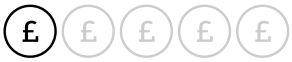
Phonics

High impact for very low cost based on very extensive evidence

Phonics is an approach that develops pupils' knowledge and understanding of the relationship between written symbols and sounds.

Implementation cost



Evidence strength

Impact (months)

months

Subject breakdown

reading: 111
toolkit: 121

School phase breakdown

primary: 109
secondary: 10
toolkit: 121

Technical Appendix

The criteria used to judge the inclusion of studies in the Toolkit are:

- The population sampled involved early years and school age learners from 3-18 learning in their first language.
- The intervention or approach being tested was educational in nature, including named or clearly defined programmes and recognisable approaches classifiable according to the Toolkit strand definitions (e.g. peer tutoring or small group teaching). The intervention or approach is undertaken in a normal educational setting or environment for the learners involved, such as a nursery or school or a typical setting (e.g. an outdoor field centre or museum).
- A valid comparison was made between those receiving the educational intervention or approach and those not receiving it.
- Outcomes include the assessment of educational or cognitive achievement which reports quantitative results from testing of attainment or learning outcomes, such as by standardised tests or other appropriate curriculum assessments or school examinations or appropriate cognitive measures.
- The study design provided a quantitative estimate of the impact of the intervention or approach on the educational attainment of the sample, calculated or estimated in the form of an effect size (standardised mean difference) based on a counterfactual comparison.

Standardised mean differences and confidence intervals for the most appropriate estimates of the impact of the intervention or approach for the Toolkit were extracted from each included study, along with other study variables. These effect sizes were further synthesised into a single pooled effect using a random effects meta-analysis adopting a restricted maximum likelihood (REML) estimation methods.For the full details of the methodology see the Protocol and Analysis Plan (https://educationendowmentfoundation.org.uk/public/files/Toolkit/EEF_Evidence_Database_Protocol_and_Analysis_Plan_June2019.pdf)
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References (121)

The forest plot below is a graphical representation of the results of all included studies in this Toolkit strand. It shows the effect size and confidence interval of each study, and whether the particular intervention in that study was more or less effective than standard practice or other alternative interventions that the study looked at.

Studies that show an effect size result on the right-hand side of the red vertical red indicate that the particular intervention studied was more effective than standard practice. Studies that show an effect size on the left-hand size of the red vertical indicate that the particular intervention studied was less effective than standard practice.

Author	Title	Effect Size	Effect Size (Graph)
Levy (1999) 1_2	Fast and slow namers: benefits of segmentation and whole word training *(Journal of Experimental Child Psychology)*	**Effect Size**: 8.437 **LCI**: 6.124 **UCI**: 10.751 **Weight**: 0.125 **Standard error**: 1.18	
Levy (1999) 1_1	Fast and slow namers: benefits of segmentation and whole word training *(Journal of Experimental Child Psychology)*	**Effect Size**: 4.972 **LCI**: 3.498 **UCI**: 6.446 **Weight**: 0.266 **Standard error**: 0.752	
Murphy (2007) Ph	Enhancing print knowledge, phonological awareness, and oral language skills with at -risk preschool children in Head Start classrooms *(NA)*	**Effect Size**: 2.14 **LCI**: 0.924 **UCI**: 3.357 **Weight**: 0.353 **Standard error**: 0.621	
Levy (1997) 1_6	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 1.643 **LCI**: 1.002 **UCI**: 2.285 **Weight**: 0.711 **Standard error**: 0.327	
Kirk (2009)	Integrated morphological awareness intervention as a tool for improving literacy *(Language, Speech and Hearing Services in Schools)*	**Effect Size**: 1.549 **LCI**: 0.432 **UCI**: 2.666 **Weight**: 0.397 **Standard error**: 0.57	
Herrera (2011) Ph	Effects of phonological and musical training on the reading readiness of native- and foreign-Spanish-speaking children. *(Psychology of Music)*	**Effect Size**: 1.546 **LCI**: 0.73 **UCI**: 2.362 **Weight**: 0.573 **Standard error**: 0.416	

