What Works Clearinghouse

Fluency Formula™

Program description

Fluency Formula™ is a supplemental curriculum designed to promote reading fluency for first- through sixth-grade students. The program emphasizes automatic recognition of words, decoding accuracy, and oral expressiveness as the foundation for building reading fluency. A daily 10- to 15-minute lesson is delivered in the classroom. Students participate in whole-class, small-group, and individual practice activities using workbooks, read-aloud anthologies, library books, fluency activity cards, and audio CDs. The curriculum encourages at-home practice and includes a *Fluency Formula*™ *Assessment System,* which allows teachers to assess student fluency using one-minute grade-level passages and a timer.

Research

One study of *Fluency Formula*™ met the What Works Clearinghouse (WWC) evidence standards. The study findings are based on data from 128 second-grade students in two suburban school districts in the Northeast.[1] The WWC considers the extent of evidence for *Fluency Formula*™ to be small for fluency and comprehension. No studies that met WWC evidence standards with or without reservations addressed alphabetics or general reading achievement.

Effectiveness

Fluency Formula™ was found to have potentially positive effects on fluency and potentially negative effects on comprehension.

	Alphabetics	*Fluency*	*Comprehension*	*General reading achievement*
Rating of effectiveness	na	Potentially positive effects	Potentially negative effects	na
Improvement index[2]	na	Average: +10 percentile points	Average: –11 percentile points	na

na = not applicable

1. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
2. These numbers show the improvement indices based on the single finding in each domain in the study.

Additional program information

Developer and contact

Fluency Formula™ is distributed by Scholastic. Web: www.scholastic.com/fluencyformula. Telephone: (800) 724-6527 (customer service).

Scope of use

Fluency Formula™ has been implemented in eight states in the United States.

Teaching

Teachers use a variety of strategies during 15-minute daily lessons to promote students' knowledge and skills in phonics, vocabulary, fluency, and comprehension. The first two days of each instructional week are devoted to direct instruction and guided practice activities for the whole class with a focus on fluent reading, prosody (intonation and/or vocal stress), and oral comprehension. During the next two days of the week, students reading at and above grade level practice their reading fluency independently, while students reading below grade level receive supplemental instruction in small groups with an emphasis on phonics and word attack skills. On the fifth day, teachers use the *Fluency Formula*™ *Assessment System* to identify struggling students and then use the assessment handbook to set instructional goals based on student assessment scores. In addition, teachers monitor student fluency growth at the beginning, middle, and end of the school year.

During class lessons, teachers model fluent reading and ask students to practice through repeated readings, reading with partners, and together in whole class (choral) reading. Students practice fluency, vocabulary, and comprehension individually using a program workbook and read library books while listening to an audio CD version of the book. Instructional practices also include review of sight word fluency and drills for reading speed and accuracy. Students can track their fluency progress on a class chart and receive bookmarks and certificates as rewards for progress. Students are encouraged to take the library books and workbooks home and read for at least 20–30 minutes daily at home or at school.

Professional development for teachers includes the *Fluency Formula*™ *Professional Guide* as well as online courses through Scholastic's "Scholastic Red" division, which include teaching simulations, structured feedback, information on research and theory, videos modeling instruction by expert practitioners, and materials that can be used in the classroom.

Cost

The *Fluency Formula*™ kit for one grade level costs $625 and includes introductory materials, four student workbooks, four copies each of 24 library books and six audio CDs, fluency activity cards, original leveled reading passages, the *Fluency Formula*™ *Assessment System* with a student timer, and a fluency flip chart. The cost for six *Fluency Formula*™ Kits (one per grade for grades 1–6), a principal's guide, and a facilitator handbook is $5,775. The cost of individual materials and courses is available on the publisher's website.

