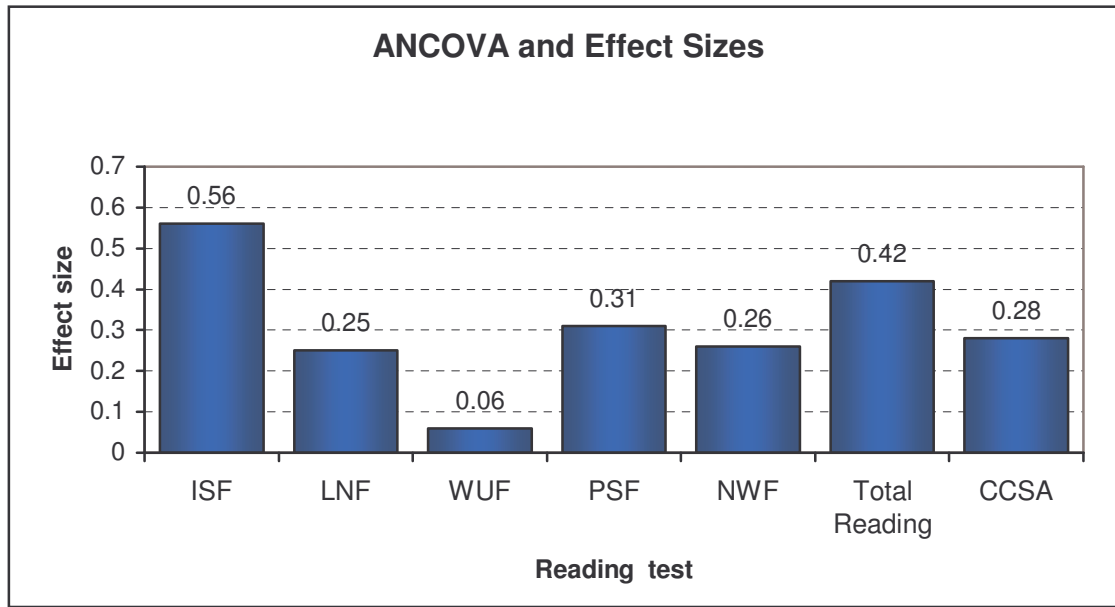
Findings: The WERP kindergartners consistently outperformed the Comparison group kindergartners on all outcome measures of the DIBELS and the CCSA. Figure 1 shows the difference in pretest to posttest scores for each of the outcome measures.

Figure 1. Effect Size (ES) of WERP and Comparison Schools on All Outcome Measures



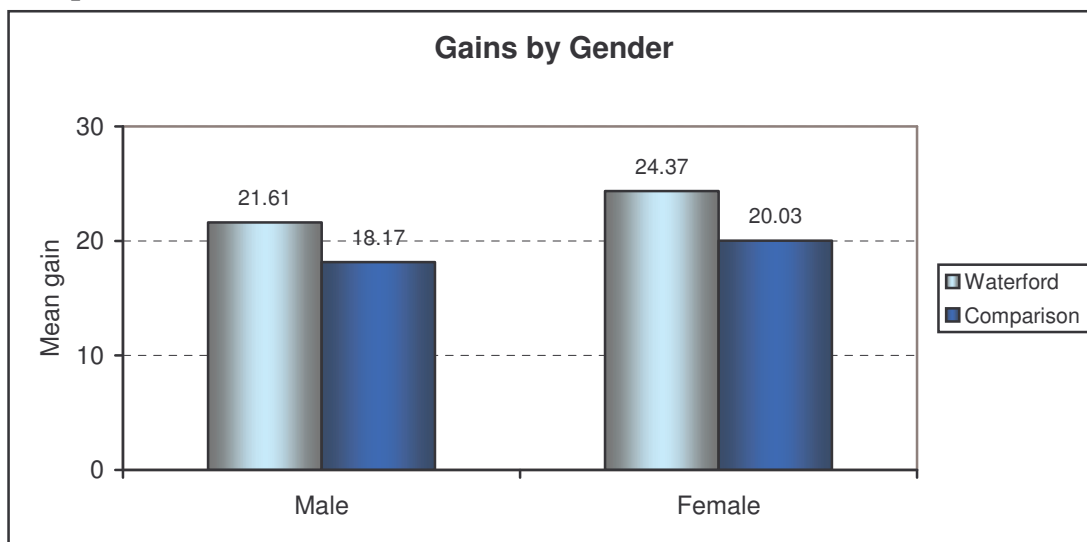
Effect sizes of gains favored the WERP kindergartners, as well as effect sizes comparing the posttest achievement of the WERP kindergartners with the Comparison kindergartners. Figure 2 displays the effectiveness of the WERP above and beyond that of the Comparison schools and adjusting for differences in the pretest mean.