Author	Title	Effect Size	Effect Size (Graph)
Levy (1997) 1_5	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 1.459 **LCI**: 0.83 **UCI**: 2.088 **Weight**: 0.722 **Standard error**: 0.321	
Levy (1997) 1_4	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 1.444 **LCI**: 0.816 **UCI**: 2.072 **Weight**: 0.723 **Standard error**: 0.32	
Watson (2008) Ph 1_1	Effects of a computer based beginning reading program on young children *(Australasian Journal of Educational Technology)*	**Effect Size**: 1.417 **LCI**: 0.279 **UCI**: 2.555 **Weight**: 0.387 **Standard error**: 0.581	
Meier (2001)	Book buddies in the Bronx: Testing a model for America Reads. *(Journal of Education for Students Placed at Risk)*	**Effect Size**: 1.332 **LCI**: 0.748 **UCI**: 1.916 **Weight**: 0.762 **Standard error**: 0.298	
Bhattacharya (2004)	Graphosyllabic analysis helps adolescent struggling readers read and spell words *(Journal of Learn Disabilities)*	**Effect Size**: 1.272 **LCI**: 0.586 **UCI**: 1.958 **Weight**: 0.674 **Standard error**: 0.35	
Aram (2004) Ph	Joint Storybook Reading and Joint Writing Interventions among Low Ses Preschoolers: Differential Contributions to Early Literacy *(Early Childhood Research Quarterly)*	**Effect Size**: 1.253 **LCI**: 0.687 **UCI**: 1.82 **Weight**: 0.778 **Standard error**: 0.289	
Hund-Reid (2013)	Effectiveness of phonological awareness intervention for kindergarten children with language impairment *(Canadian Journal of Speech-Language Pathology and Audiology)*	**Effect Size**: 1.2 **LCI**: 0.396 **UCI**: 2.004 **Weight**: 0.582 **Standard error**: 0.41	
Ryder (2008)	Explicit instruction in phonemic awareness and phonemically based decoding skills as an intervention strategy for struggling readers in whole language classrooms *(Reading and Writing)*	**Effect Size**: 1.064 **LCI**: 0.199 **UCI**: 1.93 **Weight**: 0.539 **Standard error**: 0.442	
Morrow (1990)	Effects of a story reading program on the literacy development of at-risk kindergarten children *(Journal of Reading Behavior)*	**Effect Size**: 1.053 **LCI**: 0.52 **UCI**: 1.587 **Weight**: 0.808 **Standard error**: 0.272	

Author	Title	Effect Size	Effect Size (Graph)
Berninger (2003) Ph	Comparison of three approaches to supplementary reading instruction for low-achieving 2nd grade readers *(Language, Speech and Hearing Services in Schools)*	**Effect Size**: 1.031 **LCI**: 0.453 **UCI**: 1.609 **Weight**: 0.768 **Standard error**: 0.295	
Stevens (2008)	Reading and Integrated Literacy Strategies (RAILS): An integrated approach to early reading. *(Journal of Education for Students Placed at Risk)*	**Effect Size**: 1.028 **LCI**: 0.833 **UCI**: 1.224 **Weight**: 1.101 **Standard error**: 0.1	
Cleary (2001)	Providing phonemic awareness instruction to pre -first graders: An extended -year kindergarten program *(NA)*	**Effect Size**: 0.981 **LCI**: 0.431 **UCI**: 1.531 **Weight**: 0.793 **Standard error**: 0.281	
Barker (1995) 1_1	An evaluation of computer-assisted instruction in phonological awareness with below average readers *(Journal of Educational Computing Research)*	**Effect Size**: 0.968 **LCI**: 0.273 **UCI**: 1.663 **Weight**: 0.666 **Standard error**: 0.355	
Hempenstall (2008)	Corrective Reading: An evidence-based remedial reading intervention. *(Australasian Journal of Special Education)*	**Effect Size**: 0.926 **LCI**: 0.626 **UCI**: 1.226 **Weight**: 1.023 **Standard error**: 0.153	
Laub (1997) Ph	Effectiveness of Project Read on word attack skills and comprehension for third and fourth grade students with learning disabilities *(NA)*	**Effect Size**: 0.912 **LCI**: 0.315 **UCI**: 1.509 **Weight**: 0.75 **Standard error**: 0.305	
Hansen (1980)	The effects of focusing attention to relevant features of a reading task on the achieving readers *(NA)*	**Effect Size**: 0.894 **LCI**: 0.536 **UCI**: 1.253 **Weight**: 0.972 **Standard error**: 0.183	
Levy (1997) 1_2	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 0.843 **LCI**: 0.194 **UCI**: 1.493 **Weight**: 0.704 **Standard error**: 0.332	
Eldredge (1991)	An experiment with a modified whole language approach in first-grade classrooms. *(Reading Research and Instruction)*	**Effect Size**: 0.826 **LCI**: 0.426 **UCI**: 1.226 **Weight**: 0.934 **Standard error**: 0.204	

