Fast ForWord® is a computer-based reading program intended to help students develop and strengthen the cognitive skills necessary for successful reading and learning. The program, which is designed to be used 30 to 100 minutes a day, five days a week, for 4 to 16 weeks, includes two components. The first component, the Fast ForWord® Language® and Literacy® series, aims to build cognitive skills such as memory, attention, processing, and sequencing, as well as language and reading skills, including listening accuracy, phonological awareness, and knowledge of language structures. The second component, the Fast ForWord® to Reading® series (also known as the Fast ForWord® Reading series), aims to increase processing efficiency and further improve reading skills such as sound-letter associations, phonological awareness, word recognition, knowledge of English language conventions, vocabulary, and comprehension. The program, developed by scientists with expertise in the areas of brain plasticity, cognitive development, and reading instruction, is designed to adapt the nature and difficulty of the content based on individual students’ responses.

1. The descriptive information for this program was obtained from a publicly available source: the program’s website (http://www.scilearn.com, downloaded July 2009), as well as information provided to the WWC by the developer. 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 literature search reflects documents publicly available through December 2008.
2. The Fast ForWord® Language series, designed for elementary school students, includes three products: (1) Fast ForWord® Language Basics, which focuses on sound sequencing, fine motor skills, hand–eye coordination, pattern recognition, and color–shape recognition; (2) Fast ForWord® Language, which focuses on listening accuracy, phonological awareness, and language structures; and (3) Fast ForWord® Language to Reading, which focuses on the link between spoken and written language.
3. The Fast ForWord® Literacy series, designed for secondary school students and adults, includes two products: (1) Fast ForWord® Literacy, which focuses on listening accuracy, phonological awareness, and language structures; and (2) Fast ForWord® Literacy Advanced, which focuses on processing efficiency, memory, concentration, comprehension, and sequencing. Students in at least two of the studies included in this review used Fast ForWord® Middle and High School, which was discontinued and replaced by the Fast ForWord® Literacy series.
4. The Fast ForWord® Reading series, designed for students at all reading levels, includes six products. Fast ForWord® Reading Prep focuses on letter recognition, phonological awareness, and letter-sound associations. Fast ForWord® Reading Levels 1, 2, 3, 4, and 5 focus on a variety of skills, depending on the level. For example, level 1 focuses on early reading skills such as phonemic awareness, early decoding skills, vocabulary knowledge, and motivation for reading, and level 5 focuses on skills suitable for more advanced readers in upper elementary, middle, or high school, such as reading comprehension and vocabulary skills.
Two studies of Fast ForWord® that fall within the scope of the Adolescent Literacy review protocol meet What Works Clearinghouse (WWC) evidence standards, and six studies meet WWC evidence standards with reservations. The eight studies included about 2,000 students, ranging in age from 5 to 17, who attended elementary, middle, and high schools in Indiana, Maryland, North Carolina, Ohio, Pennsylvania, Virginia, an urban district in the northeastern United States, and Australia. Based on these eight studies, the WWC considers the extent of evidence for Fast ForWord® on adolescent learners to be small for the alphabetics and general literacy achievement domains and medium to large for the comprehension and reading fluency domains.

**Effectiveness**

Fast ForWord® was found to have no discernible effects on the alphabetics and general literacy achievement domains, and potentially positive effects on the reading fluency and comprehension domains for adolescent learners.

<table>
<thead>
<tr>
<th>Rating of effectiveness</th>
<th>Alphabetics</th>
<th>Reading fluency</th>
<th>Comprehension</th>
<th>General literacy achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>No discernible effects</td>
<td>No discernible effects</td>
<td>Potentially positive effects</td>
<td>Potentially positive effects</td>
<td>No discernible effects</td>
</tr>
<tr>
<td>Average: +2 percentile points</td>
<td>+17 percentile points</td>
<td>Average: +8 percentile points</td>
<td>Average: +3 percentile points</td>
<td></td>
</tr>
<tr>
<td>Range: –8 to +9 percentile points</td>
<td>na</td>
<td>Range: –6 to +15 percentile points</td>
<td>Range: –1 to +9 percentile points</td>
<td></td>
</tr>
</tbody>
</table>