Research

Met evidence standards

One study examined the effects of *Fluency Formula*™*.* The study (Sivin-Kachala & Bialo, 2005) was a randomized controlled trial that met WWC evidence standards. The study began with 252 second-grade students from 12 classrooms in two suburban school districts in the Northeast. However, because the intervention targets lower-achieving students, the study authors focused only on students scoring below the 75th percentile on the Oral Fluency Assessment at pretest. The final analysis sample involved 128 students who scored below this level. The intervention group received the school's standard reading/English language arts materials and the *Fluency Formula*™ supplemental curriculum. The comparison group received just the school's standard reading/English language arts materials.

Research *(continued)*

Extent of evidence

The WWC categorizes the extent of evidence in each domain as small or moderate to large (see the What Works Clearinghouse Extent of Evidence Categorization Scheme). The extent of evidence takes into account the number of studies and the total sample size across the studies that met WWC evidence standards with or without reservations.[3]

The WWC considers the extent of evidence for *Fluency Formula*™ to be small for fluency and comprehension. No studies that met WWC evidence standards with or without reservations addressed alphabetics or general reading achievement.

Effectiveness

Findings

The WWC review of interventions for beginning reading addresses student outcomes in four domains: alphabetics, fluency, comprehension, and general reading achievement.[4] The Sivin-Kachala & Bialo (2005) study addressed outcomes in the fluency and comprehension domains.[5] The findings below present the authors' and the WWC-calculated estimates of the size and statistical significance of the effects of *Fluency Formula*™ on students' performance.

Fluency. The Sivin-Kachala & Bialo (2005) study findings for fluency are based on the performance of *Fluency Formula*™ students and comparison students on the Edformation Oral Fluency Assessment (OFA). The WWC found no statistically significant difference between the groups, however, the effect was positive and substantively important according to WWC criteria (that is, an effect size of at least .25).[6]

Comprehension. The Sivin-Kachala & Bialo (2005) study findings for comprehension are based on the performance of *Fluency Formula*™ students and comparison students on the Woodcock-Johnson III Tests of Achievement: Passage Comprehension subtest. The WWC did not find a statistically significant difference between the groups. However, the effect was negative and substantively important (that is, an effect size of at least –.25).[7]

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,[8] the size of the difference between participants in the intervention and the comparison conditions, and the consistency in findings across studies (see the WWC Intervention Rating Scheme).

3. 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.
4. For definitions of the domains, see the Beginning Reading Protocol.
5. The study also examined data in the alphabetics domain, but complete data were not available in the study report or from the study authors.
6. The study only reported intervention effects by high- and low-ability student groups, based on the OFA pretest score. These results are shown in Appendix A4. The overall effects presented here were computed by the WWC. The study authors reported both raw and normal curve equivalent (NCE) scores. The WWC used the raw score results.
7. The study reported intervention effects on comprehension by each district in the study and for low-ability students. The overall effects presented here were computed by the WWC. The results for low-ability students are shown in Appendix A4.
8. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation, see the WWC Tutorial on Mismatch. See the Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate the statistical significance. In the case of *Fluency Formula*™, corrections for clustering were needed.

The WWC found *Fluency Formula™* to have potentially positive effects for fluency and potentially negative effects for comprehension

Improvement index

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

The improvement index for fluency is +10 percentile points for the fluency outcome in the single study reviewed. The improvement index for comprehension is –11 percentile points for the comprehension outcome in the single study.

Summary

The WWC reviewed one study on *Fluency Formula™.* This study met WWC evidence standards. Based on this single study, the WWC found potentially positive effects in the fluency domain and potentially negative effects in the comprehension domain. The evidence presented in this report may change as new research emerges.

References

Met WWC evidence standards

Sivin-Kachala, J., & Bialo, E. (2005). Fluency Formula second grade study, Long Island, New York 2003-2004: Evaluation research on the effectiveness of Fluency Formula. Retrieved from Scholastic Education Web site: http://teacher.scholastic.com/products/fluencyformula/pdfs/FF_EffectivessReport.pdf

Additional source:

Sivin-Kachala, J., & Bialo, E. (2005). Fluency Formula second grade study, Long Island, New York 2003-2004: A summary of the effectiveness research for Fluency Formula. Retrieved from Scholastic Education Web site: http://teacher.scholastic.com/products/fluencyformula/pdfs/FF_EffectivenessSummary.pdf

For more information about specific studies and WWC calculations, please see the WWC *Fluency Formula™* Technical Appendices.