Author	Title	Effect Size	Effect Size (Graph)
Vadasy (2005)	Relative effectiveness of reading practice or word-level instruction in supplemental tutoring: How text matters. *(Journal of Learning Disabilities)*	**Effect Size**: 0.813 **LCI**: 0.148 **UCI**: 1.478 **Weight**: 0.691 **Standard error**: 0.339	
Jenkins (2004)	Effects of reading decodable texts in supplemental first-grade tutoring. *(Scientific Studies of Reading)*	**Effect Size**: 0.805 **LCI**: 0.302 **UCI**: 1.309 **Weight**: 0.837 **Standard error**: 0.257	
Vadasy (2010)	Efficacy of Supplemental Phonics-Based Instruction for Low-Skilled Kindergarteners in the Context of Language Minority Status and Classroom Phonics Instruction *(Journal of Educational Psychology)*	**Effect Size**: 0.766 **LCI**: 0.256 **UCI**: 1.277 **Weight**: 0.829 **Standard error**: 0.261	
Fulwiler (1980)	The effectiveness of intensive phonics. *(Reading Horizons)*	**Effect Size**: 0.758 **LCI**: 0.423 **UCI**: 1.093 **Weight**: 0.993 **Standard error**: 0.171	
Degé (2011) Ph	The effect of a music program on phonological awareness in preschoolers *(Developmental Psychology)*	**Effect Size**: 0.756 **LCI**: 0.059 **UCI**: 1.453 **Weight**: 0.664 **Standard error**: 0.356	
Levy (1997) 1_1	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 0.747 **LCI**: 0.104 **UCI**: 1.391 **Weight**: 0.71 **Standard error**: 0.328	
Mathes (2001) 1_1	The effects of Peer Assisted Learning Strategies for first grade readers with and without additional computer assisted instruction in phonological awareness. *(American Educational Research Journal)*	**Effect Size**: 0.734 **LCI**: 0.263 **UCI**: 1.206 **Weight**: 0.867 **Standard error**: 0.241	
Morris (2000)	Early Steps: Replicating the effects of a first-grade reading intervention program. *(Journal of Educational Psychology)*	**Effect Size**: 0.729 **LCI**: 0.292 **UCI**: 1.166 **Weight**: 0.899 **Standard error**: 0.223	
Evans (1985) Ph	Cognitive abilities, conditions of learning, and the early development of reading skill. *(Reading Research Quarterly)*	**Effect Size**: 0.729 **LCI**: 0.527 **UCI**: 0.932 **Weight**: 1.096 **Standard error**: 0.103	

Author	Title	Effect Size	Effect Size (Graph)
Haskell (1992)	Effects of three orthographic/phonological units on first-grade reading, *(Remedial and Special Education)*	**Effect Size**: 0.722 **LCI**: 0.138 **UCI**: 1.306 **Weight**: 0.762 **Standard error**: 0.298	
Nelson (2010)	The Efficacy of Supplemental Early Literacy Instruction by Community-Based Tutors for Preschoolers Enrolled in Head Start *(Journal of Research on Educational Effectiveness)*	**Effect Size**: 0.692 **LCI**: 0.261 **UCI**: 1.124 **Weight**: 0.905 **Standard error**: 0.22	
Mooney (2003)	An investigation of the effects of a comprehensive reading intervention on the beginning reading skills of first graders at risk for emotional and behavioral disorders. *(NA)*	**Effect Size**: 0.66 **LCI**: 0.061 **UCI**: 1.259 **Weight**: 0.749 **Standard error**: 0.306	
del Rosario (2002)	Remedial interventions for children with reading disabilities: speech perception-an effective component in phonological training? *(Journal of Learning Disabilities)*	**Effect Size**: 0.605 **LCI**: 0.007 **UCI**: 1.203 **Weight**: 0.749 **Standard error**: 0.305	
Hund-Reid (2008)	The effectiveness of phonological awareness intervention for kindergarten children with moderate to severe language impairment *(NA)*	**Effect Size**: 0.59 **LCI**: -0.233 **UCI**: 1.413 **Weight**: 0.568 **Standard error**: 0.42	
Torgesen (2009) 1_2	Computer assisted instruction to prevent early reading difficulties in students at risk for dyslexia: Outcomes from two instructional approaches. *(NA)*	**Effect Size**: 0.538 **LCI**: 0.073 **UCI**: 1.003 **Weight**: 0.873 **Standard error**: 0.237	
Foorman (1998)	The role of instruction in learning to read: Preventing reading failure in at-risk children. *(Journal of Educational Psychology)*	**Effect Size**: 0.532 **LCI**: 0.136 **UCI**: 0.928 **Weight**: 0.937 **Standard error**: 0.202	
Ball (1991)	Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *(Reading Research Quarterly)*	**Effect Size**: 0.53 **LCI**: 0.01 **UCI**: 1.05 **Weight**: 0.821 **Standard error**: 0.265	
Ehri (2007) Ph	Reading Rescue: An effective tutoring intervention model for language-minority students who are struggling readers in first grade. *(American Educational Research Journal)*	**Effect Size**: 0.525 **LCI**: 0.164 **UCI**: 0.886 **Weight**: 0.969 **Standard error**: 0.184	

