

What Works Clearinghouse



Early Intervention in Reading^{®1}

Program Description²

Early Intervention in Reading (EIR)[®] is a program designed to provide extra instruction to groups of students at risk of failing to learn to read. The program uses picture books to stress instruction in phonemic awareness, phonics, and contextual analysis, along with repeated reading and writing. In grades K, 1, and 2, the

program is based on whole-class instruction, with additional small group instruction provided to struggling readers. In grades 3 and 4, the program consists of small group instruction for 20 minutes, four days a week. Teachers are trained for nine months using workshops and an Internet-based professional development program.

Research

One study of *EIR[®]* meets What Works Clearinghouse (WWC) evidence standards. That study included 12 teachers and 59 students in first grade from one Midwestern state.³

Based on this one study, the WWC considers the extent of evidence for *EIR[®]* to be small for alphabets and comprehension.

No studies that meet WWC evidence standards with or without reservations examined the effectiveness of *EIR[®]* in the fluency or general reading achievement domains.

Effectiveness

EIR[®] was found to have potentially positive effects on alphabets and comprehension.

	Alphabets	Fluency	Comprehension	General reading achievement
Rating of effectiveness	Potentially positive effects	na	Potentially positive effects	na
Improvement index⁴	Average: +36 percentile points Range: +29 to +42 percentile points	na	+18 percentile points	na

na = not applicable

- EIR[®]* has been adapted into Houghton Mifflin's *Early Success[®]* program. Both programs are available for purchase. This report focuses solely on *EIR[®]*. This report has been updated to include reviews of two studies that have been released since 2005. Of the additional studies, one was not within the scope of the protocol, and one was within the scope of the protocol but did not meet evidence standards. A complete list and disposition of all studies reviewed are provided in the references.
- The descriptive information for this program was obtained from a publicly available source: the program's website (<http://www.earlyinterventioninreading.com>, downloaded October 2008). 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 evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
- These numbers show the average and range of student-level improvement indices for all findings in the study.

Additional program information

Developer and contact

Developed by Dr. Barbara Taylor, *EIR*[®] is distributed by the *Early Intervention in Reading*[®] program. Address: *EIR*[®] Professional Development Program, c/o Ceil Critchley, 11293 Hastings Street NE, Blaine, MN 55449. Email: ccritchley@com-cast.net. Web: www.earlyinterventioninreading.com. Telephone: (763) 785-0701.

Scope of use

EIR[®] was developed in 1989–90. Information is not available on the number or demographics of students, schools, or districts using the program.

Teaching

Instruction involves 15–20 minutes of daily supplemental instruction to the whole class or to groups of five to seven struggling readers. In kindergarten, activities include listening to stories, creative dramatics, and literacy development (concepts of print, rhyme, phonemic segmentation and blending, and letter and sound recognition). In first and second grades, the lessons include repeated reading of familiar stories, coached reading of a new story, phonemic awareness training and systematic phonics instruction, as well as guided sentence writing, vocabulary, and comprehension instruction. The third and fourth grade programs use narrative and informational picture books and focus on

attacking multisyllabic words and fluency, vocabulary, and comprehension strategies. The study reviewed here focused on first grade students. *EIR*[®] has a number of teacher training modules. Modules cover how to use the program, the research and background of the program, routines for the various grade levels, and use of assessments. Other topics include involving parents, training one-on-one coaches, taking running records, and evaluating *EIR*[®] implementation. The training program lasts nine months and consists of two-hour Internet sessions conducted once a month, along with telephone support from an *EIR*[®] trainer. Typically, 45 minutes are spent in a large group session, during which an onsite facilitator leads the group through the Internet program. Then 45 minutes are spent in small groups with teachers sharing videos of their own practices. For the last half hour of the session, an *EIR*[®] trainer meets with the cohort via a conference call to answer questions and highlight appropriate concepts and procedures. Trainers also speak with the teachers by phone between meetings. Onsite technical assistance can be requested by program developers.

