Appendix

Appendix A1.1 Study characteristics: Baker, Gersten, & Keating, 2000 (randomized controlled trial)

Characteristic	Description
Study citation	Baker, S., Gersten, R., & Keating, T. (2000). When less may be more: A two-year longitudinal evaluation of a volunteer tutoring program requiring minimal training. *Reading Research Quarterly, 35*(4), 494–519.
Participants	Participants were 127 first-grade students from 24 classrooms in six Title I schools in four districts. Participants were nominated by their teachers as needing supplemental reading assistance based on two criteria: low reading skills and relatively little reading experience with adults or others at home. The students were randomly assigned to intervention and comparison conditions within classrooms after being matched on the Rapid Letter Naming pretest. The study presented findings after the intervention students completed two years of the program. At the end of second grade, 84 students of the original sample remained (43 students in the intervention and 41 students in the comparison group).[1] The study included an additional comparison group of 36 average-achieving readers from the same schools. Analysis involving these comparison groups was not eligible for WWC review because the WWC considers only comparisons of students with similar achievement backgrounds in assessing the effectiveness of *SMART®*. Student ethnicity was 47% European-American, 30% African-American, 10% American Indian, 6% Asian-American, and 6% Latino.
Setting	The study took place in two large counties in western Oregon. The schools represented a diverse range of communities, from low income/large city to working class/moderate size-city to rural settings.
Intervention	Students received one-to-one tutoring for six months each year while they were in first and second grade. The program consisted of two 30-minute sessions a week. Students could also take home two books a month. The number of sessions per student ranged from 49 to 98 with a mean of 73 sessions.
Comparison	Students in the comparison group received the same regular classroom reading instruction as students in the intervention group, but did not receive the tutoring program.
Primary outcomes and measurement	The Woodcock Reading Mastery Tests–Revised (WRMT-R) word identification subtest was used to test students' knowledge of alphabetics. First- and second-grade passages from the Oral Reading Fluency were used to test fluency. The WRMT-R passage comprehension subtest was used to test comprehension. Authors also looked at referral rates for special education; however this is not an outcome specified for the beginning reading topic (see Appendices A2.1–2.3 for more detailed descriptions of outcome measures).
Teacher training	The *SMART®* program intentionally places minimal demands on volunteer tutors and classroom teachers. Volunteer tutors are given 1-2 hours of training, preferably before the school year begins, but occasionally in an "on the job" setting. The training focuses as much on the logistics of tutoring as it does on reading instruction techniques. A key resource for the volunteers is a volunteer handbook, which describes four reading strategies that they can use with students: reading to the child, reading with the child, re-reading with the child, and asking the child questions about what has been read. Volunteers rely on their own judgment for any other needs.

1. The beginning reading team does not have a set cut-off point for attrition but rather examines the pretest comparability of intervention and comparison groups after attrition. In this case, the WWC examined the baseline scores of the remaining students and found the two groups were comparable on the pretest measure.

Appendix A2.1 Outcome measures in the alphabetics domain

Outcome measure	Description
Woodcock Reading Mastery Tests–Revised (WRMT-R) Word Identification subtest	The word identification subtest is a standardized test of decoding skills. It requires the student to read aloud isolated real words that vary in frequency and difficulty. It includes 51 items (as cited in Baker, Gersten, & Keating, 2000).

Appendix A2.2 Outcome measures in the fluency domain

Outcome measure	Description
Oral Reading Fluency–First- and Second-Grade Passages	Each student reads aloud a story from a first- or second-grade basal reader. The passages have been used in numerous other studies in the past. The number of words read correctly in one minute was used as the outcome measure (as cited in Baker, Gersten, & Keating, 2000).

Appendix A2.3 Outcome measures in the comprehension domain

Outcome measure	Description
WRMT-R Word Comprehension subtest	This standardized measure assesses students' vocabulary through antonyms, synonyms, and analogies (as cited in Baker, Gersten, & Keating, 2000).
WRMT-R Passage Comprehension subtest	This standardized test assesses reading comprehension by having students read a text silently and fill in missing words in a short paragraph (as cited in Baker, Gersten, & Keating, 2000).