Author	Title	Effect Size	Effect Size (Graph)
Rashotte (2001)	The effectiveness of a group reading instruction program with poor readers in multiple grades *(Learning Disability Quarterly)*	**Effect Size**: 0.523 **LCI**: 0.151 **UCI**: 0.895 **Weight**: 0.96 **Standard error**: 0.19	
Blachman (2004)	Effects of intensive reading remediation for second and third grades and a 1-year follow-up. *(Journal of Educational Psychology)*	**Effect Size**: 0.52 **LCI**: 0.039 **UCI**: 1.002 **Weight**: 0.857 **Standard error**: 0.246	
Brown (1990)	Effects of instruction on beginning reading skills in children at risk for reading disability *(Reading and Writing: An Interdisciplinary Journal)*	**Effect Size**: 0.513 **LCI**: -0.106 **UCI**: 1.131 **Weight**: 0.731 **Standard error**: 0.316	
Mathes (2001) 1_2	The effects of Peer Assisted Learning Strategies for first grade readers with and without additional computer assisted instruction in phonological awareness. *(American Educational Research Journal)*	**Effect Size**: 0.5 **LCI**: 0.039 **UCI**: 0.961 **Weight**: 0.877 **Standard error**: 0.235	
Kutrumbos (1993)	The effect of phonemic training on unskilled readers: A school-based study. *(NA)*	**Effect Size**: 0.5 **LCI**: -0.131 **UCI**: 1.131 **Weight**: 0.721 **Standard error**: 0.322	
Hurford (1994)	Early identification and remediation of phonological processing deficits in first-grade children at risk for reading disabilities. *(Journal of Learning Disabilities)*	**Effect Size**: 0.49 **LCI**: 0.098 **UCI**: 0.882 **Weight**: 0.941 **Standard error**: 0.2	
Mathes (2001) Ph 1_2	The effects of Peer-Assisted Literacy Strategies for first-grade readers with and without additional mini-skills lessons. *(Learning Disabilities Research & Practice)*	**Effect Size**: 0.487 **LCI**: -0.091 **UCI**: 1.066 **Weight**: 0.767 **Standard error**: 0.295	
Levy (1997) 1_3	Beginning word recognition: benefits of training by segmentation and whole word methods. *(Scientific Studies of Reading)*	**Effect Size**: 0.472 **LCI**: -0.157 **UCI**: 1.101 **Weight**: 0.722 **Standard error**: 0.321	
Leinhardt (1981)	An iterative evaluation of NRS: Ripples in a pond. *(Evaluation Review)*	**Effect Size**: 0.472 **LCI**: 0.352 **UCI**: 0.592 **Weight**: 1.141 **Standard error**: 0.061	

Author	Title	Effect Size	Effect Size (Graph)
Vadasy (2007)	Effectiveness of paraeducator-supplemented individual instruction: Beyond basic decoding skills. *(Journal of Learning Disabilities)*	**Effect Size**: 0.466 **LCI**: -0.142 **UCI**: 1.075 **Weight**: 0.74 **Standard error**: 0.31	
Traweek (1997)	Comparisons of beginning literacy programs: Alternative paths to the same learning outcome. *(Learning Disability Quarterly)*	**Effect Size**: 0.461 **LCI**: -0.229 **UCI**: 1.15 **Weight**: 0.671 **Standard error**: 0.352	
Allor (2004) 1_1	The efficacy of an early literacy tutoring program implemented by college students. *(Learning Disabilities Research & Practice)*	**Effect Size**: 0.46 **LCI**: -0.011 **UCI**: 0.931 **Weight**: 0.867 **Standard error**: 0.24	
Mathes (2001) Ph 1_1	The effects of Peer-Assisted Literacy Strategies for first-grade readers with and without additional mini-skills lessons. *(Learning Disabilities Research & Practice)*	**Effect Size**: 0.459 **LCI**: 0.078 **UCI**: 0.84 **Weight**: 0.951 **Standard error**: 0.194	
Clarke (2017)	Reading Intervention for Poor Readers at the Transition to Secondary School *(Scientific Studies of Reading)*	**Effect Size**: 0.454 **LCI**: 0.117 **UCI**: 0.792 **Weight**: 0.991 **Standard error**: 0.172	
Merrell (2015)	Butterfly Phonics: Evaluation Report and Executive Summary *(NA)*	**Effect Size**: 0.43 **LCI**: 0.018 **UCI**: 0.842 **Weight**: 0.923 **Standard error**: 0.21	
Torgesen (2006)	National Assessment of Title I interim report: Volume II: Closing the reading gap: First year findings from a randomized trial of four reading interventions for striving readers. Washington, DC: U.S. *(NA)*	**Effect Size**: 0.43 **LCI**: -0.791 **UCI**: 1.651 **Weight**: 0.352 **Standard error**: 0.623	
Torgesen (1997) 1_1	Prevention and remediation of severe reading disabilities: Keeping the end in mind. *(Scientific Studies of Reading)*	**Effect Size**: 0.426 **LCI**: -0.056 **UCI**: 0.908 **Weight**: 0.857 **Standard error**: 0.246	
Mathes (2003) Ph	A comparison of teacher-directed versus peer-assisted instruction to struggling first-grade readers. *(The Elementary School Journal)*	**Effect Size**: 0.423 **LCI**: -0.094 **UCI**: 0.94 **Weight**: 0.824 **Standard error**: 0.264	

