
Summary of research generated by Striving Readers on the effectiveness of interventions for struggling adolescent readers

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This review summarizes evidence from 17 studies conducted under Striving Readers, a discretionary grant program supporting the implementation and rigorous evaluation of interventions aimed at raising the achievement of struggling adolescent readers. Grants were awarded to 16 school districts and states, who in turn implemented ten different interventions. Each grantee conducted an independent, randomized controlled trial design evaluation of the impacts of the intervention, which were assessed against the What Works Clearinghouse™ evidence standards. Four of the ten interventions had at least one study showing a positive effect on reading achievement. The remaining six interventions had no discernible effects. The findings from the studies funded by Striving Readers expand the evidence base on effective reading interventions for adolescents by adding information for 9 interventions not previously reviewed in the What Works Clearinghouse™.

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Introduction

This review used a systematic process modeled after the What Works Clearinghouse™ (WWC) review process to answer the question: What do the evaluations funded by the Striving Readers grant program tell us about effective interventions for improving the achievement of struggling adolescent readers? The 16 Striving Readers grantees selected and implemented ten different reading interventions with struggling readers in grades 6 through 10. All of the interventions selected included complete curricular materials and full instructional sessions, and most (7 of 10) were named or “branded” reading interventions that were available commercially.¹

The Striving Readers grantees each partnered with an independent evaluator to conduct a randomized controlled trial design evaluation of the reading intervention being implemented.² All of the evaluations conducted by Striving Readers independent evaluators were reviewed under WWC evidence standards (version 2.1).³ Twelve of the evaluations were determined to meet WWC evidence standards without reservations, three of the evaluations were determined to meet WWC evidence standards with reservations, and two of the evaluations were determined to not meet WWC evidence standards.⁴ This review summarizes the evidence from these evaluations; across the studies, four of the reading interventions had at least one study showing a positive effect on reading achievement. The remaining six reading interventions had no discernible effects. This small set of well-designed and well-implemented evaluations provides causal evidence that could help districts and schools in selecting an intervention for struggling adolescent readers.

The effects of ten interventions on the achievement of struggling adolescent readers

All of the evaluations of the reading interventions implemented by Striving Readers grantees measured effects on students’ reading achievement, using a variety of measures of general literacy achievement and reading comprehension.^{5,6} The use of general literacy achievement and comprehension to gauge students’

¹ Eligible reading interventions could be used as stand-alone reading programs for a classroom of struggling readers or as supplementary programs delivered in a targeted manner to struggling readers either prior to or simultaneously with a comprehensive literacy program.

² One grantee implemented and evaluated two interventions, such that the 16 Striving Readers grants generated 17 studies.

³ The WWC Procedures and Standards Handbook (version 2.1) can be found at: http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf. Note that the Striving Readers evaluations were reviewed prior to the release of WWC Standards (version 3.0). These reviews were assessed to determine if any of the revisions in version 3.0 affect the results of the reviews under version 2.1. It was determined that one study rating should be updated, and in this report receives a rating of meets WWC evidence standards with reservations (rather than the rating of meets WWC evidence standards without reservations determined under version 2.1) due to the analysis not properly accounting for differing random assignment probabilities.

⁴ Of the studies that do not meet WWC evidence standards, one is a cluster randomized controlled trial with joiners that fails to establish baseline equivalence and one is a randomized controlled trial that non-randomly excludes sample members and fails to establish baseline equivalence.

⁵ The WWC uses four separate outcome domains to summarize evidence of effectiveness of interventions for the reading proficiency of adolescent readers: alphabets, fluency, comprehension, and general literacy. This report summarizes findings from Striving Readers-funded studies within a single overarching domain – reading achievement – which is comprised of outcomes in the comprehension and general literacy domains used by the WWC. Appendix C provides more detailed findings from the Striving Readers-funded studies separately for the comprehension and general literacy domains.

reading achievement in this report is motivated by several factors:

- There is a focus in the field on comprehension problems as a primary cause of reading problems among struggling adolescent readers. For example, the IES practice guide, *Improving Adolescent Literacy: Effective Classroom and Intervention Practices*, makes a strong recommendation to provide direct and explicit instruction on comprehension strategies when working with adolescent readers (Kamil et al., 2008).
- Comprehension is recognized as being particularly important at the middle and high school levels, as these students must utilize disciplinary literacy skills that build on a solid use of comprehension strategies to master other content areas such as mathematics, history, sciences, and other subjects (Shanahan & Shanahan, 2008).
- In the studies in this review, the measures of general literacy are either state reading tests or standardized reading tests that encompass multiple domains. Because these measures always include at least one subtest related to comprehension (and often more), we include findings on the general literacy achievement domain along with findings on comprehension.