**Additional program information**

Fast ForWord® was designed by university-based scientists, Drs. Merzenich, Jenkins, Tallal, Miller, and Mann, all of whom have expertise in the areas of brain plasticity, cognitive development, and reading instruction. Fast ForWord® is produced and distributed by the Scientific Learning Corporation, 300 Frank H. Ogawa Plaza, Suite 600, Oakland, CA 94612-2040. Email: customerservices@scilearn.com. Web: http://www.scilearn.com. Telephone: (888) 665-9707. Fax: (510) 444-3580. The program can be purchased from local Fast ForWord® providers who are listed in the searchable database on the Scientific Learning Corporation website.

**Scope of use**

Fast ForWord® products entered the market with Fast ForWord® Language in 1997 and Fast ForWord® to Reading (also known as Fast ForWord® Reading) in 2000. Fast ForWord® products have been used by students struggling with reading, language, and general literacy skills.

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5. The studies in this report were reviewed using WWC Evidence Standards, Version 1.0 (see the WWC Standards), as described in protocol Version 1.0.
6. The Adolescent Literacy topic area reviews studies of interventions administered to students in grades 4–12 (or 9–18 years of age). For studies that include samples of students that span both the Adolescent Literacy (grades 4–12) and Beginning Reading (grades K–3) topic areas and cannot be disaggregated by grade level, the Adolescent Literacy topic area also reviews any studies that include 5th-grade students or higher. For example, this report includes a combined sample of students from grades 3–6 (Rouse & Krueger, 2004), grades 2–8 (Scientific Learning Corporation, 2004b), and students aged 5–14 years (Scientific Learning Corporation, 2007a).
7. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
8. These numbers show the average and range of student-level improvement indices for all findings across the studies.
9. The year that Fast ForWord® Literacy entered the market was unavailable.
and learning problems, as well as with the general K–12 student population across the United States. Overall, Fast ForWord® has been used by more than 570,000 students in more than 3,700 schools nationwide.

Teaching
The Fast ForWord® Language, Fast ForWord® to Reading, and Fast ForWord® Literacy computer software uses exercises that aim to develop the cognitive processes necessary for reading. Fast ForWord® Language intends to build cognitive skills of memory, attention, processing, and sequencing, as well as language and reading skills, such as listening accuracy, phonological awareness, and language structures. Fast ForWord® to Reading aims to further improve cognitive and reading skills through exercises focused on sound–letter associations, phonological awareness, word recognition, knowledge of English language conventions, vocabulary, and comprehension. Fast ForWord® Literacy intends to improve students’ skills in the areas of listening accuracy, phonological awareness, language structures, processing efficiency, memory, concentration, comprehension, and sequencing. As students listen through headphones and respond using the mouse, the software adapts to individual students’ responses, adjusting the content and difficulty of items presented so that the student responds correctly approximately 80% of the time. The developer suggests multiple options for using the program, ranging from 30 minutes a day, five days a week, for 12 to 16 weeks, to 90 to 100 minutes a day, five days a week, for 4 to 8 weeks. All children start at the same basic level and progress individually as they attain proficiency.

Cost
A single license for Fast ForWord® Language is $900, with discounts available for multiple licenses. Each license for Fast ForWord® to Reading is $500, with no quantity discount.

Research
A total of 305 studies reviewed by the WWC investigated the effects of Fast ForWord® on adolescent learners. Two studies (Rouse & Krueger, 2004; Scientific Learning Corporation, 2007a) are randomized controlled trials that meet WWC evidence standards. Six studies (Beattie, 2000; Borman & Benson, 2006; Overbay & Baenen, 2002; Scientific Learning Corporation 2004a, 2004b, 2007b) are randomized controlled trials or quasi-experimental designs that meet WWC evidence standards with reservations. The remaining 297 studies do not meet either WWC evidence standards or eligibility screens.