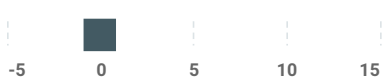
Author	Title	Effect Size	Effect Size (Graph)
Roth (1987)	Theoretical and instructional implications of the assessment of two microcomputer word recognition programs. *(Reading Research Quarterly)*	**Effect Size**: 0.423 **LCI**: -0.22 **UCI**: 1.066 **Weight**: 0.71 **Standard error**: 0.328	
Beach (2004)	The effects of a school district's kindergarten readiness summer program on phonological awareness skills of at-risk prekindergarten students: A regression discontinuity analysis *(NA)*	**Effect Size**: 0.419 **LCI**: 0.174 **UCI**: 0.664 **Weight**: 1.066 **Standard error**: 0.125	
Torgesen (2009) 1_1	Computer assisted instruction to prevent early reading difficulties in students at risk for dyslexia: Outcomes from two instructional approaches. *(NA)*	**Effect Size**: 0.383 **LCI**: -0.081 **UCI**: 0.847 **Weight**: 0.873 **Standard error**: 0.237	
Klesius (1991)	A whole language and traditional instruction comparison: Overall effectiveness and development of the alphabetic principle. *(Reading Research and Instruction)*	**Effect Size**: 0.378 **LCI**: 0.004 **UCI**: 0.752 **Weight**: 0.958 **Standard error**: 0.191	
Savage (2003)	The effects of rime- and phoneme- based teaching delivered by Learning Support Assistants *(Journal of Research in Reading)*	**Effect Size**: 0.357 **LCI**: -0.089 **UCI**: 0.804 **Weight**: 0.89 **Standard error**: 0.228	
Blachman (1994)	Developing phonological awareness and word recognition skills: A two-year intervention with low-income inner-city children. *(Reading and Writing: An Interdisciplinary Journal)*	**Effect Size**: 0.352 **LCI**: 0.003 **UCI**: 0.702 **Weight**: 0.98 **Standard error**: 0.178	
Wang (2008)	Effects of targeted intervention on early literacy skills of at-risk students. *(Journal of Research in Childhood Education)*	**Effect Size**: 0.349 **LCI**: -0.026 **UCI**: 0.724 **Weight**: 0.957 **Standard error**: 0.192	
Foorman (1997) 1_1	Early interventions for children with reading disabilities. *(Scientific Studies of Reading)*	**Effect Size**: 0.34 **LCI**: 0.066 **UCI**: 0.614 **Weight**: 1.044 **Standard error**: 0.14	
Graves (2010)	Emergent Literacy Skills Achievement of Kindergarteners in Relation to Sample Demographics in Southeastern Connecticut *(NA)*	**Effect Size**: 0.318 **LCI**: -0.363 **UCI**: 0.999 **Weight**: 0.678 **Standard error**: 0.347	