Evidence ratings that are assigned to the interventions are adopted from WWC's rating scheme for combining findings from multiple studies (WWC Procedures and Standards Handbook (version 2.1)). Striving Readers-funded studies that met WWC standards with or without reservations reported evidence of positive, potentially positive, or mixed effects⁷ on students' reading achievement for four of the ten interventions (Table 1):

- For *READ 180*[®], there was evidence of positive effects on reading achievement. Three studies found statistically significant positive effects.
- For *Xtreme Reading*, there was evidence of potentially positive effects on reading achievement. One study found statistically significant positive effects and one study found no effects.
- For *Learning Strategies Curriculum*, there was evidence of potentially positive effects on reading achievement. There was a single study of the intervention, and it found statistically significant positive effects.
- For *Voyager Passport Reading Journeys*[®], there were mixed effects on reading achievement. One study found statistically significant positive effects and two studies found no effects.

The findings from the studies funded by Striving Readers expand the evidence base on effective reading interventions for struggling adolescent readers. First, for *READ 180*[®], the current review includes new evidence that complements a WWC intervention report produced under the Adolescent Literacy topic area.⁸ Second, the current review includes new evidence of potentially positive or mixed effects for three interventions that had not been previously reviewed by the WWC: *Xtreme Reading*, *Learning Strategies*

⁶ In the alphabetic domain, one Striving Readers-funded study of *Fusion Reading Program* found statistically significant positive effects, and one Striving Readers-funded study of *Read to Achieve* found no statistically significant positive effects. No Striving Readers-funded study reported evidence of effects on students' fluency. Since the review focuses on effects on students' reading achievement, the findings on alphabetic are not included in the summary tables and discussion.

⁷ See Appendix A for definitions of the categories of effectiveness.

⁸ See http://ies.ed.gov/ncee/wwc/pdf/intervention_reports/wwc_read180_102009.pdf

Curriculum, and *Voyager Passport Reading Journeys*⁹.⁹ Finally, this review includes evidence of no discernible effects for six interventions not previously reviewed by the WWC.

Table 1. Summary of evidence from Striving Readers-funded effectiveness studies of interventions for struggling adolescent readers that met What Works Clearinghouse™ evidence standards with or without reservations

Overall Effectiveness Rating*	Intervention	Summary of the evidence
Positive Effects	<i>Read 180</i> [®]	Three studies found statistically significant positive effects on reading achievement; zero studies found no effects.
	<i>Xtreme Reading</i>	One study found statistically significant positive effects on reading achievement; one study found no effects.
Potentially Positive Effects	<i>Learning Strategies Curriculum</i>	One study found statistically significant positive effects on reading achievement; zero studies found no effects.
Mixed Effects	<i>Voyager Passport Reading Journeys</i> [®]	One study found statistically significant positive effects on reading achievement; two studies found no effects.
	<i>Chicago Striving Readers</i>	One study found no effects.
	<i>Fusion Reading Program</i>	One study found no effects.
	<i>Kentucky Cognitive Literacy Model</i>	One study found no effects.
	<i>Read to Achieve</i>	One study found no effects.
	<i>REWARDS</i>	One study found no effects.
	<i>Strategies for Literacy Independence</i>	One study found no effects.
	<i>Curriculum (SLIC)</i>	One study found no effects.
No Discernible Effects		

* See Appendix A for definitions of Overall Effectiveness Ratings.

Positive effects on students’ reading achievement – *READ 180*[®]

READ 180[®] is a reading intervention for students in elementary through high school (grades 4-12) reading two or more years below grade-level that aims to address gaps in students’ skills through the use of literature, direct instruction in reading skills, and a computer component. *READ 180*[®] offers differentiated levels of support through small group, teacher-led instruction and customized, technology-based instruction. *READ 180*[®] has three stages: Elementary (Stage A); Middle School (Stage B); High School (Stage C). The intervention is designed for one year of daily, 90-minute sessions, but it can last longer with add-on materials. *READ 180*[®] was developed by the Cognition and Technology Group at Vanderbilt University, the Orange County Literacy Project in Florida, and the development staff at Scholastic Inc. (Scholastic Inc., n.d.a).

READ 180[®] offers a mix of instructional approaches, including fluency exercises, question stems, use of graphic organizers, activation of prior knowledge, and cooperative group work (among others). Lessons are designed to begin with whole-class instruction, which is introduced with a video. The curriculum has a recommended sequence in which whole class instruction is designed to be followed by small group (approximately five students) activities that involve either direct instruction from the teacher, modeled or independent reading, or software exercises. The *READ 180*[®] software provides instruction in decoding and word recognition, spelling, fluency, vocabulary, and comprehension. The *READ 180*[®] software provides students with videos and corresponding reading passages, after which students receive decoding and spelling instruction, and an assessment for comprehension, word recognition, and fluency. The software

⁹ The WWC reviewed studies of *Voyager Passport Reading Journeys*[®] (and other Voyager reading interventions) that focused on students with disabilities; no studies were identified that met WWC evidence standards and no summary of effectiveness was generated. See http://ies.ed.gov/ncee/wwc/pdf/intervention_reports/wwc_vrp_031610.pdf

component aims to track and adapt to each student's progress. Each student has individual access to a networked computer with microphones and headsets. The teacher has a separate computer workstation and printer.

Three Striving Readers-funded studies found statistically significant positive effects on students' reading achievement.