Meets evidence standards
Rouse and Krueger (2004) conducted a randomized controlled trial of students in grades 3–6 in an urban district in the northeastern United States. Students scoring in the bottom 20% on the state’s standardized reading test were randomly assigned within each grade and school to either the treatment group or the control group. The WWC based its effectiveness ratings on findings from comparisons of 237 students who received Fast ForWord® as a supplemental targeted pullout program during the regular school day and 217 control students who received regular reading instruction. The study reported students’ outcomes after six to eight weeks of program implementation.

Scientific Learning Corporation (2007a) conducted a randomized controlled trial of 5- to 14-year-old students from four primary schools in the Perth metropolitan area in Western Australia. Students who had difficulties with language, literacy, auditory processing, attention, and/or behaviors were randomly assigned to the treatment and control groups. The WWC based its effectiveness rating on findings from comparisons of 68 students who received Fast ForWord® and 69 control group students who received regular classroom instruction. The study reported students’ outcomes after three months of program implementation.

Meets evidence standards with reservations
Beattie (2000) conducted a randomized controlled trial of middle and high school students in suburban northern Virginia.
Research (continued)

Students with language deficits who ranged in age from 11 to 16 were randomly assigned by computer-generated procedures to one of five groups (Appendix 1.1 provides more details about these groups). The WWC based its effectiveness rating on findings from comparisons of 12 students who received Fast ForWord® and 12 control group students who received regular reading instruction. Although these analytic samples were shown to be equivalent at baseline, overall attrition of the study sample led to the study’s rating of meets standards with reservations. The study reported students’ outcomes after two months of program implementation.

Borman and Benson (2006) conducted a randomized controlled trial of 7th-grade students attending seven middle schools in Baltimore, Maryland. Students scoring below the 50th percentile on a district-administered reading test were randomly assigned within schools to either the treatment or the control group. Ninety students received the Fast ForWord® program as a supplemental targeted pullout program during the regular school day. Although post-attrition analytic samples were shown to be equivalent at baseline, overall and differential attrition of the study sample led to the study’s rating of meets standards with reservations. The 98 students in the control group received nonliteracy instruction or participated in special activities and classes, such as art and gym, for their supplemental instruction. The study reported students’ outcomes after two months of program implementation.

Overbay and Baenen (2002) conducted a quasi-experimental study that examined the effect of Fast ForWord® on students from the Wake County Public School System in Raleigh, North Carolina. The students participating in Fast ForWord® were matched to students from schools that were not using Fast ForWord® based on demographic factors and reading pretest scores. The WWC based its effectiveness rating on findings from comparisons of 355 students from grades 4–8 who used Fast ForWord® and 355 comparison group students who did not. The study reported students’ outcomes after one academic year of program implementation.

Scientific Learning Corporation (2004a) conducted a quasi-experimental study that examined the effect of Fast ForWord® on 4th-grade students in four schools in Springfield, Ohio. Students who did not pass the Ohio Proficiency Test in 2002 constituted the study sample. The WWC based its effectiveness rating on findings from comparisons of 41 students who received Fast ForWord® and 50 comparison group students who attended schools that were not using Fast ForWord® and, like treatment group students, did not pass the Ohio Proficiency Test. The study reported students’ outcomes after one semester of program implementation.

Scientific Learning Corporation (2004b) conducted a quasi-experimental study that examined the effect of Fast ForWord® on students from 16 public schools in Philadelphia, Pennsylvania. Students (primarily from 4th and 5th grades) were assigned to one of the three study groups. Group 1 received the Fast ForWord® intervention from September to November, group 2 received the Fast ForWord® intervention from December to February, and group 3 served as the control. The WWC based its effectiveness rating on findings from comparisons of 125 students in group 1 and 37 control group students, as well as comparisons of 131 students in group 2 and 37 control group students. The study reported students’ outcomes after three months of program implementation.