Author	Title	Effect Size	Effect Size (Graph)
Wilson (1998)	Differences in word recognition based on approach to reading instruction. *(Alberta Journal of Educational Research)*	**Effect Size**: 0.318 **LCI**: -0.219 **UCI**: 0.855 **Weight**: 0.805 **Standard error**: 0.274	
Vadasy (1997)	The effectiveness of one-to-one tutoring by community tutors for at-risk beginning readers *(Learning Disabilities)*	**Effect Size**: 0.303 **LCI**: -0.321 **UCI**: 0.927 **Weight**: 0.727 **Standard error**: 0.318	
Gersten (1988) 1_1	Effectiveness of a direct instruction academic kindergarten for low-income students. *(The Elementary School Journal)*	**Effect Size**: 0.283 **LCI**: -0.111 **UCI**: 0.677 **Weight**: 0.939 **Standard error**: 0.201	
Mantzicopoulos (1992)	Use of the search/teach tutoring approach with middle-class students at risk for reading failure. *(The Elementary School Journal)*	**Effect Size**: 0.271 **LCI**: -0.107 **UCI**: 0.648 **Weight**: 0.954 **Standard error**: 0.193	
Marion (2004)	An examination of the relationship between students' use of the Fast ForWord Reading Program and their performance on standardized assessments in elementary schools. *(NA)*	**Effect Size**: 0.263 **LCI**: 0.046 **UCI**: 0.479 **Weight**: 1.087 **Standard error**: 0.11	
Gorard (2015)	Fresh Start: Evaluation report and executive summary *(NA)*	**Effect Size**: 0.239 **LCI**: 0.047 **UCI**: 0.431 **Weight**: 1.103 **Standard error**: 0.098	
Gorard (2014)	Switch-on Reading: Evaluation report and executive summary *(NA)*	**Effect Size**: 0.237 **LCI**: 0.013 **UCI**: 0.461 **Weight**: 1.081 **Standard error**: 0.114	
Mathes (2005)	The effects of theoretically different instruction and student characteristics on the skills of struggling readers. *(Reading Research Quarterly)*	**Effect Size**: 0.21 **LCI**: -0.093 **UCI**: 0.513 **Weight**: 1.02 **Standard error**: 0.155	
Torgesen (1999)	Preventing reading failure in young children with phonological processing disabilities: group and individual responses to instruction *(Journal of Educational Psychology)*	**Effect Size**: 0.21 **LCI**: -0.21 **UCI**: 0.63 **Weight**: 0.915 **Standard error**: 0.214	

Author	Title	Effect Size	Effect Size (Graph)
Bond (1967) Ph	The cooperative research program in first-grade reading instruction *(Reading Research Quarterly)*	**Effect Size**: 0.209 **LCI**: 0.113 **UCI**: 0.305 **Weight**: 1.149 **Standard error**: 0.049	
Archer (1981)	Decoding of multisyllabic words by skill deficient fourth and fifth grade students *(NA)*	**Effect Size**: 0.207 **LCI**: -0.596 **UCI**: 1.01 **Weight**: 0.583 **Standard error**: 0.41	
Greaney (1997)	Effects of rime-based orthographic analogy training on the word recognition skills of children with reading disability *(Journal of Educational Psychology)*	**Effect Size**: 0.198 **LCI**: -0.457 **UCI**: 0.853 **Weight**: 0.7 **Standard error**: 0.334	
Gunn (2005)	Fostering the development of reading skill through supplemental instruction: Results for Hispanic and non-Hispanic students. *(Journal of Special Education)*	**Effect Size**: 0.183 **LCI**: -0.22 **UCI**: 0.586 **Weight**: 0.931 **Standard error**: 0.206	
Silberberg (1973)	Which remedial reading method works best? *(Journal of Learning Disabilities)*	**Effect Size**: 0.159 **LCI**: -0.245 **UCI**: 0.563 **Weight**: 0.93 **Standard error**: 0.206	
O'Connor (2000)	Blending versus whole word approaches in first grade remedial reading: Short-term and delayed effects on reading and spelling words *(Reading and Writing: An Interdisciplinary Journal)*	**Effect Size**: 0.148 **LCI**: -0.985 **UCI**: 1.281 **Weight**: 0.389 **Standard error**: 0.578	
Miller (2017)	Success for All *(NA)*	**Effect Size**: 0.141 **LCI**: 0.033 **UCI**: 0.248 **Weight**: 1.145 **Standard error**: 0.055	
Torgesen (1997) 1_2	Prevention and remediation of severe reading disabilities: Keeping the end in mind. *(Scientific Studies of Reading)*	**Effect Size**: 0.139 **LCI**: -0.338 **UCI**: 0.616 **Weight**: 0.862 **Standard error**: 0.243	
Borman (2009) Ph	A randomized field trial of the fast forword language computer-based training program *(Educational Evaluation and Policy Analysis)*	**Effect Size**: 0.135 **LCI**: -0.035 **UCI**: 0.304 **Weight**: 1.116 **Standard error**: 0.087	