Figure 2. ANCOVA and Effect Sizes of WERP and Comparison Groups on All Outcome Measures



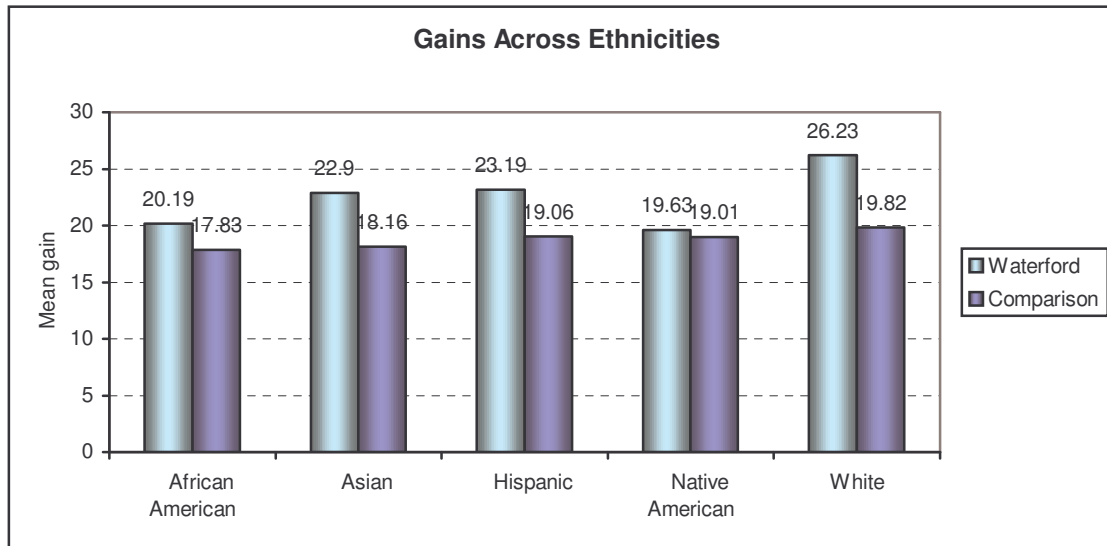
Gains were greater for males in the WERP group than for males in the Comparison group, and for females in the WERP group than for females in the Comparison group. See Figure 3 for pretest to posttest gains on the DIBELS for males and females.

Figure 3. Pretest to Posttest Gains for Males and Females in WERP and Comparison Groups