Sprague, et al. (2012) conducted a randomized controlled trial that examined the effects of *READ 180*[®] on five cohorts of grade 9 students in five schools in the Springfield and Chicopee Public School Districts in Massachusetts. The study meets WWC evidence standards without reservations. Students who performed below the 50th normal curve equivalency on their spring grade 8 district reading screening tool were eligible for the study. Participating students that were not selected to receive *READ 180*[®] received business-as-usual literacy instruction, including the standard English Language Arts (ELA) courses for all students inclusive of any normally provided reading instruction and the supplemental services ordinarily available to students in need of additional reading support. Findings indicated a statistically significant positive effect of *READ 180*[®] on students' reading achievement as measured by the district-administered Stanford Diagnostic Reading Test (ES = 0.18) (Karlsen and Gardner, 1995).

Swanlund, et al. (2012) conducted a randomized controlled trial that examined the effects of *READ 180*[®] on students in grades 6 - 9 in five schools in Milwaukee Public Schools of Wisconsin. The study meets WWC evidence standards without reservations. Students who performed below proficiency levels on state standardized reading tests and those or were assessed by teachers as performing at least two grade levels below expectations were eligible for the study. Participating students that were not selected to receive *READ 180*[®] received business-as-usual instruction, which consisted of their standard ELA class and no supplemental literacy instruction. Findings indicated a statistically significant positive effect of *READ 180*[®] on students' reading achievement as measured by the district-administered Measures of Academic Progress Reading test (ES = 0.14) (Northwest Evaluation Association, n.d.).

Loadman, et al. (2011) conducted a randomized controlled trial that examined the effects of *READ 180*[®] on incarcerated youth ages 15 through 25 in seven Ohio Department of Youth Services high schools within facilities run by the Ohio Department of Youth Services. The study meets WWC evidence standards with reservations. Youths who performed below proficiency levels on reading tests were eligible for the study. Participating students that were not selected to receive *READ 180*[®] received business-as-usual instruction, which consisted of standard ELA instruction within correctional facilities in either a traditional English classroom or resource room from a certified teacher. Findings indicated a statistically significant positive effect of *READ 180*[®] on students' reading achievement as measured by the state-administered Scholastic Reading Inventory (ES = 0.22) and the state-administered California Achievement Test (ES = 0.19) (Scholastic Inc., n.d.b.; Seton Testing Services, n.d.).

Potentially positive effects on students' reading achievement – Xtreme Reading

Xtreme Reading is a one-year supplemental reading intervention to assist struggling adolescent readers in grades 9 - 12. The operational definition of a struggling reader targeted by the intervention is not provided. *Xtreme Reading* was developed by the University of Kansas Center for Research on Learning, and builds upon a prior curriculum developed by the Center, the Strategic Instruction Models Learning Strategies

Curriculum (The University of Kansas Center for Research on Learning, n.d.a).¹⁰ *Xtreme Reading* provides direct instruction on reading comprehension strategies and vocabulary learning strategies. Five strategies focus on comprehension: 1) Word identification strategy helps students quickly decode and identify multisyllabic words found in content material. Students also work in pairs to practice reading with fluency, recording their speed in words per minute on a fluency progress chart, and practicing on passages of increasing difficulty. 2) Self-questioning strategy instructs students in asking themselves questions while reading (about character, plot, setting, vocabulary), keeping their predictions in mind, searching for the answers, and talking about them. 3) Visual imagery strategy instructs students in how to visualize or “make movies” of the events described in a reading passage. 4) Paraphrasing strategy helps students focus on the main ideas and important information as they read short passages. 5) Inference strategy helps students make guesses about a reading passage when the information is not provided. *Xtreme Reading* integrates writing strategies with reading instruction. These writing strategies (such as paragraph writing and theme writing) focus on the writing process and emphasize planning, writing, providing or accepting feedback, and editing.

One Striving Readers-funded study found statistically significant positive effects on students' reading achievement, and one Striving Readers-funded study found no effects.

Faddis, et al. (2011) conducted a randomized controlled trial that examined the effects of *Xtreme Reading* on students in grades 7 - 10 in five middle schools and four high schools in the Portland, Oregon area. The study meets WWC evidence standards without reservations. Students who performed at least two years below grade level on either the state reading test or a reading screening test were eligible for the study. Participating students that were not selected to receive *Xtreme Reading* received business-as-usual instruction, which consisted of either courses in language arts or social studies (in the middle schools), or an elective (high schools). Findings indicated statistically significant positive effects of *Xtreme Reading* on students' reading achievement as measured by the study-administered Group Reading Assessment and Diagnostic Evaluation (GRADE) (ES = 0.21) and the state-administered test of English language arts (the Oregon Assessment of Knowledge and Skills, or OAKS) (ES = 0.09) (Williams, 2001.; Oregon Department of Education, n.d.).

Sprague et al. (2012) conducted a randomized controlled trial that examined the effects of *Xtreme Reading* on five cohorts of grade 9 students in five schools in the Springfield and Chicopee Public School Districts of Massachusetts. The study meets WWC evidence standards without reservations. Students who performed below the 50th normal curve equivalency on their spring grade 8 district reading screening tool were eligible for the study. Participating students that were not selected to receive *Xtreme Reading* received business-as-usual instruction, which consisted of normal ELA classes and any supplemental services ordinarily available to students in need of additional reading support. Findings indicated non-statistically significant effects of *Xtreme Reading* on students' reading achievement as measured by the district-administered Stanford Diagnostic Reading Test (Version 4) (Karlsen and Gardner, 2005). These effects were not large enough to be considered substantively important according to WWC criteria.

