What Works Clearinghouse

ies INSTITUTE OF EDUCATION SCIENCES

Students with Learning Disabilities July 2010

Project Read® Phonology

Program Description[1]

Project Read® is a multisensory[2] language arts curriculum designed for use in a classroom or group setting. Two main objectives of the program are to use language in all its forms, and to use responsive instruction rather than preplanned textbook lessons. The program emphasizes direct instruction, and lessons move from letter-sounds to words, sentences, and stories. *Project Read*® has three strands: Phonics/Linguistics, Reading Comprehension, and Written Expression, which are integrated at all grade levels, though the emphasis of the specific strands differs by grade. This intervention report examines the effectiveness of *Project Read*® *Phonology*. The What Works Clearinghouse (WWC) believes that *Project Read*® *Phonology* was an earlier version of the Phonics/Linguistics strand but was unable to confirm this with the developer.

Research[3]

One study (Bussjaeger, 1993) of *Project Read*® *Phonology* that falls within the scope of the Students with Learning Disabilities review protocol meets WWC evidence standards, and one study (Acalin, 1995) meets WWC evidence standards with reservations. The two studies included 80 students with learning disabilities, from kindergarten through grade 5, in six locations.[4] However, only the study by Acalin (1995) presents sufficient outcome data to allow the WWC to make a determination of the effectiveness of *Project Read*® *Phonology*. Although this report describes the two studies, the WWC review of the effectiveness of *Project Read*® *Phonology* is based only on the Acalin (1995) study, which included 66 students with learning disabilities in kindergarten through grade 4 from five school districts.

1. The descriptive information for this program was obtained from a publicly available source: the program's website (http://www.projectread.com, downloaded October 2009). The WWC requests developers to review the program description sections for accuracy from their perspective. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review. The intervention was formerly sold as *Project Read*® *Phonology* for all grades. *Project Read*® *Phonology* was used by studies meeting standards both with and without reservations, but it is now sold only as either *Project Read*® *Phonics* (for grades 1–3) or *Project Read*® *Linguistics* (for grades 4–6), both of which fall under *Project Read's* Phonology strand. The literature search reflects documents publicly available by October 2009.
2. *Project Read*® is one of many curricula that are based, in part, on the principles of the sequential, multisensory Orton-Gillingham approach to teaching reading. Other WWC intervention reports related to the multisensory Orton-Gillingham approach include *Barton Reading & Spelling System*®, *Fundations*®, *Herman Method*™, *Orton-Gillingham–based Strategies (Unbranded)*, *Wilson Reading System*®, *Alphabetic Phonics*, and *Dyslexia Training Program*.
3. The studies in this report were reviewed using WWC Evidence Standards, Version 2.0 (see the WWC Procedures and Standards Handbook, Chapter III), as described in protocol Version 2.0.
4. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

Research *(continued)*

Based on this one study, the WWC considers the extent of evidence for *Project Read® Phonology* on students with learning disabilities to be small for general reading achievement. Bussjaeger (1993) examined outcomes in alphabetics and reading comprehension but did not report sufficient outcome data to be considered for extent of evidence ratings. No studies that meet WWC evidence standards with or without reservations examined the effectiveness of *Project Read® Phonology* on students with learning disabilities in the reading fluency, writing, math, science, social studies, or progressing in school domains.

Effectiveness

Project Read® Phonology was found to have no discernible effects on general reading achievement for students with learning disabilities. Although one of the studies reviewed by the WWC meets evidence standards and collected data in the alphabetics and reading comprehension domains, the data were insufficient to confirm the author's findings in these domains.

	General reading achievement	Alphabetics	Reading comprehension
Rating of effectiveness	No discernible effects	na	na
Improvement index[5]	Average: +5 percentile points	na	na

na = not applicable

Additional program information

Developer and contact

Developed by Victoria Greene and Mary Lee Enfield in the Bloomington Public Schools in 1969, *Project Read® Phonics/Linguistics* is distributed by Language Circle Enterprises, Inc. Address: 1620 West 98th Street, Suite #130, Bloomington, MN 55431. Email: languagecircle@projectread.com. Web: www.projectread.com. Telephone: (800) 450-0343. Fax: (952) 884-6787.

Scope of use

The WWC believes that *Project Read® Phonology* was an earlier version of *Project Read® Phonics/Linguistics*. According to the authors of the two studies that meet WWC standards (Bussjaeger, 1993; Acalin, 1995), *Project Read® Phonology* is designed for students in grades 1–8. According to the developers, *Project Read® Phonics/Linguistics* is designed for students in grades 1–6 and in special education.