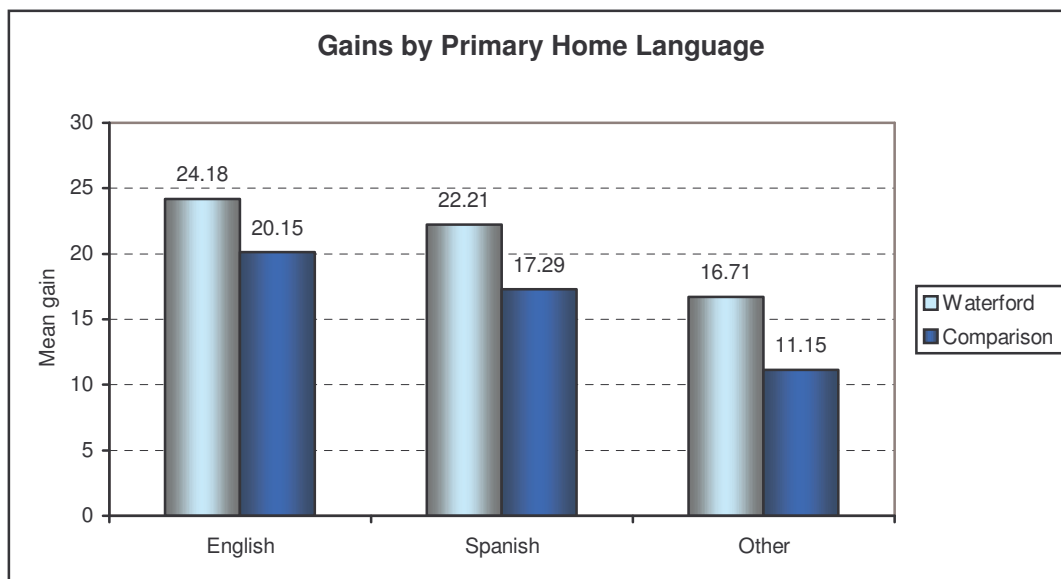
WERP pretest to posttest gains were greater for Whites, Hispanics, African Americans, Native Americans, and Asians than for their counterparts in the Comparison group. WERP pretest to posttest gains of White, African American, Hispanic, and Asian kindergartners were greater than the gains of White kindergartners in the Comparison group. See Figure 4.

Figure 4. Pretest to Posttest Gains by Ethnicity in WERP and Comparison Schools



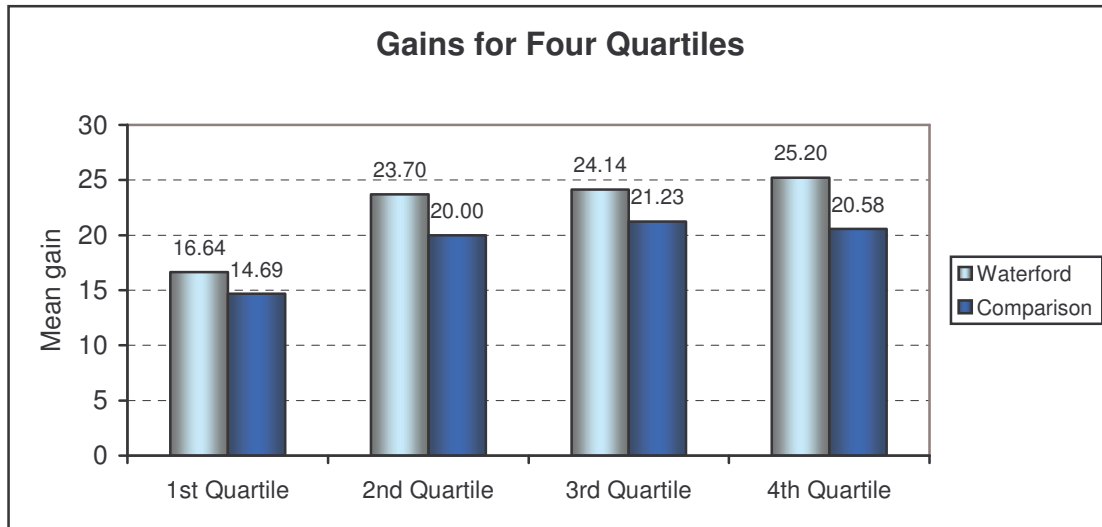
WERP gains of kindergartners with a primary home language of English, Spanish, and other languages were greater than their counterparts in the Comparison group. In addition, it is important to note that WERP gains of kindergartners with a primary home language of Spanish were greater than the gains of English primary home language kindergartners in the Comparison group. See Figure 5.