¹⁰ There is no current information on *Xtreme Reading* available on the developer's website.

Potentially positive effects on students' reading achievement – *Learning Strategies Curriculum*

Learning Strategies Curriculum (LSC) is a one-year supplemental reading intervention designed to assist adolescents in grades 6 - 9 with learning disabilities in the general education classroom. The intervention was developed by the University of Kansas Center for Research on Learning as a component of the Strategic Instruction Model (The University of Kansas Center for Research on Learning, n.d.b).¹¹ The primary objectives of the curriculum are to teach students a variety of task-specific learning strategies that enable them to deal with the immediate demands of the school curriculum and the self-regulatory processes needed to successfully transfer these skills to other contexts. *Learning Strategies Curriculum* also provides support for students to develop the self-regulatory processes needed to enable them to control their own learning and thinking and to monitor their own progress towards achieving goals.

Learning Strategies Curriculum is divided into three strands: 1) Acquisition, 2) Storage, and 3) Expression. Each strand includes a number of strategies designed to help students derive information from texts, identify and remember important information, or develop writing or academic competence. The Acquisition strand teaches students how to acquire information from text. This strand includes strategies such as word identification, visual imagery, self-questioning, and paraphrasing, in order to help students learn to paraphrase critical information, picture information to promote understanding and remembering, ask questions and make predictions about text information, and identify unknown words in text. The strategies in the Storage strand are designed to help students identify, organize, and store important information, to teach students how to study information once they acquire it and how to develop mnemonics and other devices to aid memorization of facts as well as strategies for learning new vocabulary. These strategies are intended to help prepare students for standardized achievement tests in content areas. The Expression strand is comprised of strategies for writing and academic competence. It includes various strategies designed to help students write sentences and paragraphs, monitor their work for errors, and confidently approach and take tests.

One Striving Readers-funded study found statistically significant positive effects on students' reading achievement.

Cantrell, et al. (2011) conducted a randomized controlled trial that examined the effects of *Learning Strategies Curriculum (LSC)* on students in grades 6 and 9 in ten middle schools, nine high schools, and two grade 6-12 schools in seven rural school districts in Kentucky. The study meets WWC evidence standards without reservations. Students who performed below the 33rd normal curve equivalency on a reading screening test were eligible for the study. Special education students were eligible for the study if they were not in full-time special education classrooms. Participating students that were not selected to receive LSC received business-as-usual instruction, which consisted of non-literacy elective courses. Findings indicated a statistically significant positive effect of LSC on students' reading achievement as measured by the study-administered Group Reading Assessment and Diagnostic Evaluation (GRADE) (ES = 0.10) (Williams, 2001).

¹¹ The Center has since developed more recent versions of this program—*Xtreme Reading* and the *Fusion Reading Program*, both of which were tested in one of the Striving Readers-funded studies.

Mixed effects on students' reading achievement – *Voyager Passport Reading Journeys*[®]

Voyager Passport Reading Journeys[®] is a one-year reading intervention system that targets struggling readers in middle and high school. The operational definition of a struggling reader targeted by the intervention is not provided. *Voyager Passport Reading Journeys*[®] was developed by Cambium Learning Group (Cambium Learning, n.d.) The intervention provides explicit, systematic, and scaffolded reading instruction through content selected to be of high interest to adolescents, flexible groupings, and an interactive format. There are separate *Voyager Passport Reading Journeys*[®] interventions for grade 6 (Journey Beginnings), grade 7 (Journeys I), grade 8 (Journeys II), and high school (Journeys III). Each of the four *Voyager Passport Reading Journeys*[®] interventions consists of 15 ten-day (two week) lessons for a total of 30 weeks (or one school year).

The 15 lessons include a fluency module and a comprehension and vocabulary module. Each lesson is launched by a DVD video that provides background knowledge on science and social studies topics. Fluency building activities include individual readings, reading along with the teacher, partner readings, and frequent timed readings. The comprehension and vocabulary module includes weekly reading passages and instruction on word analysis skills in which students are taught affixes and morphemes. *Voyager Passport Reading Journeys*[®] also includes explicit instruction in vocabulary, decoding, and writing. Strategic Online Learning Opportunities[®] (SOLO[®]) is *Voyager Passport Reading Journeys*[®] technology component. SOLO[®] is a computer program designed to be used by individual students for additional practice applying key comprehension skills. Use of SOLO[®] requires computers, internet access, and headphones. Online books are also available as additional reading materials for differentiated instruction.

One Striving Readers-funded study found statistically significant positive effects on students' reading achievement, and two Striving Readers-funded studies found no effects.