Scientific Learning Corporation (2007b) conducted a quasi-experimental study that examined the effect of Fast ForWord® on students in grades 2–5 in Pendleton, Indiana. Students selected to receive the Fast ForWord® intervention were individually matched by school personnel, using grade-level and reading test scores, to students not using Fast ForWord®. The WWC based its effectiveness rating on findings from comparisons of 35 students in grades 4 and 5 who received Fast ForWord® and 35 comparison students who received the regular school curriculum. The study reported students’ outcomes after four months of program implementation.
Extent of evidence
The WWC categorizes the extent of evidence in each domain as small or medium to large (see the WWC Procedures and Standards Handbook, Appendix G). The extent of evidence takes into account the number of studies and the total sample size across the studies that meet WWC evidence standards with or without reservations.\(^{10}\)

The WWC considers the extent of evidence for Fast ForWord® to be small for the alphabetic and reading fluency domains, and medium to large for the comprehension and general literacy achievement domains for adolescent learners.

Effectiveness
Findings
The WWC review of interventions for Adolescent Literacy addresses student outcomes in four domains: alphabetic, reading fluency, comprehension, and general literacy achievement. The studies included in this report cover all four domains. Alphabetic includes five constructs: phonemic awareness, phonological awareness, letter knowledge, print awareness, and phonics. Comprehension includes two constructs: reading comprehension and vocabulary development. General literacy achievement includes two constructs: general reading achievement and other literacy achievement. The findings below present the authors’ estimates and WWC-calculated estimates of the size and the statistical significance of the effects of Fast ForWord® on adolescent learners.\(^{11}\)

Alphabetic. Two studies reviewed findings in the alphabetic domain. Scientific Learning Corporation (2007a) did not find a statistically significant effect of Fast ForWord® on the Queen'sland University Inventory of Literacy (QUIL), nor was the effect large enough to be considered substantively important according to the WWC criteria (that is, an effect size of at least 0.25). Beattie (2000) did not find statistically significant effects of Fast ForWord® on the Letter-Word Identification, Word Attack, and Auditory Processing subtests of the Woodcock-Johnson tests of cognitive ability, or on the Wide Range Achievement Spelling subtest. The effects also were not large enough to be considered substantively important according to WWC criteria.

For the alphabetic domain, both studies showed indeterminate effects.

Reading fluency. Beattie (2000) did not find a statistically significant effect of Fast ForWord® on the Gray Oral Reading Test, but the effect was large enough to be considered substantively important according to WWC criteria.

Comprehension. Six studies reviewed findings in the comprehension domain. Beattie (2000) did not find a statistically significant effect of Fast ForWord® on the Woodcock-Johnson Passage Comprehension subtest, but the effect was large enough to be considered substantively important according to WWC criteria. Borman and Benson (2006) did not find a statistically significant effect of Fast ForWord® on the Terra Nova Reading test, and the effect was not large enough to be considered substantively important according to WWC criteria. Overbay and Baenen (2002) did not find a statistically significant effect of Fast ForWord® on the North Carolina End of Grade Reading Test, and the effect was not large enough to be considered substantively important.

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\(^{10}\) 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 Fast ForWord® is in Appendix A6.

\(^{11}\) The level of statistical significance was reported by the study authors or, when necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation, see the WWC Tutorial on Mismatch. For the formulas the WWC used to calculate the statistical significance, see WWC Procedures and Standards Handbook, Appendix C for clustering and WWC Procedures and Standards Handbook, Appendix D for multiple comparisons. In all studies except Borman and Benson (2002), Scientific Learning Corporation (2004a, 2004b), and Overbay and Baenen (2002), a correction for multiple comparisons was needed, so the significance levels may differ from those reported in the original studies.
Effectiveness (continued)

important according to the WWC criteria. Scientific Learning Corporation (2004a) did not find a statistically significant effect of Fast ForWord® on the Ohio Proficiency Test Reading score, but the effect was large enough to be considered substantively important according to WWC criteria. Scientific Learning Corporation (2004b) found, and the WWC confirmed, a statistically significant effect of Fast ForWord® on the Gates-MacGinitie Reading Test. Scientific Learning Corporation (2007b) did not find a statistically significant effect of Fast ForWord® on the Reading Measure of Academic Progress, and the effect was not large enough to be considered substantively important according to WWC criteria.