Appendix

Appendix A1 Study characteristics: Sivin-Kachala & Bialo, 2005 (randomized controlled trial)

Characteristic	Description
Study citation	Sivin-Kachala, J., & Bialo, E. (2005). Fluency Formula second grade study, Long Island, New York 2003-2004: Evaluation research on the effectiveness of Fluency Formula. Retrieved from Scholastic Education Web site: http://teacher.scholastic.com/products/fluencyformula/pdfs/FF_EffectivessReport.pdf
Participants	The study began with 252 second-grade students (127 in the intervention condition) from 12 classrooms (six classrooms in each condition). Participants came from three schools in one district and two schools in a second district (personal communication). Classrooms were matched on students' reading ability, demographic variables, and teacher characteristics and then randomly assigned to study conditions. Because *Fluency Formula™* does not target high-performing students, analyses were limited to the 143 students scoring at or below the 75th percentile on the Edformation Oral Fluency Assessment (OFA) pretest. Fifteen additional students were removed from analyses: one student who moved from the comparison to intervention group, eight students who exited the program, four students who missed at least half the intervention lessons, and two students with a large number of absences. The final analyses were based on data from 66 intervention students and 62 comparison students. According to data provided in the study, the remaining students (analysis sample) from the intervention and comparison groups were comparable on pretest achievement measures (OFA).[1]
Setting	The study was conducted in five schools[2] across two suburban school districts in the northeastern United States.
Intervention	*Fluency Formula™* was delivered as a supplement to the participating schools' standard reading/English language arts curriculum. Intervention group teachers followed the six-unit curriculum sequence in the *Fluency Formula™ Professional Guide*. Students classified as "low initial ability" (based on the pretest of oral fluency) received four days a week of *Fluency Formula™* instruction (two days of whole-class instruction plus two days of small-group instruction). Students classified as "high initial ability" received two days of whole-class *Fluency Formula™* instruction. Once a week, students received a 15-minute take-home assignment.
Comparison	The comparison group students received the participating schools' standard reading/English language arts curriculum with no supplemental materials or instruction. The comparison group teachers were not exposed to the *Fluency Formula™* materials or professional development.
Primary outcomes and measurement	The primary outcome measure in the fluency domain is the Edformation Oral Fluency Assessment (OFA) and the primary outcome in the comprehension domain is the Woodcock-Johnson III Tests of Achievement: Passage Comprehension subtest (see Appendixes A2.1 and A2.2 for more detailed descriptions of outcome measures).[3]
Teacher training	Intervention group teachers attended one after-school professional development session (about two and a half hours) that presented the theoretical basis, components, and implementation of the program. Teachers followed the instructional sequence detailed in the *Fluency Formula™ Professional Guide*.

1. The authors also used the Woodcock-Johnson III Basic Reading cluster score as a pretest and indicated that there were no statistically significant differences between the treatment and comparison students. These data were provided by the study authors in personal communication. For one outcome (comprehension), the authors analyzed the two (unidentified) districts separately. In that analysis, the comparison group in one of the districts scored significantly lower than the intervention group on pretest. The WWC, however, considered the pooled data, rather than data for the separate districts.
2. This information was provided by the study authors in personal communication.
3. The study also included student outcomes in the alphabetics domain, but those outcomes were not reviewed for rating purposes because the data were not reported in the study.

Appendix A2.1 Outcome measures in the fluency domain

Characteristic	Description
Edformation Oral Fluency Assessment (OFA)	This test measures the number of words correct per minute (WCPM) that students read using three brief grade-level passages (200-word minimum). These passages include both fiction and nonfiction text. The norms for this test are updated by Edformation each school year[1] (as cited in Sivin-Kachala & Bialo, 2005).