Vaden-Kiernan, et al. (2012) conducted a randomized controlled trial that assessed the impact of *Voyager Passport Reading Journeys*[®] on students in grades 6 and 7 in 10 schools in four districts in Louisiana. The study meets WWC evidence standards without reservations. Students who performed below proficiency levels on state standardized reading tests were eligible for the study. Participating students that were not selected to receive *Voyager Passport Reading Journeys*[®] received business-as-usual instruction, which consisted of the regular school curriculum and an elective course that provided no additional literacy instruction. Findings indicated a statistically significant positive effect of *Voyager Passport Reading Journeys*[®] on students' reading achievement as measured by the study-administered Group Reading Assessment and Diagnostic Evaluation (ES = 0.27). Findings indicated a non-statistically significant effect as measured by the state-administered iLEAP English Language Arts and Reading tests (Williams, 2001; Louisiana Department of Education, n.d.). This effect was not large enough to be considered substantively important according to WWC criteria.

Dimitrov, et al. (2012) conducted a randomized controlled trial that examined the effects of *Voyager Passport Reading Journeys*[®] on grade 9 students in six high schools in four districts in Illinois. The study meets WWC evidence standards without reservations. Students who performed in the bottom two quartiles on state reading tests were eligible for the study. Participating students that were not selected to receive *Voyager Passport Reading Journeys*[®] received business-as-usual instruction, which consisted of standard ELA instruction and elective classes that did not provide any supplemental literacy instruction. Findings

indicated a non-statistically significant effect of *Voyager Passport Reading Journeys*[®] on students' reading achievement as measured by the study-administered Gates-MacGinitie Reading Test and the state-administered EXPLORE Grade 9: Reading Test (MacGinitie, MacGinitie, Maria & Dryer, 2002; ACT, 2011). This effect was not large enough to be considered substantively important according to WWC criteria.

Schenck, et al. (2012) conducted a randomized controlled trial that examined the effects of *Voyager Passport Reading Journeys*[®] on students in grades 7 and 8 in nine schools located in three districts in Virginia. The study meets WWC evidence standards without reservations. Students who performed below proficiency levels on state standardized reading tests and those who scored at least two grade levels below expectations on a screening reading test were eligible for the study. Participating students that were not selected to receive *Voyager Passport Reading Journeys*[®] received business-as-usual instruction, which consisted of standard ELA instruction and elective classes that did not provide any supplemental literacy instruction. Findings indicated non-statistically significant effects of *Voyager Passport Reading Journeys*[®] on students' reading achievement as measured by the study-administered Gates-MacGinitie Reading Test and the state-administered English Language Arts test (the Virginia Standards of Learning-English/Reading) (MacGinitie, MacGinitie, Maria & Dryer, 2002; Virginia Department of Education, 2005). These effects were not large enough to be considered substantively important according to WWC criteria.

Implications of the findings

The Striving Readers grantees conducted 17 randomized controlled trial design evaluation studies of 10 different interventions aimed at raising reading achievement of struggling adolescent readers. Twelve studies met What Works Clearinghouse[™] evidence standards without reservations, three studies met What Works Clearinghouse[™] evidence standards with reservations, and two studies did not meet What Works Clearinghouse[™] evidence standards. Based on findings from studies that met WWC standards with or without reservations, four of the ten interventions had positive, potentially positive, or mixed effects on reading achievement. This body of evidence substantially increases the amount of credible information available to district administrators trying to decide how to best meet the needs of struggling adolescent readers. Prior to this report, the WWC has produced 19 intervention reports in the topic area of adolescent literacy. Each report includes at least one study that meets evidence standards with or without reservations; 13 of these interventions were found to have potentially positive or mixed effects on either comprehension or general literacy and no interventions were found to have positive effects.¹² The findings from the studies funded by Striving Readers expand the evidence base on effective reading interventions for adolescents by adding information for 9 interventions not previously reviewed in the WWC.¹³ Three of these 9 interventions had positive, potentially positive, or mixed effects on reading achievement, showing promise for improving the literacy skills of struggling adolescent readers. These sources, along with other relevant research summaries (for example, Deshler 2007 and Slavin 2008), provide practitioners and policymakers with credible information to help design instructional programs to meet the needs of struggling adolescent readers.

¹² See http://ies.ed.gov/ncee/wwc/publications_reviews.aspx, accessed 9/23/2014.

¹³ One intervention implemented and evaluated by Striving Readers grantees, *READ 180*[®], is also the subject of a WWC intervention report.

Appendix A. Review process

The 17 studies of the reading interventions selected and implemented by the Striving Readers grantees were reviewed using methods consistent with the systematic approach used by the What Works Clearinghouse™ (WWC) to assess the strength of the evidence and summarize the results from studies that meet the standards (see the WWC Procedures and Standards Handbook v.2.1).¹⁴ The review team was comprised of WWC-certified reviewers.

Research studies that are assessed using WWC evidence standards receive a rating of *Meets Evidence Standards without Reservations*, *Meets Evidence Standards with Reservations*, or *Does Not Meet Evidence Standards*. The study rating indicates the level of confidence with which the study provides causal evidence of the effectiveness of an intervention. It is based on study elements including design, attrition, baseline equivalence, confounds, and outcomes.