Figure 5. Pretest to Posttest Gains by Primary Home Languages in WERP and Comparison Schools



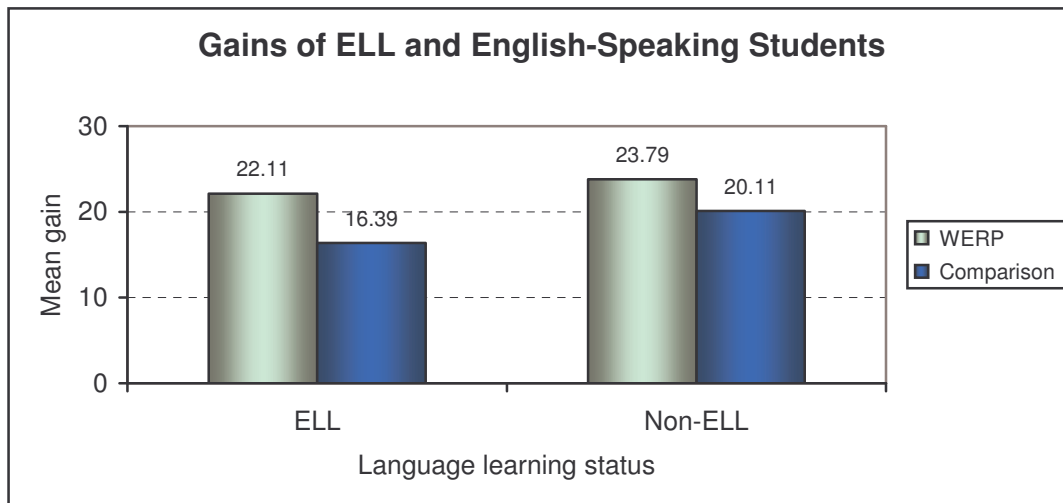
WERP gains of kindergartners in four different quartile levels of reading pretest achievement outperformed the Comparison students with the largest gain in the top (fourth) quartile. See Figure 6.

Figure 6. Pretest to Posttest Gains by Pretest Quartiles in WERP and Comparison Schools



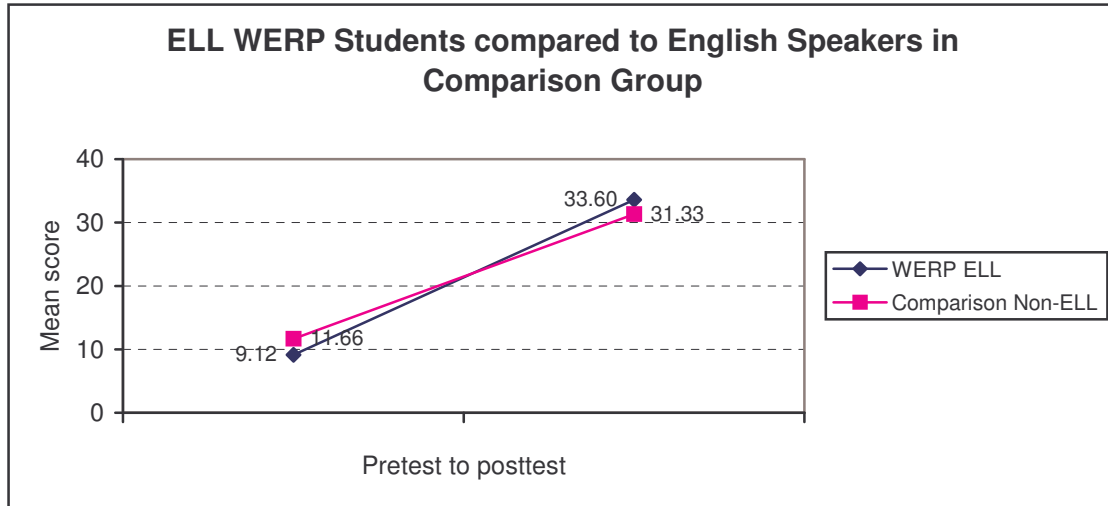
WERP ELL students outperformed Comparison group ELL students and non-ELL (English speakers) in the WERP group outperformed English speakers in the Comparison group. See Figure 7.