Cost

Currently, the *EIR*[®] Internet training program costs \$500 per teacher. One or more site visits by the *EIR*[®] trainer can be arranged at an additional cost. Discounts are available for groups of 10 or more teachers.

Research

Seven studies reviewed by the WWC investigated the effects of *EIR*[®]. One study (Taylor, Frye, Short, & Shearer, 1991) is a randomized controlled trial that meets WWC evidence standards. The remaining six studies do not meet either WWC evidence standards or eligibility screens.

Taylor et al. (1991) conducted a randomized controlled trial of first grade teachers in two schools located in a Midwestern suburban school district. In each first grade classroom, five or six of

the lowest-achieving students participated in the study. In all, 31 students in six classrooms were in the treatment group, and 28 students in six classrooms were in the comparison group.

Extent of evidence

The WWC categorizes the extent of evidence in each domain as small or medium to large (see the [What Works Clearinghouse Extent of Evidence Categorization Scheme](#)). The extent of

Research *(continued)*

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.⁵

The WWC considers the extent of evidence for *EIR*[®] to be small for alphabets and comprehension. No studies that meet

WWC evidence standards with or without reservations examined the effectiveness of *EIR*[®] in the fluency or general reading achievement domains.

Effectiveness Findings

The WWC review of interventions for Beginning Reading addresses student outcomes in four domains: alphabets, fluency, comprehension, and general reading achievement. The study included in this report covers two domains: alphabets and comprehension. Within alphabets, results for two constructs, phonological awareness and phonics, are reported. The findings below present the authors' estimates and WWC-calculated estimates of the size and the statistical significance of the effects of *EIR*[®] on students.⁶

Alphabets. The Taylor et al. (1991) study findings for this domain are based on students' performance on two measures of alphabets: (1) segmentation and blending and (2) vowel sounds. When the *EIR*[®] group was compared with the comparison group, the study authors found, and the WWC confirmed, statistically significant positive effects on both measures.

Comprehension. The Taylor et al. (1991) study findings for the comprehension domain are based on the performance of *EIR*[®]

students and comparison students on a standardized reading test (Gates-MacGinitie). The study authors did not find statistically significant effects of *EIR*[®], but the effect was positive and large enough to be considered substantively important according to WWC criteria (that is, an effect size greater than or equal to 0.25).

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 (as calculated by the WWC), the size of the difference between participants in the intervention condition and the comparison condition, and the consistency in findings across studies (see the [WWC Intervention Rating Scheme](#)).

The WWC found *Early Intervention in Reading*[®] to have potentially positive effects in the alphabets and comprehension domains

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

[Technical Details of WWC-Conducted Computations](#)). The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. Unlike the rating of effectiveness, the

5. 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 *EIR*[®] is in Appendix A5.
6. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation, see the [WWC Tutorial on Mismatch](#). For the formulas the WWC used to calculate the statistical significance, see [Technical Details of WWC-Conducted Computations](#). In the case of Taylor et al. (1991), corrections for clustering and multiple comparisons were needed, so the significance levels may differ from those reported in the original study.

The WWC found *Early Intervention in Reading*[®] to have potentially positive effects in the alphabetics and comprehension domains
(continued)

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.

The average improvement index for alphabetics is +36 percentile points for the one study, with a range of +29 to +42 percentile points across findings. The improvement index for comprehension is +18 percentile points in the one study, with only one outcome measured.

References

Meets WWC evidence standards

Taylor, B. M., Frye, B. J., Short, R., & Shearer, B. (1991). *Early Intervention in Reading: Preventing reading failure among low-achieving first grade students*. Minneapolis: University of Minnesota, Center for Urban and Regional Affairs and Office of the Vice President of Academic Affairs.

Additional Sources:

Taylor, B. M. (2001). *The Early Intervention in Reading Program (EIR[®]): Research and development spanning twelve years* (Tech. Rep.). Boston: Houghton Mifflin Company.