1. The study authors reported both raw and normal curve equivalent (NCE) scores. The WWC used the raw score results.

Appendix A2.2 Outcome measures in the comprehension domain

Characteristic	Description
Woodcock-Johnson III Tests of Achievement: Passage Comprehension subtest	This standardized test measures children's ability to match words and pictures of objects the words stand for and to identify missing key words in the reading passage (as cited in Sivin-Kachala & Bialo, 2005).

Appendix A3.1 Summary of study findings included in the rating for the fluency domain[1]

Outcome measure	Study sample	Sample size (classrooms/ students)	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — *Fluency Formula™ (FF)* group	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — Comparison group	WWC calculations: Mean difference[4] (*FF* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Sivin-Kachala & Bialo, 2005 (randomized controlled trial)[8]								
Oral Fluency Assessment (OFA)	Grade 2	12/128	84.85 (19.65)	78.62 (27.88)	6.24	0.26	ns	+10
Domain average[9] for fluency (Sivin-Kachala & Bialo, 2005)						0.26	ns	+10

ns = not statistically significant

1. This appendix reports the findings considered for the effectiveness rating and the average improvement indices. Subgroup findings from the same study are not included in these ratings, but are reported in Appendix A4.
2. The means for the intervention and comparison groups were calculated by the WWC by combining initial fluency ability subgroup means (see Technical Details of WWC-Conducted Computations). The reported intervention group mean equals the comparison group mean plus the mean difference.
3. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. Standard deviations for the combined intervention and comparison groups were calculated by the WWC based on subgroup standard deviations.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group. The mean difference was calculated using the difference-in-difference (gain scores) approach; see Technical Details of WWC-Conducted Computations.
5. For an explanation of the effect size calculation, see Technical Details of WWC-Conducted Computations.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
8. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Sivin-Kachala & Bialo (2005), a correction for clustering was needed, so the significance levels may differ from those reported in the original study.
9. This row provides the study average, which in this instance, is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A3.2 Summary of study findings included in the rating for the comprehension domain[1]

Outcome measure	Study sample	Sample size (classrooms/ students)	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — *Fluency Formula™ (FF)* group	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — Comparison group	WWC calculations: Mean difference[4] (*FF* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Sivin-Kachala & Bialo, 2005 (randomized controlled trial)[8]								
Woodcock-Johnson III: Passage Comprehension subtest	Grade 2	12/128	477.46 (10.88)	480.82 (13.05)	–3.36	–0.28	ns	–11
Domain average[9] for comprehension (Sivin-Kachala & Bialo, 2005)						–0.28	ns	–11

ns = not statistically significant

1. This appendix reports findings considered for the effectiveness rating and the average improvement indices.
2. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group. The reported intervention group mean equals the comparison group mean plus the mean difference.
3. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes. Standard deviations for the combined intervention and comparison groups were calculated by the WWC based on subgroup standard deviations from two districts.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group. The mean difference was calculated using the difference-in-difference (gain scores) approach; see Technical Details of WWC-Conducted Computations.
5. For an explanation of the effect size calculation, see Technical Details of WWC-Conducted Computations.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
8. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Sivin-Kachala & Bialo (2005), a correction for clustering was needed, so the significance levels may differ from those reported in the original study.
9. This row provides the study average, which, in this instance, is also the domain average. The WWC-computed domain average effect size is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A4 Summary of subgroup findings for the fluency domain[1]

Outcome measure	Study sample	Sample size (classrooms/ students)	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — *Fluency Formula™ (FF)* group	Authors' findings from the study: Mean outcome[2] (standard deviation[3]) — Comparison group	WWC calculations: Mean difference[4] (*FF* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Sivin-Kachala & Bialo, 2005 (randomized controlled trial)—Low-ability subgroup[8]								
Oral Fluency Assessment (OFA)	Grade 2	12/72	74.28 (17.53)	60.83 (22.40)	13.45	0.66	ns	+25
Sivin-Kachala & Bialo, 2005 (randomized controlled trial)—High-ability subgroup[8]								
Oral Fluency Assessment (OFA)	Grade 2	12/56	98.63 (14.43)	101.67 (13.79)	–3.04	–0.21	ns	–11