For the comprehension domain, one study showed statistically significant positive effects, two studies showed substantively important positive effects, and three studies showed indeterminate effects.

**General literacy achievement.** Five studies reviewed findings in the general literacy achievement domain. Rouse and Krueger (2004) did not find statistically significant effects of Fast ForWord® on the Clinical Evaluation of Language Fundamentals, Success for All assessment, and a state standardized reading test, and none of the effects were large enough to be considered substantively important according to WWC criteria. Scientific Learning Corporation (2007a) did not find statistically significant effects of Fast ForWord® on the Clinical Evaluation of Language Fundamentals Receptive and Expressive subtests, and neither of the effects was large enough to be considered substantively important according to WWC criteria. Beattie (2000) did not find a statistically significant effect of Fast ForWord® on the Clinical Evaluation of Language Fundamentals, nor was the effect large enough to be considered substantively important according to WWC criteria. Scientific Learning Corporation (2007b) did not find a statistically significant effect of Fast ForWord® on the Language Measure of Academic Progress, and the effect was not large enough to be considered substantively important according to WWC criteria.

For the general literacy achievement domain, all five studies showed indeterminate effects.

**Rating of effectiveness**

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

**Improvement index**

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

The average improvement index for alphabets is +2 percentile points across two studies, with a range of –9 to +9 percentile points across findings. The improvement index for reading fluency is +17 percentile points for a single finding from one study. The average improvement index for comprehension
The WWC found *Fast ForWord*® to have no discernible effects for the alphabetics and general literacy achievement domains and potentially positive effects for the reading fluency and comprehension domains for adolescent learners. (continued)

is +8 percentile points across six studies, with a range of –6 to +17 percentile points across findings. The average improvement index for general literacy achievement is +3 percentile points across five studies, with a range of –1 to +9 percentile points across findings.

**Summary**

The WWC reviewed 305 studies on *Fast ForWord*® for adolescent learners. Two of these studies meet WWC evidence standards with reservations; the remaining 297 studies do not meet either WWC evidence standards or eligibility screens. Based on the eight studies, the WWC found no discernible effects in the alphabetics and general literacy achievement domains, and potentially positive effects in the reading fluency and comprehension domains for adolescent learners. The conclusions presented in this report may change as new research emerges.

**References**

**Meets WWC evidence standards**


*Additional source:*


**Meets WWC evidence standards with reservations**


*Additional source:*


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12. Three single-case design studies were identified but are not included in this review because the WWC does not yet have standards for reviewing regression discontinuity or single-case design studies.
Studies that fall outside the Adolescent Literacy review protocol or do not meet WWC evidence standards


Bluth, T. L. (2002). *Fast ForWord Language intervention: Does it really improve language and reading skills?* Unpublished master’s thesis, St. Cloud State University, MN. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.

Camarata, S. M. (2008). *Fast ForWord®* does not significantly improve language skills in children with language disorders. *Evidence-Based Communication Assessment and Intervention, 2*(2), 96–98. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.


Children’s Hospital Boston. (2007). *Sound training rewires dyslexic children’s brains for reading*. Boston, MA: Author. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.

Ciaceria, K. B. (2007). *Will instruction using a computer-based cognitive skills development program, with audio and visual stimulation, increase the reading levels of male students in grades three through eight?* Unpublished research paper, Salem State College, MA. The study is ineligible for review because it does not use a comparison group.

Cohen, W., Hodson, A., O’Hare, A., Boyle, J., Durrani, T., McCartney, E., et al. (2005). Effects of computer-based intervention through acoustically modified speech (*Fast ForWord*) in severe mixed receptive-expressive language impairment: Outcomes from a randomized controlled trial. *Journal of Speech, Language, and Hearing Research, 48*(3), 715. The study is ineligible for review because it does not disaggregate findings for the age or grade range specified in the protocol.13

De Anda, I. (2000). Glasses for the ears: Technology provides a critical link to literacy. *Multimedia Schools: A Practical Journal of Technology, Including Multimedia, CD-ROM, Online, Internet, & Hardware in K–12, 7*(2). The study is ineligible for review because it does not use a comparison group.