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

Outcome measure	Study sample[3]	Sample size (students)	Authors' findings from the study: Mean outcome (standard deviation[2]): *SMART* group	Authors' findings from the study: Mean outcome (standard deviation[2]): Comparison group	WWC calculations: Mean difference[4] (*SMART* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—Two years of intervention[8]								
Construct: Phonics								
Woodcock Reading Mastery Tests–Revised: Word Identification subtest	Grade 1	84	449.4 (30.2)	437.9 (25.9)	11.5	0.40	Statistically significant	+16
Domain average[9] for alphabetics						0.40	Statistically significant	+16

1. This appendix reports findings considered for the effectiveness rating. Interim findings (end of first grade after one year of intervention) from the same study are not included in these ratings, but are reported in Appendix A4.1.
2. The means in the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. The sample at the beginning of the study consisted of students in first grade. Results in this table are based on outcomes assessed at the end of second grade.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
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 or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), no corrections were needed for this domain.
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 fluency domain[1]

Outcome measure	Study sample[3]	Sample size (students)	Authors' findings from the study: Mean outcome (standard deviation[2]) *SMART* group	Authors' findings from the study: Mean outcome (standard deviation[2]) Comparison group	WWC calculations: Mean difference[4] (*SMART* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—Two years of intervention[8]								
Oral Reading Fluency First-Grade Passage	Grade 1	84	71.3 (35.2)	55.9 (32.1)	15.4	0.45	Statistically significant	+17
Oral Reading Fluency Second-Grade Passage	Grade 1	84	61.5 (35.5)	45.9 (29.5)	15.6	0.47	Statistically significant	+18
Domain average[9] for fluency						0.46	Statistically significant	+17

1. This appendix reports findings considered for the effectiveness rating. Interim findings (end of first grade after one year of intervention) from the same study are not included in these ratings, but are reported in Appendix A4.2.
2. The means in the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. The sample at the beginning of the study consisted of students in first grade. Results in this table are based on outcomes assessed at the end of second grade.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
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 or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), corrections for multiple comparisons were needed for this domain.
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 A3.3 Summary of study findings included in the rating for the comprehension domain[1]

Outcome measure	Study sample[3]	Sample size (students)	Authors' findings from the study: Mean outcome (standard deviation[2]): *SMART* group	Authors' findings from the study: Mean outcome (standard deviation[2]): Comparison group	WWC calculations: Mean difference[4] (*SMART* – comparison)	WWC calculations: Effect size[5]	WWC calculations: Statistical significance[6] (at $\alpha = 0.05$)	WWC calculations: Improvement index[7]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—Two years of intervention[8]								
Construct: Vocabulary development								
Woodcock Reading Mastery Test–Revised: Word Comprehension subtest	Grade 1	84	472.30 (17.3)	456.4 (16.2)	6.90	0.41	ns	+16
Construct: Reading comprehension								
Woodcock Reading Mastery Test-Revised: Passage Comprehension subtest	Grade 1	84	468.90 (16.0)	464.70 (13.1)	4.20	0.28	ns	+11
Domain average[9] for comprehension						0.35	ns	+14

ns = not statistically significant

1. This appendix reports findings considered for the effectiveness rating. Interim findings (end of first grade after one year of intervention) from the same study are not included in these ratings, but are reported in Appendix A4.3.
2. The means in the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. The sample at the beginning of the study consisted of students in first grade. Results in this table are based on outcomes assessed at the end of second grade.
4. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
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 or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), corrections for multiple comparisons were needed for this domain.
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 A4.1 Summary of findings at the end of first grade for the alphabetics domain[1]

Outcome measure	Study sample	Sample size (students)	Authors' findings from the study: Mean outcome (standard deviation[2]): *SMART* group	Authors' findings from the study: Mean outcome (standard deviation[2]): Comparison group	WWC calculations: Mean difference[3] (*SMART* – comparison)	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—One year of intervention[7]								
Woodcock Reading Mastery Tests–Revised: Word Identification subtest	Grade 1	84	409.20 (29.70)	398.90 (24.40)	10.30	0.37	ns	+15

ns = not statistically significant

1. This appendix presents interim findings for measures that fall in the alphabetics domain. First-grade scores, which reflect student outcomes after one year of the intervention, are reported here. Second-grade scores (after two years of the intervention) were used for rating purposes and are reported in Appendix A3.1.
2. The means in the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of effect size calculation, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), no corrections were needed for this domain.