Taylor, B. M., Short, R., Frye, B., & Shearer, B. (1992). Classroom teachers prevent reading failure among low-achieving first-grade students. *The Reading Teacher*, 45(8), 592–597.

Studies that fall outside the Beginning Reading protocol or do not meet WWC evidence standards

Chard, D. J. (1997). *Final evaluation report AY 1996–97: Early Reading Intervention Project, Springfield Public Schools, Springfield, Massachusetts*. Retrieved from Houghton Mifflin Company, Education Place Website: <http://www.eduplace.com/intervention/readintervention/pdfs/springfield.pdf>. The study does not meet WWC evidence standards because the measures of effect cannot be attributed solely to the intervention—the intervention was combined with another intervention.

McIntyre, E., Jones, D., Powers, S., Newsome, F., Petrosko, J., Powell, R., et al. (2005). Supplemental instruction in early

Summary

The WWC reviewed seven studies on *Early Intervention in Reading*[®]. One of these studies meets WWC evidence standards. The remaining six studies do not meet either WWC evidence standards or eligibility screens. Based on the one study, the WWC found potentially positive effects on alphabetics and comprehension. The conclusions presented in this report may change as new research emerges.

reading: Does it matter for struggling readers? *The Journal of Educational Research*, 99(2), 99–107. The study does not meet WWC evidence standards because the measures of effect cannot be attributed solely to the intervention—the intervention was combined with another intervention.

Taylor, B. M., Critchley, C., Paulsen, K., MacDonald, K., & Miron, H. (2002). *Learning to teach an early reading intervention program through Internet-supported professional development*. Retrieved from EIR[®] Website: www.earlyinterventioninreading.com/pdfs/taylor_research2.pdf. The study does not meet evidence standards because the measures of effect cannot be attributed solely to the intervention—the intervention was combined with another intervention.

Taylor, B. M., Hanson, B. E., Justice-Swanson, K., & Watts, S. (1997). Helping struggling readers: Linking small-group intervention with cross-age tutoring. *The Reading Teacher*, 51(3), 196–208. The study does not meet WWC evidence standards because the measures of effect cannot be attributed solely to the intervention—there was only one unit of analysis in one or both conditions.

Taylor, B. M., Watts, S. M., & Hanson, B. E. (1997). Teachers working together to help struggling readers: Linking second grade reading intervention with fourth grade tutoring in urban elementary school. (Available from Barbara Taylor, Ed. D., University of Minnesota, 1517 Goodrich Avenue, St. Paul, MN 55105.) The study does not meet WWC evidence standards

References *(continued)*

because the measures of effect cannot be attributed solely to the intervention—there was only one unit of analysis in one or both conditions.

Wing, M. A. (1994). The effects of a supplemental literacy program on students in a developmental first-grade classroom

using cross-age tutors. *Dissertation Abstracts International*, 56(01), 151A. (UMI No. 9514687) The study does not meet WWC evidence standards because the measures of effect cannot be attributed solely to the intervention—there was only one unit of analysis in one or both conditions.

Appendix

Appendix A1 Study Characteristics: Taylor, Frye, Short, & Shearer, 1991 (randomized controlled trial)