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13. The study is included in the *Fast ForWord®* intervention report released by the WWC Beginning Reading topic area.

Divine, K. P., & Botkin, D. (2008). *A study of the longitudinal effects of Fast ForWord on student performance in Duval County*. Jacksonville, FL: Duval County Public Schools. The study does not meet WWC evidence standards because the intervention and comparison groups are not shown to be equivalent at baseline.

Eady, S. (2006). *Effects of Fast ForWord on reading skills of students who speak Spanish and English*. Unpublished master’s thesis, Texas Tech University Health Sciences Center, Lubbock. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.

Education Commission of the States. (1999). *Fast ForWord®*. Denver, CO: Author. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.

Education Commission of the States. (2002). *Fast ForWord®*. Denver, CO: Author. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.


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Additional source:

Holtby, L. M. (2002). Language and auditory processing abilities in a child with central auditory processing disorder following Fast ForWord Language intervention. Unpublished master’s thesis, Western Illinois University, Macomb. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.

Hook, P., Macaruso, P., & Jones, S. (2001). Efficacy of Fast ForWord training on facilitating acquisition of reading skills by children with reading difficulties—A longitudinal study. Annals of Dyslexia, 51(1), 73–96. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample was 100% special education students.

Hubing, R. L. (2000). Language and reading gains made by children who participate in Fast ForWord as compared to children who receive traditional intervention services. Unpublished master’s thesis, University of Wisconsin–Eau Claire. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample was 100% special education students.

Imaging, B. (2006). Cognitive neuroscience discoveries and educational practices: Seven areas of brain research that will shift the current behavioral orientation of teaching and learning. School Administrator, 63(11), 32. The study is ineligible for review because it does not examine the effectiveness of an intervention.


Kitzes, A. J. (2000). The effects of Fast ForWord on ADHD: The relationship between ADHD and language impairments. Dissertation Abstracts International, 60(12-B), 6369. The study does not meet WWC evidence standards because the intervention and comparison groups are not shown to be equivalent at baseline.

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Lajiness-O’Neill, R., Akamine, Y., & Bowyer, S. M. (2008). Treatment effects of Fast ForWord® demonstrated by magnetoencephalography (MEG) in a child with developmental dyslexia. *Neurocase, 13*(5-6), 390–401. The study is ineligible for review because it does not use a comparison group.


Loliva, A. (2002). *Following children’s progress through a well-known computerized training program, Fast ForWord*. Unpublished master’s thesis, Eastern Washington University, Cheney. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.


Marion, G. G. (2004). *An examination of the relationship between students’ use of the Fast ForWord Reading program and their performance on standardized assessments in elementary schools*. Unpublished doctoral dissertation, East Tennessee State University, Johnson City. The study does not meet WWC evidence standards because the intervention and comparison groups are not shown to be equivalent at baseline.

Additional source:


References (continued)

Science, 271(5245), 77. The study is ineligible for review because it does not use a comparison group.

Additional source:


The study is ineligible for review because it does not use a comparison group.

Merzenich, M. M., Saunders, G., Jenkins, W. M., Miller, S., Peterson, B., & Tallal, P. (1999). Pervasive developmental disorders: Listening training and language abilities. In S. H. Broman & J. M. Fletcher (Eds.), The changing nervous system: Neurobehavioral consequences of early brain disorders (pp. 365–385). New York: Oxford University Press. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample was 100% special education students.

Merzenich, M. M., Tallal, P., Peterson, B. E., Miller, S. L., & Jenkins, W. M. (1999). Some neurological principles relevant to the origins of—and the cortical plasticity-based remediation of—developmental language impairments. In J. Grafman & Y. Christen (Eds.), Neuroplasticity: Building a bridge from the laboratory to the clinic (pp. 169–187). Amsterdam: Elsevier. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.


Additional source:

Miller, S., & Tallal, P. (2007). Addressing literacy through neuroscience. The School Administrator, 63(11), 19–23. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.