Teaching

The program uses concrete examples and multisensory experiences to teach abstract concepts. It emphasizes strategies such as explaining concepts to students before teaching the skill; using graphic symbols and body language; and using visual, auditory, and tactile exercises to keep students engaged. The three program strands (phonics/linguistics, reading comprehension, and written expression) are integrated at all grade levels, but specific strands are emphasized at certain levels.

The prekindergarten and kindergarten level focuses on phonics and handwriting. Students learn the basics of the ABCs, practicing correct pronunciation and tracing the strokes for every letter. The primary level (grades 1–3) builds on the phonics foundation and introduces reading comprehension strategies, such as identifying subjects and key facts. Professional development for teachers and educators is also available through Language Circle Enterprises.

5. These numbers show the average and range of student-level improvement indices for all findings across the studies.

Additional program information *(continued)*

Cost

Most program components are sold individually. *Project Read®* student workbooks range from approximately $5 to $15; classroom materials, from $10 to $15; teacher's guides and assessments, from $35 to $90; and classroom kits, from $295 to $695.

Research

Twenty-five studies reviewed by the WWC investigated the effects of *Project Read® Phonology* on students with learning disabilities. One study (Bussjaeger, 1993) is a randomized controlled trial that meets WWC evidence standards. One study (Acalin, 1995) used a quasi-experimental design that meets WWC evidence standards with reservations. The remaining 23 studies do not meet either WWC evidence standards or eligibility screens.

Meets evidence standards

A randomized controlled trial reviewed by the WWC (Bussjaeger, 1993) meets WWC evidence standards, but the outcome data included in the report from the study are not sufficient[6] to allow the WWC to assess the effectiveness of *Project Read® Phonology*. The study included a total of 14 students with learning disabilities in grades 4 and 5 from an elementary school in southern California. All students in the study were identified as learning disabled based on definitions from the Education for All Handicapped Children Act and the California Code of Regulations and had been placed in a special day class by school district staff. Students were paired based on matching gender, grade level, and pretest reading achievement scores. Then, for each pair, one student was assigned to one group and the other student to another group. The two groups were then assigned randomly either to *Project Read® Phonology* or to a control group. Pretest and posttest data were collected at the start and end of the six-week intervention period. All students were from low socioeconomic households and were limited English proficient; six were female and eight were male; six were 4th graders and eight were 5th graders. The two groups were instructed in the same classroom at the same time, sitting on opposite sides of a classroom that was divided by a portable wall. The study author and an instructional assistant were trained to deliver both interventions and alternated delivery of the interventions on a weekly basis. Students with learning disabilities who were assigned to *Project Read® Phonology* received instruction using the *Project Read Phonology Guide* for 20 minutes a day, four days a week, for six weeks. Students with learning disabilities in the control group participated in "literature-based instruction" for 20 minutes a day, four days a week, for six weeks. Both groups of students participated in regular basal reading programs for the remaining 1.5 hours of daily reading instruction.

Meets evidence standards with reservations

A second study reviewed by the WWC (Acalin, 1995) used a quasi-experimental design. This study included a total of 66 students with learning disabilities in kindergarten through grade 4 from five school districts in three southern California counties. Students were identified as learning disabled based on a discrepancy between IQ and achievement test scores and were placed in one of two programs (*Project Read® Phonology* or *Reading Recovery*) by school district personnel. Thirty-three students with learning disabilities were placed in each group. Pretest and posttest data were collected at the start and end of a school year. Analysis of pretest scores showed no statistically significant or substantively large differences between groups. All children in the study were from middle socioeconomic

6. Bussjaeger (1993) reported raw-score gain scores (posttest mean–pretest mean) for the treatment and comparison groups. Posttest standard deviations were reported only for the gain scores, so it was not possible for the WWC to confirm the author's findings, nor could the WWC calculate an effect size or an improvement index. The author also reported posttest grade equivalent means and standard deviations; however, grade equivalent scores are not an equal-interval metric, and hence are not appropriate to use in WWC analyses. The author did not respond to a query asking for means and standard deviations in a standard score metric.

Research *(continued)*

households, and English was their primary language. The sample included 61% male children; 55% Caucasian children, 36% Hispanic children, and 9% African-American children. Students with learning disabilities who participated in *Project Read® Phonology* received 30 minutes of small-group instruction (two to five students) daily for one school year, using the *Project Read® Phonology Guide*. Students with learning disabilities who were assigned to the comparison group participated in *Reading Recovery* 30 minutes daily for the school year, receiving one-on-one instruction and using the Rigby Series reading books.