Characteristic	Description
Study citation	Taylor, B. M., Frye, B. J., Short, R., & Shearer, B. (1991). <i>Early Intervention in Reading: Preventing reading failure among low-achieving first grade students</i> . Minneapolis: University of Minnesota, Center for Urban and Regional Affairs and Office of the Vice President of Academic Affairs.
Participants	Twelve first grade teachers from two schools were randomly assigned either to the intervention or to a control group (six teachers were assigned to <i>EIR</i> [®] and six teachers were assigned to the comparison group). In each classroom, five or six of the lowest-scoring students participated in the study. Students were identified initially by teacher recommendations based on reading test scores and confirmed through testing by study assistants using knowledge of consonant sounds; reading of sight words on the Dolch preprimer list; and the Burns-Roe Informal Reading Inventory, an auditory phonemic segmentation and blending test. Thirty-one low-achieving students from six <i>EIR</i> [®] classes and 28 students from six comparison classes participated in the study (there were five or six students in each class, but only three low-achieving students in one of the comparison classrooms). The district reports 20% of students receive free or reduced price lunch and 10% are minority students, but no specific demographic information was given about the study participants. Twenty-nine of the original 31 students in the treatment group remained throughout the study. All of the 28 comparison group students remained in the study. ¹
Setting	The study took place in one suburban district in a metropolitan area in the Midwest.
Intervention	The program involved pulling aside the lowest-achieving students in each class to work as a group with the teacher. The program was implemented in three-day cycles from October to April of the school year. On day one, the teacher read a picture book (this part of the intervention occurred with the entire class). The teacher then taught the intervention students to segment words and blend phonemes into words. On days two and three, the intervention students read a story summary with minimal assistance. They also wrote one sentence a day that was related to the story with the teacher's help. In addition to the 15–20 minutes that students worked with teachers each day, children worked individually (for 5 minutes) or in pairs (for 10 minutes) with a trained aide or project assistant. Running records were taken by the teacher or aide weekly to assess students' progress. In this study, the project assistants, who were graduate students from a local university, spent time listening to intervention students read individually and provided teachers with feedback on the program.
Comparison	Students in the comparison classes participated in their regular reading instruction, supplemented with additional instruction from teachers and reading specialists. Some students received 30-minute pull-out sessions, whereas others were aided by special reading teachers within their own classes.
Primary outcomes and measurement	For both pre- and posttests, the authors administered a vowel sounds test, a test of segmentation and blending, and the Gates-MacGinitie reading test. Two additional tests, the Burns-Roe Informal Reading Inventory and the percentage of children reading a 150-word selection at the first grade level, were used in the study but have not been included in this review. ² For a more detailed description of these outcome measures, see Appendices A2.1–2.2.
Staff/teacher training	Intervention teachers attended an all-day workshop the summer before implementation. Three afternoon meetings were also held to support implementation. Project assistants (graduate students) observed and assisted (listening to program students read aloud) in intervention classes. These assistants were in program classes about 90 minutes per week. Assistants gave feedback and suggestions for improvement to program teachers.

1. Outcome tests were conducted over two days; thus, the total number of students in the analysis samples varies depending on the measure assessed and student absences each day.
2. The administration of the tests involved substantial reading and interaction between students and testers, who served as assistants in the intervention classrooms. The WWC eliminated these tests from consideration in the review because students in the intervention group had a preexisting relationship with testers, which created unequal testing conditions across the intervention and comparison groups.

Appendix A2.1 Outcome measures for the alphabetic domain

Outcome measure	Description
Phonological awareness Segmentation and blending	An 18-item version of a segmentation (six items) and blending (six items) test adapted from Taylor and Pearson (as cited in Taylor, Frye, Short, & Shearer, 1991). At posttest, children were asked to say each sound in a three- to four-letter word, and then blend the sounds together. Twelve of the 18 words were on the pretest, and the other six were new.
Phonics Vowel sounds	A test measuring students' knowledge of letter sounds for 15 pairs of vowels. The same test was given at pre- and posttest (as cited in Taylor et al., 1991).

Appendix A2.2 Outcome measures for the comprehension domain

Outcome measure	Description
Gates-MacGinitie reading test	A standardized test of reading readiness; form R was given as the pretest and Level A as the posttest (as cited in Taylor et al., 1991).

