

What Works Clearinghouse



Early Intervention in Reading®

Program description *Early Intervention in Reading (EIR)*® is a program designed to provide extra instruction to groups of students at risk of failing 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–2, the program includes whole-class instruction followed by small-group

instruction for students who score low on oral reading and literacy skills. 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 *Early Intervention in Reading*®¹ met the What Works Clearinghouse (WWC) evidence standards. The one study included 12 teachers and 59 students in first grade from one Midwestern state.²

The WWC considers the extent of evidence for *Early Intervention in Reading*® to be small for alphabets and comprehension. No studies that met WWC standards with or without reservations addressed fluency or general reading achievement.

Effectiveness *Early Intervention in Reading*® was found to have potentially positive effects in alphabets and comprehension.

	Alphabets	Fluency	Comprehension	General reading achievement
Rating of effectiveness	Potentially positive effects	na	Potentially positive effects	na
Improvement index³	Average: + 36 percentile points Range: +29 to +42 percentile points	na	+18 percentile points	na

na = not applicable

- Early Intervention in Reading*® has also been adapted into Houghton Mifflin’s *Early Success*™ program. Both programs are available for purchase. This report focuses solely on *Early Intervention in Reading*®.
- 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 improvement indices for all findings across the study.

Additional program information

Developer and contact

Developed by Dr. Barbara Taylor, *Early Intervention in Reading*[®] 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@comcast.net. Web: www.earlyinterventioninreading.com. Telephone: (763) 785-0701.

Scope of use

Early Intervention in Reading[®] 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 address listening to stories, creative dramatics, and literacy development (concepts of print, rhyme, phonemic segmentation and blending, 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 multi-syllabic 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 is spent in a large group session, during which an on-site facilitator leads the group through the Internet program. Then 45 minutes is spent in small groups with teachers sharing videos of their own practice. For the last half hour of the session, an *EIR*[®] trainer meets with the cohort via conference call to answer questions and highlight appropriate concepts and procedures. Trainers also speak with the teachers by phone between meetings. On-site 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

Five studies reviewed by the WWC investigated the effects of *EIR*[®]. One study (Taylor, Frye, Short, & Shearer, 1991) was a randomized controlled trial that met WWC evidence standards. The remaining four studies did not meet WWC evidence screens.

room, 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.

Met evidence standards

Taylor, Frye, Short, & Shearer (1991) conducted a randomized controlled trial of first grade teachers in two schools located in a Midwestern suburban school district. In each first grade class-

Extent of evidence

The WWC categorizes the extent of evidence in each domain as small or moderate 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 met WWC evidence standards with or without reservations.⁴

The WWC considers the extent of evidence for *Early Intervention in Reading*[®] to be small for alphabets and comprehension. No studies that met WWC standards with or without reservations addressed fluency or general reading achievement.

Effectiveness Findings

The WWC review of interventions for beginning reading addresses student outcomes in four domains: alphabets, reading fluency, comprehension, and general reading achievement.⁵ The study included in this *EIR*[®] report covers two domains: alphabets and comprehension. Within alphabets, results for two constructs, phonological awareness and phonics, are reported. The findings present the authors' estimates and WWC-calculated estimates of the size and the statistical significance of the effects of *EIR*[®] on students.

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 at least 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,⁶ the size of the difference between participants in the intervention and the comparison conditions, 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 for 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 improvement index is based entirely on the size of the effect, regardless of the statistical significance of the effect, the study design, or the analyses. The improvement index can take on values between -50 and +50, with positive numbers denoting results favorable to the intervention group.

4. 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 students' demographics and the types of settings in which studies took place, are not taken into account for the categorization.
5. For definitions of the domains, see the [Beginning Reading Protocol](#).
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](#). See the [WWC Intervention Rating Scheme](#) for the formulas the WWC used to calculate the statistical significance. In the case of *Early Intervention in Reading*[®], corrections for clustering and for multiple comparisons were needed.

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

The average improvement index for alphabetics is +36 percentile points in 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

Met WWC 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.

Did not meet WWC evidence screens

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 Web site: <http://www.eduplace.com/intervention/readintervention/pdfs/springfield.pdf>⁷

Summary

The WWC reviewed five studies on *Early Intervention in Reading*[®]. One of these studies met WWC standards; the others did not meet WWC evidence screens. Based on this one study, the WWC found potentially positive effects in the alphabetics and comprehension domains. The evidence presented in this report is limited and may change as new research emerges.