Extent of evidence

The WWC categorizes the extent of evidence in each domain as small or medium to large (see the WWC Procedures and Standards Handbook, Appendix G). The extent of evidence takes into account the number of studies and the total sample size across the studies that meet WWC evidence standards with or without reservations.[7]

The WWC considers the extent of evidence for *Project Read® Phonology* for students with learning disabilities to be small for general reading achievement. Bussjaeger (1993) examined outcomes in alphabetics and reading comprehension but did not report sufficient outcome data to be considered for extent of evidence ratings. No studies that meet WWC evidence standards with or without reservations examined the effectiveness of *Project Read® Phonology* on students with learning disabilities in the reading fluency, writing, math, science, social studies, or progressing in school domains.

Effectiveness

Findings

The WWC review of interventions for students with learning disabilities addresses student outcomes in nine domains: alphabetics, reading fluency, reading comprehension, general reading achievement, writing, math, science, social studies, and progressing in school. The studies included in this report cover three domains: alphabetics, comprehension, and general reading achievement. The findings below present the authors' estimates and WWC-calculated estimates of the size and statistical significance of the effects of *Project Read® Phonology* on students with learning disabilities.[8]

Alphabetics. Bussjaeger (1993) assessed the effectiveness of *Project Read® Phonology* on students with learning disabilities in the alphabetics domain using the Letter-Word Identification subtest from the Woodcock-Johnson Psycho-Educational Battery–Revised (WJ–R) and the Reading subtest from the Wide Range Achievement Test–Revised (WRAT–R). The study author reported no statistically significant effect of *Project Read® Phonology* on these measures for students with learning disabilities. The WWC was not able to confirm or disconfirm this finding. As outcome data were not reported, the WWC was unable to determine whether these findings were substantively important.

Reading comprehension. Bussjaeger (1993) assessed the effectiveness of *Project Read® Phonology* on students with learning disabilities in the comprehension domain using the Passage Comprehension subtest from the WJ–R. The study author reported no statistically significant effect of *Project Read® Phonology* on this measure for students with learning disabilities.[9]

7. The extent of evidence categorization was developed to tell readers how much evidence was used to determine the intervention rating, focusing on the number and size of studies. Additional factors associated with a related concept—external validity, such as the students' demographics and the types of settings in which studies took place—are not taken into account for the categorization. Information about how the extent of evidence rating was determined for *Project Read® Phonology* is in Appendix A5.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the cases of Acalin (1995) and Bussjaeger (1993), no corrections for clustering or multiple comparisons were needed.
9. Bussjaeger (1993) reported that the intervention group scored better than the comparison group at the $p<.10$ level.

Effectiveness *(continued)*

The WWC was not able to confirm or disconfirm this finding. As outcome data were not reported, the WWC was unable to determine whether these findings were substantively important.

General reading achievement. Acalin (1995) assessed the effectiveness of *Project Read® Phonology* on students with learning disabilities in the general reading achievement domain using the Broad Reading cluster (a combination of the Letter-Word Identification and Passage Comprehension subtests) from the WJ–R. The author's analysis showed, and the WWC analysis confirmed, no statistically significant effect of *Project Read® Phonology* on this measure for students with learning disabilities. The effect size on this measure was not large enough to be considered substantively important based on WWC standards. According to WWC criteria, this study shows no discernible effects of *Project Read® Phonology* on students with learning disabilities in the general reading achievement domain.

Rating of effectiveness

The WWC rates the effects of an intervention in a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative. The rating of effectiveness takes into account four factors: the quality of the research design, the statistical significance of the findings, the size of the difference between participants in the intervention and the comparison conditions, and the consistency in findings across studies (see the WWC Procedures and Standards Handbook, Appendix E).

The WWC found *Project Read® Phonology* to have no discernible effects on general reading achievement for students with learning disabilities. No conclusions could be reached about the effectiveness of *Project Read® Phonology* on alphabetics and reading comprehension.

Improvement index

The WWC computes an improvement index for each individual finding. In addition, within each outcome domain, the WWC computes an average improvement index for each study and an average improvement index across studies (see WWC Procedures and Standards Handbook, Appendix F). The improvement index represents the difference between the percentile rank of the average student in the intervention condition and the percentile rank of the average student in the comparison condition. Unlike the rating of effectiveness, the improvement index is entirely based on the size of the effect, regardless of the statistical significance of the effect, the study design, or the analysis. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.

Based on one study, the improvement index for general reading achievement is +5 percentile points (using a single measure). As Bussjaeger (1993) did not report complete outcome data, the improvement index for alphabetics and reading comprehension could not be reported.

