REL SOUTHWEST Regional Educational Laboratory Southwest

5.4.3 Blended Learning Evidence Review

Date: January 6, 2021

To: **Oklahoma Department of Education**

From: Regional Educational Laboratory Southwest

Subject: Using the nonregulatory Every Student Succeeds Act (ESSA) standards to assess the level of evidence in blended learning

Introduction

Regional Educational Laboratory (REL) Southwest conducted an evidence review to identify blended learning interventions that are effective in improving student academic achievement and engagement. The evidence review found evidence for the following types of interventions (see table 1 for ESSA tiers):

Mathematics

Mathematics Games

- Math video games (Tier 1, Strong Evidence)
- Math Snacks (Tier 1, Strong Evidence)

Mathematics Curriculum

- DreamBox Learning (Tier 1, Strong Evidence)
- Class.com Algebra I (Tier 1, Strong Evidence)
- SimCalc (Tier 1, Strong Evidence)
- Enhanced Anchored Instruction (Tier 2, Moderate Evidence)

Mathematics Problem Sets

- ASSISTments (Tier 1, Strong Evidence)
- Tenmarks (Tier 3, Promising Evidence)

Reading

Online Reading Tutoring

- Intelligent Tutoring of the Structure Strategy (Tier 1, Strong Evidence)
- Intelligent Tutoring of the Structure Strategy, adaptable version (Tier 3, Promising Evidence)

Supplemental Reading Instruction

- READ 180 (Tier 1, Strong Evidence)
- Passport Reading Journeys (Tier 1, Strong Evidence)
- Reading Plus (Tier 2, Moderate Evidence)
- Achieve3000 (Tier 2, Moderate Evidence)
- Affable Reading Tutor (Tier 3, Promising Evidence)
- Improving Comprehension Online (Tier 3, Promising Evidence)

Science

Online Science Units

- Project eText Supports for Collaborative Online Learning and Academic Reading (Tier 3, Promising Evidence)

Screening

REL Southwest conducted a literature search to locate journal articles, reports, and other research-based documents focused on blended learning, systematically reviewed relevant studies, classified the quality of the studies using a predetermined rubric, and synthesized the evidence findings. Literature for the review was located using the 932 studies included by the What Works Clearinghouse (WWC) as part of its Studies of Distance Learning Review.

In response to COVID-19, the WWC has amassed a list of 932 distance learning studies identified through nominations from the education research field and identification of relevant entries in Education Resources Information Center (ERIC) and the WWC databases. REL Southwest reviewed the studies included on the WWC site (https://ies.ed.gov/ncee/wwc/DistanceLearningStudy) and determined which studies should be included in the blended learning evidence review summary. To be included in the blended learning evidence review summary, studies had to meet the following qualifications:

- Were conducted within the last 20 years.
- Described interventions that could feasibly be used for blended learning (that is, include a component to be completed on a computer, could feasibly be completed by students from home, and require minimal teacher interaction).
- Included elementary school, middle school, or high school students.
- Demonstrated statistically significant and positive effects (or associations) on the outcomes of interest.
- Included a treatment group and a comparison group.
- Were conducted in the United States.

Review

REL Southwest staff compared each identified study to the criteria included on an IES-developed template (see appendix C). The Institute of Education Sciences (IES)-developed template includes criteria related to each component included in the ESSA levels of evidence shown in table 1.

Table 1. ESSA levels of evidence

	Tier 1 Strong evidence	Tier 2 Moderate evidence	Tier 3 Promising evidence	Tier 4 Demonstrates a rationale
Study design	Experimental study	Quasi-experimental study	Correlational study with statistical controls for selection	Provides a well-specified logic model informed by research or evaluation
WWC standard	Meets WWC evidence standards without reservations	Meets WWC evidence standards with or without reservations	N/A	N/A
Favorable effects	Shows a statistically significant and positive effect of the intervention on a student outcome or other relevant outcome	Shows a statistically significant and positive effect of the intervention on a student outcome or other relevant outcome	Shows a statistically significant and positive effect of the intervention on a student outcome or other relevant outcome	Relevant research or an evaluation that suggests the intervention is likely to improve a student outcome or other relevant outcome
Other effects	Is not overridden by statistically significant and negative evidence from other findings in studies that meet WWC evidence standards with or without reservations	Is not overridden by statistically significant and negative evidence from other findings in studies that meet WWC evidence standards with or without reservations	Is not overridden by statistically significant and negative evidence from other findings in studies that meet WWC evidence standards with or without reservations	An effort to study the effects of the intervention, ideally producing promising evidence or higher, will happen as part of the intervention or is underway elsewhere
Sample size and overlap	Includes a large sample and a multisite sample, overlapping with populations and settings proposed to receive the intervention	Includes a large sample and a multisite sample, overlapping with populations OR settings proposed to receive the intervention	N/A	N/A

N/A is not applicable.
Note: This table is based on table 1 in *Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments*. U.S. Department of Education. (2016). *Non-regulatory guidance: Using evidence to strengthen education investments*. Washington, DC: Author.