After identifying studies of an intervention that receive ratings of *Meets Evidence Standards* or *Meets Evidence Standards with Reservations*, the WWC will combine findings across these studies to summarize the effectiveness of an intervention. The effectiveness rating for each outcome domain incorporates statistical significance, the direction of the effect, the size of the effect, the quality of the research on the intervention, and the consistency in findings across studies.

The effectiveness ratings can fall into six categories: Positive Effects, Potentially Positive Effects, Mixed Effects, No Discernible Effects, Potentially Negative Effects, and Negative Effects. Findings on the interventions from the Striving Readers-funded studies generated no effectiveness ratings of Potentially Negative Effects or Negative Effects. The four effectiveness ratings received by interventions in this report are defined below, in Table A.1.

¹⁴ The Procedures and Standards Handbook can be found at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

Table A.1. Definitions of overall effectiveness rating¹⁵

Studies with **Positive Effects** meet both of the following criteria:

- Two or more studies showing statistically significant¹⁶ positive effects, at least one of which met WWC evidence standards for a strong design
- No studies showing statistically significant or substantively important¹⁷ negative effects

Studies with **Potentially Positive Effects** meet both of the following criteria:

- At least one study showing a statistically significant or substantively important positive effect
- 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

Studies with **Mixed Effects** meet either of the following criteria:

- At least one study showing a statistically significant or substantively important positive effect AND at least one study showing a statistically significant or substantively important negative effect, but no more such studies than the number showing a statistically significant or substantively important positive effect
- At least one study showing a statistically significant or substantively important effect AND more studies showing an indeterminate effect than showing a statistically significant or substantively important effect

Studies with **No Discernible Effects** have no studies showing a statistically significant or substantively important effect, either positive or negative.

¹⁵ The WWC also has two effectiveness rating categories for negative results: **negative effects** and **potentially negative effects** (see the Procedures and Standards Handbook, v. 2.1 for criteria for these ratings). None of the effectiveness ratings generated in this report falls into these categories.

¹⁶ Significance was assessed using an alpha level of .05.

¹⁷ A substantively important effect size has a magnitude of at least 0.25 standard deviations.

Appendix B. References

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Appendix C. Detailed findings from the Striving Readers-funded studies meeting What Works Clearinghouse™ evidence standards

Table C.1. READ 180®: positive effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Sprague, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	456 9th grade students in 5 schools who performed below the 50th normal curve equivalency on their spring grade 8 district reading screening tool	Springfield and Chicopee, MA	Comprehension	Stanford Diagnostic Reading Test, version 4	+0.18*	+7
Loadman, et al. (2011)	Randomized controlled trial (Meets WWC standards with reservations)	1,245 15-25 year old students in 7 school units who performed below proficiency levels on reading tests	Ohio Department of Youth Services high schools (incarcerated youth)	Comprehension	Scholastic Reading Inventory; California Achievement Test	+0.19*	+8
Swanlund, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	619 6-9th grade students in 5 schools who performed below proficiency levels on state standardized reading tests and those or were assessed by teachers as performing at least two grade levels below expectations	Milwaukee Public Schools, WI	Comprehension	Measures of Academic Progress reading score	+0.14*	+5
Summary of Effects				Comprehension		+0.17	+7

TABLE NOTES: Effect size values marked with an asterisk (*) denote that the study finding is statistically significant. The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. The Summary of Effects row presents average values for Effect Size – computed as the simple, unweighted average of the individual effect sizes – and Improvement Index – computed directly from the study average effect size. Comparison group students in all studies received business-as-usual instruction instead of the READ 180® intervention.

INTERVENTION NOTES: The intervention groups received the READ 180® intervention during a 90-minute literacy block. During that block, small classes of 15–18 students spent the first 20 minutes in teacher-led whole group language-arts instruction. Over the next hour, the class broke into three smaller groups and cycled through three 20-minute rotations as follows: small-group instruction, independent reading, and software use. Each class ended with 10 minutes of a teacher-led wrap-up.

Table C.2. Xtreme Reading: potentially positive effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Sprague, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	448 9th grade students in 5 schools who performed below the 50th normal curve equivalency on their spring grade 8 district reading screening tool	Springfield and Chicopee, MA	Comprehension	Stanford Diagnostic Reading Test (version 4)	0.00	+1
Faddis, et al. (2011)	Randomized controlled trial (Meets WWC standards without reservations)	1,579 7-10th grade students in 9 schools (5 MS, 4 HS) who performed at least two years below grade level on either the state reading test or a reading screening test	Portland, OR	Comprehension	Group Reading and Diagnostic Evaluation	+0.21*	+8
		1,468 7th, 8th, and 10th grade students (same eligibility criteria as above)		General literacy achievement	Oregon Assessment of Knowledge and Skills Reading Test	+0.09*	+4
Summary of Effects				Comprehension		+0.13	+5
				General literacy achievement		+0.09	+4

TABLE NOTES: Effect size values marked with an asterisk (*) denote that the study finding is statistically significant. The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. The Summary of Effects row presents average values for Effect Size – computed as the simple, unweighted average of the individual effect sizes – and Improvement Index – computed directly from the study average effect size. Comparison group students in all studies received business-as-usual instruction instead of the *Xtreme Reading* intervention.