Author	Title	Effect Size	Effect Size (Graph)
Hatcher (2006)	Efficacy of Small Group Reading Intervention for Beginning Readers with Reading-Delay: A Randomised Controlled Trial *(Journal of Child Psychology and Psychiatry)*	**Effect Size**: 0.124 **LCI**: -0.324 **UCI**: 0.571 **Weight**: 0.889 **Standard error**: 0.228	
Rutt (2015)	Catch Up ® Literacy: Evaluation report and executive summary *(NA)*	**Effect Size**: 0.12 **LCI**: -0.015 **UCI**: 0.255 **Weight**: 1.134 **Standard error**: 0.069	
Bond (1995)	The effects of the sing, spell, read, and write program on reading achievement of beginning readers. *(Reading Research and Instruction)*	**Effect Size**: 0.116 **LCI**: -0.028 **UCI**: 0.261 **Weight**: 1.129 **Standard error**: 0.074	
Mathes (1998)	Peer-Assisted Learning Strategies for first-grade readers: Responding to the needs of diverse learners. *(Reading Research Quarterly)*	**Effect Size**: 0.114 **LCI**: -0.287 **UCI**: 0.514 **Weight**: 0.933 **Standard error**: 0.204	
Griffith (1992)	The effect of phonemic awareness on the literacy development of first grade children in a traditional or a whole language classroom. *(Journal of Research in Childhood Education)*	**Effect Size**: 0.114 **LCI**: -0.687 **UCI**: 0.915 **Weight**: 0.584 **Standard error**: 0.409	
Gersten (1988) 1_2	Effectiveness of a direct instruction academic kindergarten for low-income students. *(The Elementary School Journal)*	**Effect Size**: 0.113 **LCI**: -0.242 **UCI**: 0.467 **Weight**: 0.976 **Standard error**: 0.181	
Rouse (2004)	Putting computerized instruction to the test: A randomized evaluation of a “scientifically-based” reading program. *(Economics of Education Review)*	**Effect Size**: 0.11 **LCI**: -0.067 **UCI**: 0.286 **Weight**: 1.112 **Standard error**: 0.09	
Hatcher (1994)	Ameliorating early reading failure by integrating the teaching of reading and phonological skills: The phonological linkage hypothesis. *(Child Development)*	**Effect Size**: 0.104 **LCI**: -0.398 **UCI**: 0.607 **Weight**: 0.838 **Standard error**: 0.256	
Savage (2005)	Learning support assistants can deliver effective reading interventions for ’at-risk’ children *(Educational Research)*	**Effect Size**: 0.099 **LCI**: -0.445 **UCI**: 0.643 **Weight**: 0.799 **Standard error**: 0.278	

Author	Title	Effect Size	Effect Size (Graph)
Vandervelden (1997)	Teaching phonological processing skills in early literacy: A developmental approach. *(Learning Disability Quarterly)*	**Effect Size**: 0.043 **LCI**: -0.686 **UCI**: 0.771 **Weight**: 0.639 **Standard error**: 0.372	
Watson (2008) Ph 1_2	Effects of a computer based beginning reading program on young children *(Australasian Journal of Educational Technology)*	**Effect Size**: 0.041 **LCI**: -0.974 **UCI**: 1.055 **Weight**: 0.449 **Standard error**: 0.518	
Gottshall (2007)	Gottshall Early Reading Intervention: A phonics based approach to enhance the achievement of low performing, rural, first grade boys. *(NA)*	**Effect Size**: 0.033 **LCI**: -0.459 **UCI**: 0.525 **Weight**: 0.847 **Standard error**: 0.251	
Ewbank (2005) Ph	An exploratory evaluation of the implementation of direct phonics in six primary schools *(NA)*	**Effect Size**: 0.03 **LCI**: -0.408 **UCI**: 0.469 **Weight**: 0.898 **Standard error**: 0.224	
Thomson (2013) Ph	Auditory processing interventions and developmental dyslexia: a comparison of phonemic and rhythmic approaches. *(Reading and Writing)*	**Effect Size**: 0.02 **LCI**: -0.781 **UCI**: 0.82 **Weight**: 0.584 **Standard error**: 0.408	
Roy (2019)	Catch Up Literacy (Effectiveness Trial) - Evaluation report and executive summary *(NA)*	**Effect Size**: 0.01 **LCI**: -0.16 **UCI**: 0.18 **Weight**: 1.116 **Standard error**: 0.087	
Jimez (2007)	Computer speech-based remediation for reading disabilities: the size of spelling-to-sound unit in a transparent orthography *(Spanish Journal of Psychology)*	**Effect Size**: 0.01 **LCI**: -0.531 **UCI**: 0.552 **Weight**: 0.801 **Standard error**: 0.276	
Foorman (1997) 1_2	Early interventions for children with reading disabilities. *(Scientific Studies of Reading)*	**Effect Size**: -0.005 **LCI**: -0.148 **UCI**: 0.138 **Weight**: 1.13 **Standard error**: -0.073	
Vadasy (2008)	Repeated reading intervention: Outcomes and interactions with readers' skills and classroom instruction. *(Journal of Educational Psychology)*	**Effect Size**: -0.006 **LCI**: -0.314 **UCI**: 0.302 **Weight**: 1.016 **Standard error**: 0.157	