Summary

The WWC reviewed 25 studies on *Project Read® Phonology* for students with learning disabilities. One of these studies meets WWC evidence standards, one study meets WWC evidence standards with reservations, and the remaining 23 studies do not meet either WWC evidence standards or eligibility screens. Based on the one study that reported complete outcome data, the WWC found no discernible effects on general reading achievement for students with learning disabilities. Although a second study reviewed by the WWC meets evidence standards and collected data in the alphabetics and reading comprehension domains, no data were available to confirm the author's findings in these domains. The conclusions presented in this report may change as new research emerges.

References

Meets WWC evidence standards

Bussjaeger, J. J. (1993). The effectiveness of *Project Read* on the reading achievement of students with learning disabilities (Master's thesis, California State University, Fullerton, 1993). *Masters Abstracts International, 31*(04), 54–1480.

Meets WWC evidence standards with reservations

Acalin, T. A. (1995). A comparison of *Reading Recovery* to *Project Read* (Master's thesis, California State University, Fullerton, 1995). *Masters Abstracts International, 33*(06), 54–1660.

Studies that fall outside the Students with Learning Disabilities review protocol or do not meet WWC evidence standards

Blodgett-Bordeaux, D. J. (1989). *A comparison of the effects of integrating* Project Read Phonology Written Expressions *with the Oregon Writing Project*. Unpublished master's thesis, Central Washington University, Ellensburg. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.

Briggs, K. L., & Clark, C. (1997). *Reading programs for students in the lower elementary grades: What does the research say?* Austin, TX: Texas Center for Educational Research. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Bruce, C., Snodgrass, D., & Salzman, J. A. (1999, October). *A tale of two methods: Melding* Project Read *and* Guided Reading *to improve at-risk students' literacy skills*. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Chicago, IL. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Cox, D. J. (1997). *The effectiveness of* Project Read *and visualization and verbalization reading comprehension strategies to improve reading comprehension in at-risk and learning disabled students*. Unpublished master's thesis, California State University, Fresno. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Elliott, B., & Riddle, M. (1992). *An effective interface between regular & special education: A synopsis of issues and successful practices*. CASE information dissemination packet. Bloomington, IN: CASE Research Committee, Indiana University School of Education. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Enfield, M. L. (1988). The quest for literacy. *Annals of Dyslexia, 38*, 8–21. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Gore, C. W. (2002). A study of the effect of multisensory writing instruction on the written expression of the dyslexic elementary child (Doctoral dissertation, Louisiana State University and Agricultural & Mechanical College, 2002). *Dissertation Abstracts International, 63*(04A), 168–1244. The study is ineligible for review because it does not use a comparison group.

Haase, C. (1999). Project Read: *An early intervention program*. Unpublished master's thesis, Hamline University, Saint Paul, MN. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Laub, C. M. (1997). Effectiveness of *Project Read Phonology* on word attack skills and comprehension for third and fourth grade students with learning disabilities (Master's thesis, California State University, Fresno, 1997). *Masters Abstracts International, 36*(01), 48–36. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.

Magolan, P. (2000). *The effects of direct instruction on phonological awareness for kindergarten children at risk for reading failure*. Unpublished master's thesis, Cardinal Stritch University, Milwaukee, WI. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

References *(continued)*

Moore, L. M. (2003). *Comparing responses of third grade students who participated in* Project Read *to third grade students who did not participate in* Project Read *on sociological and psychological questions*. Unpublished master's thesis, Minnesota State University, Mankato. The study is ineligible for review because it does not include an outcome within a domain specified in the protocol.

Nicholson, T. (1994). At the cutting edge: Recent research on learning to read and spell. *Studies in Education Series*, 53. Wellington, NZ: New Zealand Council for Educational Research. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Overcash, S. J. (2005). The effect of ROSHI protocol and cranial electrotherapy stimulation on a nine-year-old anxious, dyslexic male with attention deficit disorder: A case study. *Journal of Neurotherapy, 9*(2), 63–77. The study is ineligible for review because it does not use a comparison group.

Pennock, S. L. (1999). *An evaluation of the effects of* Project Read *on the reading achievement of primary age disabled learners*. Unpublished master's thesis, Rowan University, Glassboro, NJ. The study is ineligible for review because it does not provide enough information about its design to assess whether it meets standards.