Mohler, R. I. (2005). The effect on literacy levels by the Fast ForWord program and its connection with students’ behavior and academic achievement (Master’s thesis, Pacific Lutheran University, 2005). Masters Abstracts International, 44(03), 106–1123. The study is ineligible for review because it does not examine the effectiveness of an intervention.


Eastern Illinois University, Charleston. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.

Olson, K. M. (2002). *FFW Language to Reading* effects on acquired dyslexia (Master’s thesis, MGH Institute of Health Professions, 2002). Masters Abstracts International, 40(03), 47–700. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.


Pokorni, J. L., Worthington, C. K., & Jamison, P. J. (2004). Phonological awareness intervention: Comparison of *Fast ForWord*, *Earobics*, and *LIPS*. *Journal of Educational Research*, 97(3), 147–158. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample was 100% special education students.

Robertson, N. B. (2001). *A new approach to teaching the child with language impairments*. Unpublished master’s project, Weber State University, Ogden, UT. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.


Russo, C. (2000). A quasi-experimental study of the effects of *Fast ForWord* and *Recipe for Reading* on central auditory processing and phonological processing deficits among learning disabled and language-disabled reading students in grades one through six. *Dissertation Abstracts International*, 64(01A), 212–97. The study does not meet WWC evidence standards because the intervention and comparison groups are not shown to be equivalent at baseline.

Schacter, J. (1999). *Reading programs that work: A review of programs from pre-kindergarten to 4th grade*. Santa Monica, CA: Milken Family Foundation. The study is ineligible for review because it is not a primary analysis of the effectiveness of an intervention.


Scientific Learning Corporation. (1998). *National field trial results*. Oakland, CA: Author. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2002). *Scientifically based reading research and the Fast ForWord products: Research implications for effective language and reading intervention* (Education Department report #127). Oakland, CA: Author. The study is ineligible for review because it does not use a comparison group.
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Scientific Learning Corporation. (2003). Improved language skills by students in the Escambia County School District who used Fast ForWord products. MAPS for Learning: Educator Reports, 7(8), 1–6. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2003). Improved listening comprehension for middle school students in the Waupun School District. MAPS for Learning: Educator Reports, 7(2), 1–4. 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.

Scientific Learning Corporation. (2003). Improved reading skills by high school students in Pocatello/Chubbuck School District #25 who used Fast ForWord® Middle and High School. MAPS for Learning: Educator Reports, 7(5), 1–4. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2003). Improved reading skills by students in the Exceptional Student Education Program in the Osceola County School District who used Fast ForWord® Language. MAPS for Learning: Educator Reports, 7(1), 1–4. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2003). Improved vocabulary and comprehension skills by students in the school district of Philadelphia who used Fast ForWord Language. MAPS for Learning: Educator Reports, 7(6), 1–4. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2004). Improved academic achievement by students at Westwood Elementary School who used Fast ForWord® products. MAPS for Learning: Educator Reports, 8(7), 1–5. The study is ineligible for review because it does not use a comparison group.

Scientific Learning Corporation. (2004). Improved academic achievement by students in the Manchester City School District, Tennessee, who used Fast ForWord products. MAPS for Learning: Educator Reports, 8(7), 1–5. The study is ineligible for review because it does not use a comparison group.


Scientific Learning Corporation. (2004). Improved cognitive and early reading by students in the Berlin School District who used Fast ForWord products. MAPS for Learning: Educator Reports, 8(31), 1–5. 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.

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**Studies with disposition pending**

Barrett, M. L. (2002). *The effect of computer-assisted instruction for students with central auditory processing disorder using the Fast ForWord® program*. Unpublished master’s thesis, Rowan University, Glassboro, NJ. The study is not included because it uses a design for which the WWC is currently developing standards.


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14. The study compared student self-ratings on reading performance survey items for three groups of students: (1) students exposed to *Fast ForWord®*, (2) students exposed to *SuccessMaker*, and (3) students in a control group. A total of 18 students completed the rating survey. Students were participating in the study described in Beattie (2000).