Figure 7. Pretest to Posttest Gains by English Language Learner Status in WERP and Comparison Groups



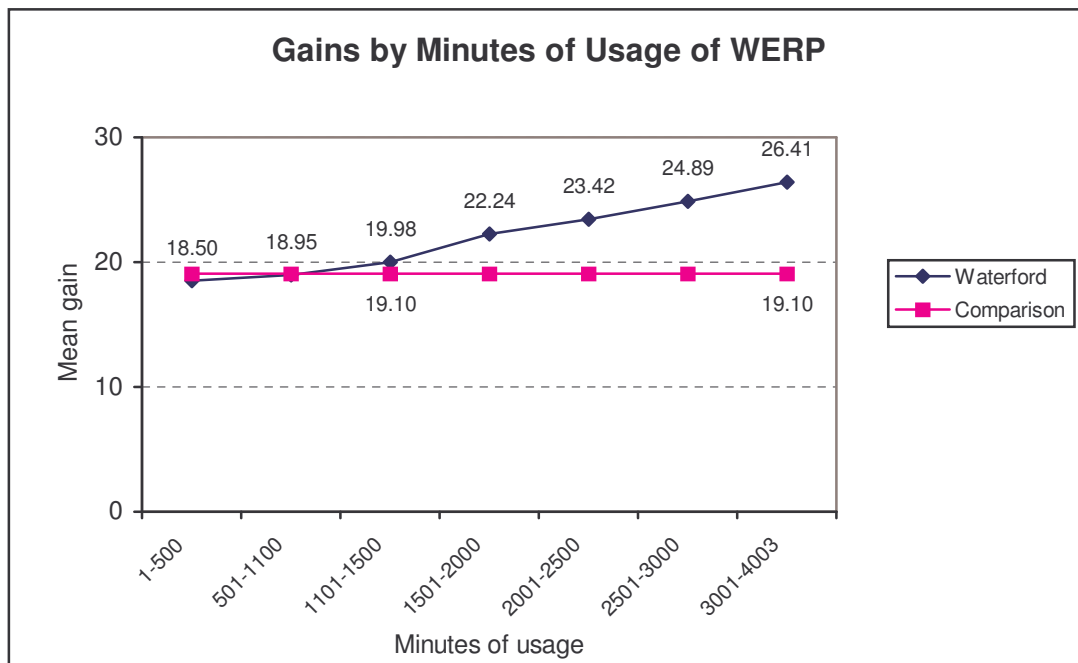
A remarkable finding was that WERP ELL students outperformed the non-ELL students (English speakers) in the Comparison group. Figure 8 shows the gains of these two groups.

Figure 8. ANCOVA of WERP ELL and Comparison Non-ELL (English Speakers)



Usage of the WERP software was found to be positively and significantly correlated with the reading outcome measures and pretest to posttest gains in the outcome measures. Figure 9 presents pretest to posttest gains for the WERP students according to level of usage of the program, compared to the mean gain of the Comparison group. This suggests that the more the student experiences the WERP content, the greater the reading gains.

Figure 9. Pretest to Posttest Gains by Level of WERP Usage Compared to Comparison Group



Conclusion: The consistency of the findings was notable in that repeatedly the WERP kindergartners outperformed the Comparison kindergartners in reading achievement.

Each and every WERP subgroup, whether by ethnicity, gender, primary home language or language learner status (ELL or English-speaking) outperformed their counterpart in the Comparison group.

A special note should be made here:

1) WERP African Americans, Asians and Hispanics made greater gains than the Comparison White students. 2) WERP Spanish primary home language students made greater gains than the Comparison English primary home language students. 3) WERP ELL students made greater gains than the Comparison non-ELL (English-speaking) students.

Finally, the more the students used the WERP software and content, the greater the reading gains they made.