Project Read. (n.d.). *First graders succeed with phonics at Liberty Elementary in Riverside, CA*. Bloomington, MN: Author. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Russo, E. (2008). *Success at the Fernbrook School in Randolph, New Jersey*. Bloomington, MN: Project Read. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Schacter, J. (2001). Reading programs that work: An evaluation of kindergarten-through-third-grade reading instructional programs. *ERS Spectrum, 19*(4), 12–25. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Schostag, J. A. (1997). Project Read: *An action plan proposal for a school district–community collaboration for school readiness and reading success*. Unpublished educational specialist's thesis, Mankato State University, Mankato, MN.[1] The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Steger, M. (2005). *Special education students make progress with* Project Read. Bloomington, MN: Project Read. The study is ineligible for review because it does not use a comparison group.

Thatcher, L. E. (1998). How phonemic awareness training and direct phonics instruction affect the decoding ability of children with reading problems (Master's thesis, Grand Valley State University, 1998). *Masters Abstracts International, 37*(01), 73–46. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

Uhry, J. K., & Clark, D. B. (2004). *Dyslexia: Theory & practice of instruction* (3rd ed.). Austin, TX: Pro-ED. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

Wade, J. J. (1993). *Project Read* versus basal reading program with respect to reading achievement, attitude toward school and self-concept (Doctoral dissertation, University of Southern Mississippi, 1993). *Dissertation Abstracts International, 55*(02A), 120–249. The study is ineligible for review because the WWC could not confirm that at least 50% of the sample was classified as students with learning disabilities.

Wille, G. A. (1993). Project Read *as an early intervention program*. Unpublished master's thesis, California State University, Fullerton. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample includes less than 50% students with learning disabilities.

1. In 1999, this college's name changed to Minnesota State University—Mankato.

Appendix

Appendix A1.1 Study characteristics: Bussjaeger, 1993

Characteristic	Description
Study citation	Bussjaeger, J. J. (1993). The effectiveness of *Project Read* on the reading achievement of students with learning disabilities (Master's thesis, California State University, Fullerton, 1993). *Masters Abstracts International, 31*(04), 54–1480.
Participants	The sample for this study included a total of 14 students with learning disabilities in grades 4 and 5. All students in the study were identified as learning disabled based on definitions from the Education for All Handicapped Children Act and the California Code of Regulations and had been placed in a special day class by school district staff. Two groups of students were formed by matching pairs on gender, grade level, and pretest reading achievement scores. The two groups were then assigned randomly to intervention (*Project Read® Phonology*) or control (literature-based) conditions. Prior to the study, all of the participating students received one month of instruction in *Project Read® Phonology* and at least one year of literature-based instruction. Pretest and posttest data were collected at the start and end of the six-week intervention period by the study author. All students were from low socioeconomic households and were limited English proficient; six were female and eight were male; six were 4th graders and eight were 5th graders.
Setting	The study was conducted with students with learning disabilities from one elementary school in southern California. Students were enrolled in grades 4 and 5. The two study groups were instructed in the same classroom, at the same time, with the two groups sitting at opposite sides of the classroom, which was divided by a portable wall.
Intervention	Students with learning disabilities who were assigned to *Project Read® Phonology* received instruction using the *Project Read® Phonology Guide*. *Project Read® Phonology* instruction was delivered 20 minutes a day, four days a week, for six weeks. *Project Read® Phonology* students participated in regular basal reading programs for the remaining 1.5 hours of daily reading instruction.
Comparison	Students with learning disabilities in the comparison group participated in "literature-based instruction" for 20 minutes a day, four days a week, for six weeks. Comparison students also participated in regular basal reading programs for the remaining 1.5 hours of daily reading instruction.
Primary outcomes and measurement	The primary outcome domains assessed were alphabetics and reading comprehension. Alphabetics (letter knowledge) was measured by administration of the Letter-Word Identification subtest of the Woodcock-Johnson Psycho-Educational Battery–Revised (WJ–R) and the Reading subtest of the Wide Range Achievement Test–Revised (WRAT–R). Reading comprehension was measured by administration of the Passage Comprehension subtest of the WJ–R. The assessments were individually administered in English. Pretesting and posttesting were done prior to and immediately following the six-week intervention period. For each of these outcomes, the author reported gain scores (posttest mean–pretest mean) for the *Project Read® Phonology* and comparison groups. Posttest standard deviations were not reported, so it was not possible for the WWC to confirm the author's findings, nor could the WWC calculate an effect size or an improvement index. For a more detailed description of these outcome measures, see Appendices A2.1–A2.2.
Staff/teacher training	The study author was the lead teacher and received 12 hours of training in the phonology component of *Project Read®*, plus another 18 hours of training in the reading comprehension and written expression components of *Project Read®*. An instructional assistant was trained in the use of *Project Read® Phonology* by the lead teacher for six hours. The lead teacher and instructional assistant also participated in 40 hours of workshop training in literature-based and whole language instruction. The lead teacher and instructional assistant alternated weekly between the *Project Read® Phonology* group and the literature-based comparison group. The lead teacher was a credentialed special education teacher. Both instructors had 10 years of experience working with students with learning disabilities.