ns = not statistically significant

1. This appendix presents ability subgroup findings for measures that fall in the fluency domain. Total group scores were used for rating purposes and are presented in Appendix A3.1.
2. The intervention group mean equals the comparison group mean plus the mean difference.
3. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group. The mean difference was calculated using the difference in difference (gain scores) approach; see Technical Details of WWC-Conducted Computations.
5. For an explanation of the effect size calculation, see Technical Details of WWC-Conducted Computations.
6. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
7. The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
8. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of Sivin-Kachala & Bialo (2005), a correction for clustering was needed, so the significance levels may differ from those reported in the original study.

Appendix A5.1 *Fluency Formula™* rating for the fluency domain

The WWC rates an intervention's effects in a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of fluency, the WWC rated *Fluency Formula*™ as having potentially positive effects. It did not meet the criteria for the positive effects because there was only one study. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because *Fluency Formula*™ was assigned the highest applicable rating.

Rating received

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Met. The one study reviewed showed substantively important positive effects.

and

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Met. No study showed statistically significant or substantively important negative effects or indeterminate effects.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. Only one study met WWC evidence standards.

and

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

  Met. No studies showed statistically significant or substantively important negative effects.

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain-level effect. The WWC also considers the size of the domain-level effect for ratings of potentially positive or potentially negative effects. See the WWC Intervention Rating Scheme for a complete description.

Appendix A5.2 *Fluency Formula™* rating for the comprehension domain

The WWC rates an intervention's effects in a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of comprehension, the WWC rated *Fluency Formula*™ as having potentially negative effects. It did not meet the criteria for other ratings (positive effects, potentially positive effects, mixed effects, no discernible effects, and negative effects) because the single study that met WWC standards showed substantively important negative effects.

Rating received

Potentially negative effects: Evidence of a negative effect with no overriding contrary evidence

- Criterion 1: At least one study showing a statistically significant or substantively important *negative* effect.

  Met. The one study reviewed showed substantively important negative effects.

and

- Criterion 2: No studies showing a statistically significant or substantively important *positive* effect, or more studies showing statistically significant or substantively important *negative* effects than showing statistically significant or substantively important *positive* effects.

  Met. No studies showed statistically significant or substantively important positive effects.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. Only one study met WWC evidence standards.

and

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

  Not met. One study showed substantively important negative effects.

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect.

  Not met. No studies showed statistically significant or substantively important positive effects.

and

- Criterion 2: No studies showing a statistically significant or substantively important *negative* effect and fewer or the same number of studies showing *indeterminate* effects than showing statistically significant or substantively important *positive* effects.

  Not met. One study showed substantively important negative effects.

(continued)

Appendix A5.2 *Fluency Formula™* rating for the comprehension domain *(continued)*

Mixed effects: Evidence of inconsistent effects as demonstrated through either of the following criteria.

- Criterion 1: 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.

  Not met. No studies showed statistically significant or substantively important positive effects.

or

- Criterion 2: 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.

  Not met. One study showed substantively important negative effects and no study showed indeterminate effects.

No discernible effects: No affirmative evidence of effects.

- Criterion 1: None of the studies shows a statistically significant or substantively important effect, either *positive* or *negative.*

  Not met. One study showed substantively important negative effects.

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain-level effect. The WWC also considers the size of the domain-level effect for ratings of potentially positive or potentially negative effects. See the WWC Intervention Rating Scheme for a complete description.

Appendix A6 Extent of evidence rating by domain

Outcome domain	Number of studies	Sample size		Extent of evidence[1]
		Schools	Students	
Alphabetics	0	0	0	na
Comprehension	1	5	128	Small
Fluency	1	5	128	Small
General reading achievement	0	0	0	na

na = not applicable/not studied

1. A rating of "moderate to large" requires at least two studies and two schools across studies in one domain and a total sample size across studies of at least 350 students or 14 classrooms. Otherwise, the rating is "small."