INTERVENTION NOTES: *Xtreme Reading* is designed for middle and high school students who need explicit strategy instruction to develop the reading skills needed to master critical course content. *Xtreme Reading*'s core instructional approaches include direct instruction, teacher modeling, paired student practice, and independent practice. Reading motivation and self-directed learning are encouraged through collaborative learning, self-selection of highly engaging texts, and teacher think-aloud modeling.

Table C.3. Learning Strategies Curriculum: potentially positive effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Cantrell, et al. (2011)	Randomized controlled trial (Meets WWC standards without reservations)	2,263 6th and 9th grade students in 21 schools who performed below the 33rd normal curve equivalency on a reading screening test	School districts in Rural Kentucky	Comprehension	Group Reading and Diagnostic Evaluation	+0.10*	+4

TABLE NOTES: Effect size values marked with an asterisk (*) denote that the study finding is statistically significant. The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the *Learning Strategies Curriculum* intervention.

INTERVENTION NOTES: The *Learning Strategies Curriculum* is a supplemental reading intervention designed for adolescents with learning disabilities in general education classrooms. The intervention provides instruction in Acquisition (deriving information from texts), Storage (identifying and remembering important information), and Expression (developing writing or academic competence). Students in middle schools received instruction in *Learning Strategies Curriculum* 50 to 90 minutes daily (250 to 450 minutes weekly). Students in high schools received instruction in *Learning Strategies Curriculum* 50 to 84 minutes daily (250 to 420 minutes weekly).

Table C.4. Voyager Passport Reading Journeys®: mixed effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Dimitrov, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	448 9th grade students in 6 schools who performed in the bottom two quartiles on state reading tests	Illinois	Comprehension	Gates-MacGinitie Reading Test	0.00	0
		514 9th grade students in 6 schools (same eligibility criteria as above)		General literacy achievement	EXPLORE Grade 9 Reading Test	-0.12	-5
Schenck ,et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	568 7-8th grade students in 9 schools who performed below proficiency levels on state standardized reading tests and those who scored at least two grade levels below expectations on a screening reading test	Virginia	Comprehension	Gates-MacGinitie Reading Test	+0.06	+2
		700 7-8th grade students in 9 schools (same eligibility criteria as above)		General literacy achievement	Virginia Standards of Learning -English/Reading	+0.06	+2
Vaden-Kiernan, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	944 6-7th grade students in 10 schools who performed below proficiency levels on state standardized reading tests	Louisiana	Comprehension	Group Reading and Diagnostic Evaluation	+0.27 *	+11
		1,102 6-7th grade students in 10 schools (same eligibility criteria as above)		General literacy achievement	iLEAP ELA; iLEAP Reading	+0.03	+1
Summary of Effects				Comprehension		+0.11	+4
				General literacy achievement		-0.01	0

TABLE NOTES: Effect size values marked with an asterisk (*) denote that the study finding is statistically significant. The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. The Summary of Effects row presents average values for Effect Size – computed as the simple, unweighted average of the individual effect sizes – and Improvement Index – computed directly from the study average effect size. Comparison group students in all studies received business-as-usual instruction instead of the *Voyager Passport Reading Journeys®* intervention.

INTERVENTION NOTES: The intervention group received daily, 50-minute lessons providing explicit, systematic instruction in critical reading skills on a topic related to science or social studies. A series of 15 Expeditions were organized in two week, ten-lesson routines that mix teacher-led instruction and students' independent practice. Lessons typically start with whole-group instruction in which students are introduced to new vocabulary and a new reading passage. After whole group instruction, students can individually practice vocabulary using the online technology component and/or select books for independent reading. Independent and paired reading times were also incorporated into lessons, during which the teachers worked intensively with students in need of specific instruction. Class size ranged from five to 21 students.

Table C.5. REWARDS®: no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Newman, et al. (2012)	Randomized controlled trial (Meets WWC standards with reservations)	463 7th grade students in 12 schools who performed below proficiency levels on state standardized reading tests and were not deemed ineligible by the principal (for reasons such as special education/Individual Education Plan status or behavior issues)	New York	Comprehension	Gates-MacGinitie Reading Test	+0.02	+1
		517 7th grade students in 12 schools (same eligibility criteria as above)		General literacy achievement	New York State English Language Arts Assessment, Grade 7	+0.15	+6

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the REWARDS® intervention.

INTERVENTION NOTES: REWARDS® is a supplemental reading intervention consisting of four components. *REWARDS Secondary Multisyllabic Word Reading Strategies* teaches students to identify and pronounce prefixes, suffixes, and vowel sounds to decode multisyllabic words in a variety of contexts. *REWARDS Plus Science* and *REWARDS Plus Social Studies* apply *REWARDS Secondary Multisyllabic Word Reading Strategies* to content area passages in science and social studies in order to build academic vocabulary and content-area knowledge. *REWARDS Writing-Sentence Refinement* is a warm-up activity intended to assist students in word choice and sentence composition in their own writing. REWARDS® instruction was implemented in 40 to 50 minute daily class sessions.