Author	Title	Effect Size	Effect Size (Graph)
Given (2008) Ph	A randomized, controlled study of computer-based intervention in middle school struggling readers *(Brain and Language)*	**Effect Size**: -0.014 **LCI**: -0.799 **UCI**: 0.77 **Weight**: 0.596 **Standard error**: 0.4	
Dynarski (2007) Ph	Effectiveness of reading and mathematics software products: Findings from the first student cohort. *(NA)*	**Effect Size**: -0.023 **LCI**: -0.098 **UCI**: 0.051 **Weight**: 1.156 **Standard error**: 0.038	
King (2015)	Rapid Phonics: Evaluation report and executive summary *(NA)*	**Effect Size**: -0.05 **LCI**: -0.344 **UCI**: 0.244 **Weight**: 1.028 **Standard error**: 0.15	
Worth (2018)	GraphoGame Rime: Evaluation report and executive summary *(NA)*	**Effect Size**: -0.06 **LCI**: -0.235 **UCI**: 0.115 **Weight**: 1.113 **Standard error**: 0.089	
Carrasco (1994)	Effects of literature-based reading instruction on the reading achievement of Hispanic first-grade students *(NA)*	**Effect Size**: -0.068 **LCI**: -0.575 **UCI**: 0.438 **Weight**: 0.834 **Standard error**: 0.258	
Sheard (2015)	Units of Sound: Evaluation report and executive summary *(NA)*	**Effect Size**: -0.08 **LCI**: -0.27 **UCI**: 0.11 **Weight**: 1.104 **Standard error**: 0.097	
Allor (2004) 1_2	The efficacy of an early literacy tutoring program implemented by college students. *(Learning Disabilities Research & Practice)*	**Effect Size**: -0.137 **LCI**: -0.45 **UCI**: 0.176 **Weight**: 1.012 **Standard error**: 0.16	
Ford (2009)	The effect of the backward-chaining method of decoding with computer-assisted instruction on the reading skills of struggling adolescent readers *(NA)*	**Effect Size**: -0.152 **LCI**: -1.078 **UCI**: 0.773 **Weight**: 0.5 **Standard error**: 0.472	
Skailand (1971)	A comparison of four language units in teaching beginning reading *(NA)*	**Effect Size**: -0.166 **LCI**: -0.775 **UCI**: 0.442 **Weight**: 0.74 **Standard error**: 0.311	

Author	Title	Effect Size	Effect Size (Graph)
Tangel (1992)	Effect of phoneme awareness instruction on kindergarten children's invented spelling *(Journal of Reading Behavior)*	**Effect Size**: -0.167 **LCI**: -0.489 **UCI**: 0.155 **Weight**: 1.004 **Standard error**: 0.164	
Blachman (1994)	Kindergarten teachers develop phoneme awareness in low-income, inner-city classrooms. Does it make a difference? *(Reading and Writing: An Interdisciplinary Journal)*	**Effect Size**: -0.168 **LCI**: -0.48 **UCI**: 0.144 **Weight**: 1.013 **Standard error**: 0.159	
Barker (1995) 1_2	An evaluation of computer-assisted instruction in phonological awareness with below average readers *(Journal of Educational Computing Research)*	**Effect Size**: -0.196 **LCI**: -0.851 **UCI**: 0.459 **Weight**: 0.7 **Standard error**: 0.334	
Beattie (2000)	The effects o f intensive computer-based language intervention on language functioning and reading achievement in language impaired adolescents *(NA)*	**Effect Size**: -0.226 **LCI**: -1.029 **UCI**: 0.578 **Weight**: 0.582 **Standard error**: 0.41	
Hurry (2007)	Long-term outcomes of early reading intervention *(Journal of Research in Reading)*	**Effect Size**: -0.301 **LCI**: -0.58 **UCI**: -0.022 **Weight**: 1.04 **Standard error**: 0.142	
Frederickson (1996)	Phonological awareness training: A new approach to phonics teaching *(Dyslexia)*	**Effect Size**: -0.508 **LCI**: -1.083 **UCI**: 0.067 **Weight**: 0.77 **Standard error**: 0.293	
Wright (2003) Ph	Teaching Phonological Awareness and Metacognitive Strategies to Children with Reading Difficulties: A comparison of two instructional methods *(Educational Psychology)*	**Effect Size**: -3.398 **LCI**: -4.466 **UCI**: -2.33 **Weight**: 0.421 **Standard error**: 0.545