Appendix A1.2 Study characteristics: Acalin, 1995

Characteristic	Description
Study citation	Acalin, T. A. (1995). A comparison of *Reading Recovery* to *Project Read* (Master's thesis, California State University, Fullerton, 1995). *Masters Abstracts International, 33*(06), 54–1660.
Participants	The sample for this study included a total of 66 students with learning disabilities in kindergarten through grade 4. Students were identified as learning disabled based on definitions from the Education for All Handicapped Children Act and the California Code of Regulations and were placed in one of two programs (*Project Read® Phonology* or *Reading Recovery*) by school district personnel. Thirty-three students with learning disabilities were placed in each group. Pretest and posttest data were collected at the start and end of a school year by Resource Specialists. For analysis purposes, pairs of students were formed by matching on gender, grade level, ethnicity, and pretest score. Analysis of pretest scores showed no statistically significant or substantively large differences between groups. All children in the study were from middle socioeconomic households, and English was their primary language. The sample included 61% male children; 55% Caucasian children, 36% Hispanic children, and 9% African-American children.
Setting	The study was conducted with students with learning disabilities from five school districts in three southern California counties—Orange, San Bernardino, and Los Angeles.
Intervention	Students with learning disabilities who participated in *Project Read® Phonology* received 30 minutes of small-group instruction (two to five students) daily for one school year, using the *Project Read® Phonology Guide.* All instruction was conducted by credentialed Resource Specialists who had five or more years of experience working with students with learning disabilities. Teachers followed the *Project Read® Phonology* manuals, lesson by lesson, with minimal program adaptations.
Comparison	Students with learning disabilities who were in the comparison group participated in *Reading Recovery*. In this study, students with learning disabilities participated in *Reading Recovery* 30 minutes daily, receiving one-on-one instruction and using the Rigby Series reading books.
Primary outcomes and measurement	The primary outcome domain assessed was general reading achievement, which was measured by combining the scores of two subtests from the Woodcock-Johnson Psycho-Educational Battery–Revised: the Letter-Word Identification subtest and the Passage Comprehension subtest. Together, these subtests form the Broad Reading cluster of the Woodcock-Johnson battery. The assessment was administered in English by Resource Specialists. Pretesting was done in the fall of the school year and posttesting was done in the spring. For a more detailed description of this outcome measure, see Appendix A2.3.
Staff/teacher training	*Project Read® Phonology* teachers received the full training associated with this program (three inservice days—one for phonology, one for comprehension, and one for written language).

Appendix A2.1 Outcome measures for the alphabetics domain

Outcome measure	Description
Letter-Word Identification subtest of the Woodcock-Johnson Psycho-Educational Battery–Revised (WJ–R)	The WJ–R Letter-Word Identification subtest measures a student's skill in identifying individual letters and words. The examiner shows the student letters or words and the student responds with the letter or name of the word (as cited in Bussjaeger, 1993) (http://www.riverpub.com/products/wjIIIComplete/).
Reading subtest of the Wide Range Achievement Test–Revised (WRAT–R)	The WRAT–R Reading subtest measures skills in letter recognition, letter naming, and pronunciation of words in isolation. The test consists of 15 letters and 42 words that the student is asked to name or pronounce (as cited in Bussjaeger, 1993) (http://portal.wpspublish.com/portal/page?_pageid=53,118660&_dad=portal&_schema=PORTAL&cmp=20_google&kw=wide%20range%20achievement%20test&gclid=CIXA5_eEn54CFQnxDAodAWTQIw).

Appendix A2.2 Outcome measures for the reading comprehension domain

Outcome measure	Description
Passage Comprehension subtest of the WJ–R	The WJ–R Passage Comprehension subtest measures a student's ability to identify missing keywords in a reading passage. The task requires the student to state a word that would be appropriate in the context of the passage (as cited in Bussjaeger, 1993) (http://www.riverpub.com/products/wjIIIComplete/).

Appendix A2.3 Outcome measures for the general reading achievement domain

Outcome measure	Description
Broad Reading cluster from the WJ–R	The WJ–R Broad Reading cluster is a combination of the Letter-Word Identification and Passage Comprehension subtests and provides a broad measure of reading achievement (as cited in Acalin, 1995) (http://www.riverpub.com/products/wjIIIComplete/).