Appendix A4.2 Summary of findings at the end of first grade for the fluency domain[1]

Outcome measure	Study sample	Sample size (students)	Authors' findings from the study: Mean outcome (standard deviation[2]) *SMART* group	Authors' findings from the study: Mean outcome (standard deviation[2]) Comparison group	WWC calculations: Mean difference[3] (*SMART* – comparison)	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—One year of intervention[7]								
Oral Reading Fluency First-Grade Passage	Grade 1	84	27.80 (22.80)	18.70 (17.30)	9.10	0.44	Statistically significant	+17

1. This appendix presents interim findings for measures that fall in the fluency domain. First-grade scores, which reflect student outcomes after one year of the intervention, are reported here. Second-grade scores (after two years of the intervention) were used for rating purposes and are reported in Appendix A3.2.
2. The means in the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of effect size calculation, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), no corrections were needed for this domain.

Appendix A4.3 Summary of findings at the end of first grade for the comprehension domain[1]

			Authors' findings from the study		WWC calculations			
			Mean outcome (standard deviation[2])					
Outcome measure	Study sample	Sample size (students)	*SMART* group	Comparison group	Mean difference[3] (*SMART* – comparison)	Effect size[4]	Statistical significance[5] (at $\alpha = 0.05$)	Improvement index[6]
Baker, Gersten, & Keating, 2000 (randomized controlled trial)—One year of intervention[7]								
Woodcock Reading Mastery Test–Revised (WRMT-R): Passage Comprehension subtest	Grade 1	84	449.30 (24.40)	443.20 (14.20)	6.10	0.30	ns	+12

ns = not statistically significant

1. This appendix presents interim findings for measures that fall in the comprehension domain. First-grade scores, which reflect student outcomes after one year of the intervention, are reported here. Second-grade scores (after two years of the intervention) were used for rating purposes and are reported in Appendix A3.3.
2. The means for the Baker, Gersten, & Keating (2000) study were adjusted for student pretest scores on two measures: the Phonemic Segmentation test and the word identification subtest of the WRMT-R. The standard deviation across all students in each group shows how dispersed the participants' outcomes are; a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, see Technical Details of WWC-Conducted Computations.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group.
7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools or multiple outcomes within one domain. See Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. In the case of Baker, Gersten, & Keating (2000), no corrections were needed for this domain.

Appendix A5.1 *Start Making a Reader Today®* rating for the alphabetics domain

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

For the outcome domain of alphabetics, the WWC rated *Start Making a Reader Today®* as having potentially positive effects. It did not meet the criteria for positive effects because only one study met WWC evidence standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because the intervention 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 single study of *SMART®* showed statistically significant 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 studies of *SMART®* showed statistically significant or substantively important negative effects, and no studies showed 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 of *SMART®* showed statistically significant positive effects.

and

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

  Met. The single study of *SMART®* did not show 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 *Start Making a Reader Today®* 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 *Start Making a Reader Today®* as having potentially positive effects. It did not meet the criteria for positive effects because only one study met WWC evidence standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because the intervention 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 single study of *SMART®* showed statistically significant 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 studies of *SMART®* showed statistically significant or substantively important negative effects, and no studies showed 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 of *SMART®* showed statistically significant positive effects.

and

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

  Met. The single study of *SMART®* did not show 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 A5.3 *Start Making a Reader Today®* 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 *Start Making a Reader Today®* as having potentially positive effects. It did not meet the criteria for positive effects because only one study met WWC evidence standards. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, negative effects) were not considered because the intervention 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 single study of *SMART®* showed statistically significant 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 studies of *SMART®* showed statistically significant or substantively important negative effects, and no studies showed 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 of *SMART®* showed statistically significant positive effects.

and

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

  Met. The single study of *SMART®* did not show 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 A6 Extent of evidence by domain

Outcome domain	Number of studies	Sample size		Extent of evidence[1]
		Schools	Students	
Alphabetics	1	6	84	Small
Comprehension	1	6	84	Small
Fluency	1	6	84	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."