Appendix A3.1 Summary of study findings included in the rating for the alphabetics domain¹

Outcome measure	Study sample	Sample size (classes/ students)	Authors' findings from the study		WWC calculations			
			Mean outcome (standard deviation) ²		Mean difference ³ (EIR [®] -comparison)	Effect size ⁴	Statistical significance ⁵ (at $\alpha = 0.05$)	Improvement index ⁶
			EIR [®] group	Comparison group				
Taylor, Frye, Short, & Shearer, 1991 (randomized controlled trial)⁷								
Construct: Phonological awareness								
Segmentation and blending	Grade 1	12/56	14.30 (4.09)	10.41 (5.41)	3.89	0.80	Statistically significant	+29
Construct: Phonics								
Vowel sounds	Grade 1	12/56	10.62 (3.18)	6.44 (2.72)	4.18	1.39	Statistically significant	+42
Domain average for alphabetics (Taylor et al., 1991)⁸						1.10	Statistically significant	+36

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.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, see [Technical Details of WWC-Conducted Computations](#).
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. 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.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the [WWC Tutorial on Mismatch](#). For the formulas the WWC used to calculate statistical significance, see [Technical Details of WWC-Conducted Computations](#). In the case of Taylor et al. (1991), corrections for clustering and multiple comparisons were needed, so the significance levels may differ from those reported in the original study.
8. This row provides the study average, which, in this instance, is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A3.2 Summary of study findings included in the rating for the comprehension domain¹

Outcome measure	Study sample	Sample size (classes/students)	Authors' findings from the study		WWC calculations			
			Mean outcome (standard deviation) ²		Mean difference ³ (EIR [®] -comparison)	Effect size ⁴	Statistical significance ⁵ (at $\alpha = 0.05$)	Improvement index ⁶
			EIR [®] group	Comparison group				
Taylor, Frye, Short, & Shearer, 1991 (randomized controlled trial)⁷								
Gates-MacGinitie Reading Test	Grade 1	12/57	20.76 (8.03)	17.14 (6.97)	3.62	0.47	ns	+18
Domain average for comprehension (Taylor et al., 1991)⁸						0.47	ns	+18

ns = not statistically significant

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices for the 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.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, see [Technical Details of WWC-Conducted Computations](#).
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. 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.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the [WWC Tutorial on Mismatch](#). For the formulas the WWC used to calculate statistical significance, see [Technical Details of WWC-Conducted Computations](#). In the case of Taylor et al. (1991), a correction for clustering was needed, so the significance levels may differ from those reported in the original study.
8. This row provides the study average, which, in this instance, is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A4.1 *Early Intervention in Reading*[®] 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 rated *EIR*[®] as having potentially positive effects. The remaining ratings (mixed, no discernible effects, potentially negative, and negative) were not considered, as *EIR*[®] was assigned the highest applicable rating.

Rating received

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.

Met. *EIR*[®] had one study that showed a statistically significant positive effect and had a strong design.

AND

- 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.

Met. *EIR*[®] had no studies showing negative 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. *EIR*[®] had one study that met WWC standards.

AND

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

Met. *EIR*[®] had no studies showing negative effects.

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 Intervention Rating Scheme](#).

Appendix A4.2 Early Intervention in Reading® rating for the 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 comprehension, the WWC rated *EIR*® as having potentially positive effects. The remaining ratings (mixed, no discernible effects, potentially negative, and negative) were not considered, as *EIR*® was assigned the highest applicable rating.

Rating received

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.

Met. *EIR*® had one study that showed a substantively important positive effect and had a strong design.

AND

- 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.

Met. *EIR*® had no studies showing negative 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. *EIR*® had one study that met WWC standards.

AND

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

Met. *EIR*® had no studies showing negative effects.

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 Intervention Rating Scheme](#).

Appendix A5 Extent of evidence by domain

Outcome domain	Number of studies	Sample size		Extent of evidence ¹
		Schools	Students	
Alphabetics	1	2	56	Small
Fluency	0	na	na	na
Comprehension	1	2	57	Small
General reading achievement	0	na	na	na

na = not applicable/not studied

1. 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.”