Table C.6. Fusion Reading Program: no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Schiller, et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	580 6-10th grade students in 7 schools (4 MS, 3 HS) who scored between the 5th and 35th percentiles on a reading screening test; and were not screened out on any of the following criteria: identified as having a severe cognitive disability, identified as English Language Learner , or receiving another reading interventions as required by their IEP	Three School districts in Michigan	Comprehension	Group Reading and Diagnostic Evaluation: Passage Comprehension, Sentence Comprehension, and Vocabulary	+0.05	+2
		152 6-7th grade students in 4 schools (same eligibility criteria as above)		General literacy achievement	Michigan Educational Assessment Program: Reading	+0.11	+4

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the *Fusion Reading Program* intervention.

INTERVENTION NOTES: The *Fusion Reading Program* is a two-year supplemental reading intervention specifically designed for middle and high school students who are struggling readers. The intervention provides instruction focused on comprehension, vocabulary, and motivation. Students in schools on a semester schedule received daily instruction in the *Fusion Reading Program* strategies averaging in length between 48 and 60 minutes. For students in schools on a trimester schedule, the daily instruction was approximately 70 minutes.

Table C.7. Read to Achieve: no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Deussen et al. (2012)	Randomized controlled trial (Meets WWC standards without reservations)	295 6-8th grade students in 5 schools who performed at least two years below grade level on the state reading test or below proficiency on reading screening tests	Three school districts in western WA	Comprehension	Gates-MacGinitie Reading Test	+0.02	+1
		325 6-8th grade students in 5 schools (same eligibility criteria as above)		General literacy achievement	Measure of Student Progress	+0.17	+7

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the *Read to Achieve* intervention.

INTERVENTION NOTES: *Read to Achieve* is a supplemental reading intervention which focuses on comprehension, fluency strategies, and higher-order thinking skills using content area reading and narrative reading. Students in the four schools with traditional class periods received daily instruction in *Read to Achieve* for approximately 45 minutes per day. Students in the one school on a block schedule received instruction in *Read to Achieve* for approximately 85 minutes every other day.

Table C.8. Kentucky Cognitive Literacy Model: no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Cantrell, Carter, and Rintamaa (2012)	Randomized controlled trial (Meets WWC standards without reservations)	485 9th grade students in 9 schools who performed below the 40 th normal curve equivalency on a reading screening test and were not in all day resource classes	Kentucky	General literacy achievement	Group Reading and Diagnostic Evaluation	-0.06	-2

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the *Kentucky Cognitive Literacy Model* intervention.

INTERVENTION NOTES: In addition to their regular reading/language arts class, intervention students received 225 to 375 minutes per week of this supplemental reading instruction in a targeted class taught by an intervention teacher. The intervention focused on content-related themes, such as success, the environment, and problem solving, tying together the four strands of the intervention: motivation and engagement; strategic processing; instructional strategies for content learning; and communication skills.

Table C.9. Chicago Striving Readers: no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Tunik, et al. (2011)	Randomized controlled trial (Meets WWC standards with reservations)	1,288 6th grade students in 63 schools who performed below proficiency levels on state standardized reading tests	Illinois	General literacy achievement	Illinois Student Achievement Test – Reading	0.00	0

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received business-as-usual instruction instead of the *Chicago Striving Readers* intervention.

INTERVENTION NOTES: *Chicago Striving Readers* is a three-part intervention. All students in intervention schools receive the whole-school blended intervention. This instructional model is implemented in all 90 minute ELA classes and 45 minute subject-area classes and incorporates whole and small group work which focuses on direct and explicit vocabulary instruction based on *Building Academic Vocabulary*; partner reading for fluency, comprehension and vocabulary development; word study based on *Words Their Way*; and Striving Readers text set units related to subject-area content. Each classroom is supported by listening centers, media centers, and handheld computers.

Table C.10. Strategies for Literacy Independence across the Curriculum (SLIC): no discernible effects on reading achievement

Study	Design	Sample	Location	Domain	Outcome	Effect Size	Improvement Index
Hofstetter, et al. (2011)	Randomized controlled trial (Meets WWC standards without reservations)	1,812 7-12th grade students in 16 schools who performed below proficiency levels on state standardized reading tests or scored at least two years below grade level on reading screening tests	California	General literacy achievement	Degrees of Reading Power; California Standards Test in English Language Arts	+0.04	+2

TABLE NOTES: The improvement index is the percentile rank difference between the intervention group mean and the comparison group mean. It can be interpreted as the expected change in percentile points that the average comparison group student would experience if receiving the treatment. Comparison group students received either business-as-usual instruction or a different literacy intervention or support instead of the *Strategies for Literacy Independence across the Curriculum* intervention.

INTERVENTION NOTES: *Strategies for Literacy Independence across the Curriculum* targeted intervention is a supplemental class that teaches students a set of literacy strategies to enhance their skills in reading and writing. The class is held daily and ranges from 40 to 80 minutes across schools. Students learn how authors use different forms of text to present different types of information and how a text's surface features may convey information about the text's content.