Appendix A3.1 Summary of study findings included in the rating for the alphabetics domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation)[2] — *Project Read® Phonology* group[3]	Author's findings from the study: Mean outcome (standard deviation)[2] — Comparison group	WWC calculations: Mean difference[4] (*Project Read® Phonology* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Bussjaeger, 1993[8]								
WJ–R Letter-Word Identification subtest	Grades 4 and 5	14	3.57 (nr)	1.57 (nr)	2.00	na	na	na
WRAT–R Reading subtest	Grades 4 and 5	14	3.71 (nr)	1.43 (nr)	2.28	na	na	na
Domain average for alphabetics[9]						**na**	**na**	**na**

na = not applicable
nr = not reported
WJ–R = Woodcock-Johnson Psycho-Educational Battery–Revised
WRAT–R = Wide Range Achievement Test–Revised

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the alphabetics domain.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. Posttest standard deviations were not reported for this study, and the author did not respond to a query asking for means and standard deviations in a standard score metric.
3. Bussjaeger (1993) reported gain scores (posttest mean–pretest mean) for the treatment and comparison groups. Standard deviations for the gain scores are reported, but student-level posttest standard deviations are needed to calculate an effect size and improvement index. These were not available for the present study.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
5. For an explanation of the effect size calculation, see WWC Procedures and Standards Handbook, Appendix B. Posttest standard deviations were not reported by the author, so it was not possible for the WWC to calculate an effect size or an improvement index.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. Statistical significance was calculated by the author using gain score standard deviations and showed that students in the *Project Read® Phonology* group gained significantly more ($p<.05$) than students in the comparison group on the WJ–R Letter-Word Identification subtest, but not on the WRAT–R Reading subtest. Posttest standard deviations were not reported by the author, so it was not possible for the WWC to compute statistical significance in order to confirm or disconfirm the study findings.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the case of Bussjaeger (1993), no corrections for clustering or multiple comparisons were needed.
9. The WWC-computed average effect sizes for each study and for the domain across studies are simple averages rounded to two decimal places. The average improvement indices are calculated from the average effect sizes.

Appendix A3.2 Summary of study findings included in the rating for the reading comprehension domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation)[2] — *Project Read® Phonology* group[3]	Author's findings from the study: Mean outcome (standard deviation)[2] — Comparison group	WWC calculations: Mean difference[4] (*Project Read® Phonology* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Bussjaeger, 1993[8]								
WJ–R Passage Comprehension subtest	Grades 4 and 5	14	0.71 (nr)	0.42 (nr)	0.29	na	na	na
Domain average for reading comprehension[9]						**na**	**na**	**na**

na = not applicable
nr = not reported
WJ–R = Woodcock-Johnson Psycho-Educational Battery–Revised

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the reading comprehension domain.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. Posttest standard deviations were not reported for this study.
3. Bussjaeger (1993) reported gain scores (posttest mean–pretest mean) for the treatment and comparison groups. Standard deviations for the gain scores are reported, but student-level posttest standard deviations are needed to calculate an effect size and improvement index. These were not available for the present study.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
5. For an explanation of the effect size calculation, see WWC Procedures and Standards Handbook, Appendix B. Posttest standard deviations were not reported by the author, so it was not possible for the WWC to calculate an effect size or an improvement index.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. Statistical significance was calculated by the author using gain score standard deviations and showed that students in the *Project Read® Phonology* group did not have statistically significant gains compared to students in the comparison group on the WJ–R Passage Comprehension subtest. Posttest standard deviations were not reported by the author, so it was not possible for the WWC to compute statistical significance in order to confirm or disconfirm the study findings.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the case of Bussjaeger (1993), no corrections for clustering or multiple comparisons were needed.
9. The WWC-computed average effect sizes for each study and for the domain across studies are simple averages rounded to two decimal places. The average improvement indices are calculated from the average effect sizes.