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 Early Intervention in Reading Program Web site: http://www.earlyinterventioninreading.com/pdfs/taylor_research2.pdf⁸

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), 196–208.⁹

Additional source:

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)

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)¹⁰

For more information about specific studies and WWC calculations, please see the [WWC EIR[®] Technical Appendices](#).

7. Confound: this study included EIR but combined it with another intervention so the analysis could not separate the effects of the intervention from other factors.
8. Confound: the intervention condition was largely assisted by an aide, while the control condition was not. Therefore, the study could not separate the effects of the intervention from the effect of aides.
9. Does not use a strong causal design: there was only one intervention and one comparison unit, so the analysis could not separate the effects of the intervention from other factors.
10. Does not use a strong causal design: for the sample of interest to this WWC review, there was only one intervention, so the analysis could not separate the effects of the intervention from other factors.

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, MN: University of Minnesota, Center for Urban and Regional Affairs and Office of the Vice President of Academic Affairs.
Participants	<p>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 percent of students receive free or reduced price lunch and 10 percent are minority students, but no specific demographic information was given about the study participants.</p> <p>Twenty-nine of the original 31 students in the treatment group remained throughout the study. All of the 28 comparison students remained in the study.¹</p>
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 providing 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, while 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 percent 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 (See Appendix A2.1–2.2 for more detailed descriptions of outcome measures.)
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 this test from consideration in the review because students in the intervention group had a pre-existing relationship with testers, which created unequal testing conditions across the intervention and comparison groups.

Appendix A2.1 Outcome measures in the alphabetics domain

Outcome measure	Description
Phonological awareness	
Segmentation and blending	An 18-item version of a segmentation (6-items) and blending (6-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, 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, Frye, Short, & Shearer, 1991).

Appendix A2.2 Outcome measures in 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, Frye, Short, & Shearer, 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
			Early Intervention in Reading [®] 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
Average⁸ for alphabetics domain (Taylor, Frye, Short, & Shearer, 1991)						1.10	Statistically significant	+36

1. This appendix reports findings considered for the effectiveness rating and the average improvement index.
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 versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
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](#). See [Technical Details of WWC-Conducted Computations](#) for the formula the WWC used to calculate statistical significance. In the case of Taylor, Frye, Short, & Shearer (1991), corrections for clustering and multiple comparisons were needed, so the significance levels may differ from those reported in the original study.
8. 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 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
			Early Intervention in Reading [®] group	Comparison group				
Taylor, Frye, Short, & Shearer, 1991 (randomized control trial)⁷								
Gates-MacGinitie reading test	Grade 1	12/57	20.76 (8.03)	17.14 (6.97)	3.62	0.47	ns	+18
Average for comprehension domain (Taylor, Frye, Short, & Shearer, 1991)						0.47	ns	+18

ns = not statistically significant

1. This appendix reports findings considered for the effectiveness rating and the improvement index.
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 versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
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](#). See [Technical Details of WWC-Conducted Computations](#) for the formulas the WWC used to calculate statistical significance. In the case of Taylor, Frye, Short, & Shearer (1991), a correction for clustering was needed, so the significance levels may differ from those reported in the original study.

Appendix A4.1 *Early Intervention in Reading*[®] rating for the alphabetics domain

The WWC rates an intervention's effects in 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 *Early Intervention in Reading*[®] as having potentially positive effects. It did not meet the criteria for positive effects because only one study met WWC evidence standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because *Early Intervention in Reading*[®] 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. The one study showed a statistically significant positive effect and had a strong design.

- 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. There were 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. There was only one study that met WWC standards.

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

Met. There were 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. See the [WWC Intervention Rating Scheme](#) for a complete description.

Appendix A4.2 Early Intervention in Reading® rating for the comprehension domain

The WWC rates an intervention's effects in 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 *Early Intervention in Reading*® as having potentially positive effects. It did not meet the criteria for positive effects because only one study met WWC evidence standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because *Early Intervention in Reading*® 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. The one study showed a substantively important positive effect and had a strong design.

- 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. There were 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. There was only one study that met WWC evidence standards.

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

Met. There were 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. See the [WWC Intervention Rating Scheme](#) for a complete description.

Appendix A5 Extent of evidence by domain

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

na = not applicable/not studied

1. A rating of “moderate 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.”