Appendix A3.3 Summary of study findings included in the rating for the general reading achievement domain[1]

Outcome measure	Study sample	Sample size (students)	Author's findings from the study: Mean outcome (standard deviation)[2] — *Project Read® Phonology* group[3]	Author's findings from the study: Mean outcome (standard deviation)[2] — Comparison group	WWC calculations: Mean difference[4] (*Project Read® Phonology* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Acalin, 1995[8]								
WJ–R Broad Reading cluster	K through grade 4	66	82.91 (11.00)	81.54 (11.94)	1.37	0.12	ns	+5
Domain average for general reading achievement[9]						**0.12**	**na**	**+5**

ns = not statistically significant
na = not applicable
WJ–R = Woodcock-Johnson Psycho-Educational Battery–Revised

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the general reading achievement domain.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. Posttest standard deviations were not reported by Acalin (1995); however, the posttest scores for each student in the study were reported. The WWC used the student-level posttest scores to calculate posttest standard deviations for the *Project Read®* and comparison groups.
3. For Acalin (1995), each intervention group mean is calculated as the unadjusted control mean plus the adjusted mean difference as calculated by the WWC. Standard deviations are unadjusted and were calculated by the WWC based on raw data contained in the report.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
5. For an explanation of the effect size calculation, see WWC Procedures and Standards Handbook, Appendix B.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results for the intervention group.
8. The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In the case of Acalin (1995), no corrections for clustering or multiple comparisons were needed.
9. The WWC-computed average effect sizes for each study and for the domain across studies are simple averages rounded to two decimal places. The average improvement indices are calculated from the average effect sizes.

Appendix A4.1 *Project Read® Phonology* rating for the alphabetics domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of alphabetics, the WWC did not have sufficient information to make a rating.

Appendix A4.2 *Project Read® Phonology* rating for the reading comprehension domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of reading comprehension, the WWC did not have sufficient information to make a rating.

Appendix A4.3 *Project Read® Phonology* rating for the general reading achievement domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of general reading achievement, the WWC rated *Project Read® Phonology* as having no discernible effects for students with learning disabilities.

Rating received

No discernible effects: No affirmative evidence of effects.

- Criterion 1: No studies showing a statistically significant or substantively important effect, either *positive* or *negative.*

  Met. The one study of *Project Read® Phonology* that measured general reading achievement did not show statistically significant or substantively important effects.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a *strong* design.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show a statistically significant positive effect.

AND

- Criterion 2: No studies showing statistically significant or substantively important *negative* effects.

  Met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important negative effect.

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important positive effect.

AND

(continued)

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain-level effect. The WWC also considers the size of the domain-level effect for ratings of potentially positive or potentially negative effects. For a complete description, see the WWC Procedures and Standards Handbook, Appendix E.

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important negative effect. More studies showed indeterminate effects than positive effects, since the one study of general reading achievement showed no discernible effects, and there were no studies that showed positive effects.

Mixed effects: Evidence of inconsistent effects as demonstrated through either of the following criteria.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect, and at least one study showing a statistically significant or substantively important *negative* effect, but no more such studies than the number showing a statistically significant or substantively important *positive* effect.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important positive or negative effect.

OR

- Criterion 2: At least one study showing a statistically significant or substantively important effect, and more studies showing an *indeterminate* effect than showing a statistically significant or substantively important effect.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important positive or negative effect.

Potentially negative effects: Evidence of a negative effect with no overriding contrary evidence.

- Criterion 1: One study showing a statistically significant or substantively important *negative* effect and no studies showing a statistically significant or substantively important *positive* effect.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important negative effect.

OR

- Criterion 2: Two or more studies showing statistically significant or substantively important *negative* effects, at least one study showing a statistically significant or substantively important *positive* effect, and more studies showing statistically significant or substantively important *negative* effects than showing statistically significant or substantively important *positive* effects.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important positive effect.

Negative effects: Strong evidence of a negative effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *negative* effects, at least one of which met WWC evidence standards for a *strong* design.

  Not met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important negative effect.

AND

- Criterion 2: No studies showing statistically significant or substantively important *positive* effects.

  Met. One study of *Project Read® Phonology* measured general reading achievement; it did not show either a statistically significant or substantively important positive effect.

Appendix A5 Extent of evidence by domain

Outcome domain[1]	Number of studies	Sample size		Extent of evidence[2]
		Schools	Students	
General reading achievement	1	5	66	Small
Alphabetics	0	na	na	na
Reading fluency	0	na	na	na
Reading comprehension	0	na	na	na
Writing	0	na	na	na
Math	0	na	na	na
Science	0	na	na	na
Social studies	0	na	na	na
Progressing in school	0	na	na	na

na = not applicable/not studied

1. Although Bussjaeger (1993) examined outcomes in alphabetics and reading comprehension, the author does not report sufficient outcome data to enable the WWC to make a determination of effectiveness.
2. A rating of "medium to large" requires at least two studies and two schools across studies in one domain and a total sample size across studies of at least 350 students or 14 classrooms. Otherwise, the rating is "small." For more details on the extent of evidence categorization, see the WWC Procedures and Standards Handbook, Appendix G.