For the purposes of this evidence review, studies met Tier 1 and 2 population and setting requirements if they included grades K–12 students in the United States. These broad definitions were used in order to be relevant to the entire state of Oklahoma, which includes rural, urban, and suburban schools and districts. Sample sizes were considered to be large if the study includes at least 350 students.

Each intervention is listed by intervention type in appendix A. The intervention type, the name of the intervention, the author(s) of the study reviewed, the grade levels included in the study, the location(s) in which the study was conducted (rural, urban, town, or suburban), and the state in which the study was conducted are described in table A1. The table also displays the ESSA evidence tier rating each study received.

Additional information about each rating is available in the study summaries included in appendix B and the completed evidence review templates for each study that are included in appendix C.

Appendix A. Intervention ratings

Table A1. Intervention ratings by intervention type

Intervention	Intervention type	Author	Grades			Location	State	ESSA tier
			K–5	6–8	9–12			
Mathematics achievement								
Mathematics games								
Math video games	Online mathematics games	Chung, G. K. W. K., Choi, K., Baker, E., & Cai, L. (2014)		X		Rural, urban, suburban	CA	Tier 1, Strong Evidence
Math Snacks	Online mathematics games	Wiburg, K., Chamberlin, B., Valdez, A., Trujillo, K., & Stanford, T. B. (2016)	X			ns	NM	Tier 1, Strong Evidence
Mathematics curriculum								
DreamBox Learning (mathematics)	Adaptive online mathematics curriculum	Wang, H., & Woodworth, K. (2011)	X			Urban	CA	Tier 1, Strong Evidence
Class.com Algebra I	Online algebra course	Heppen, J. B., Walters, K., Clements, M., Faria, A., Tobey, C., Sorensen, N., & Culp, K. (2012)		X		Rural	VT, ME	Tier 1, Strong Evidence
SimCalc	Interactive software-based curriculum	Roschelle, J., Shechtman, N., Tatar, D. G., & Hegedus, S. (2010)		X		ns	TX	Tier 1, Strong Evidence
Enhanced Anchored Instruction	Blended learning mathematics curriculum	Bottge, B. A., Ma, X., Gassaway, L., Toland, M. D., Butler, M., & Cho, S. (2014)		X		ns	ns	Tier 2, Moderate Evidence
Mathematics problem sets								
ASSISTments	Online mathematics problem sets	Roschelle, J., Feng, M., Murphy, R. F., & Mason, C. A. (2016)		X		ns	ME	Tier 1, Strong Evidence
Mathematics engagement								
Mathematics problem sets								
TenMarks	Online mathematics problem sets	Lynch, K., & Kim, J. S. (2017)	X	X	X	Urban	ns	Tier 3, Promising Evidence
Reading achievement								

Intervention	Intervention type	Author	Grades			Location	State	ESSA tier
			K–5	6–8	9–12			
Online reading tutoring								
Intelligent Tutoring of the Structure Strategy	Online tutoring system	Wijekumar, K., Meyer, B., & Lei, P. (2012) Wijekumar, K., Meyer, B. J. F., & Lei, P. (2017) What Works Clearinghouse (2020)	X	X		Rural, suburban	ns	Tier 1, Strong Evidence
Intelligent Tutoring of the Structure Strategy (adaptable version)	Online tutoring system	Meyer, B. J. F., Wijekumar, K. K., & Lin, Y. (2011)	X			Suburban	PA	Tier 3, Promising Evidence
Supplemental reading curriculum								
READ 180	Adaptive instructional software	Swanlund, A., Dahlke, K., Tucker, N., Kleidon, B., Kregor, J., Davidson-Gibbs, D., & Halberg, K. (2012) Interactive, Inc. (2002) What Works Clearinghouse (2016)		X	X	Urban	WI	Tier 1, Strong Evidence
Passport Reading Journeys	Supplemental blended learning reading curriculum	Vaden-Kiernan, M., Caverly, S., Bell, N., Sullivan, K., Fong, C., & Atwood, E. (2012)		X		ns	LA	Tier 1, Strong Evidence
Reading Plus	Software-based scaffolded silent reading program	Spichtig, A. N., Gehsmann, K.M., Pascoe, J.P. & Ferrara, J.D. (2019)	X			Urban	ns	Tier 2, Moderate Evidence
Achieve3000	Supplemental online literacy program	Borman, G. D., Park, S. J., & Min, S. (2015)	X	X		Urban	CA	Tier 2, Moderate Evidence
Affable Reading Tutor	Online reading strategy lessons	Kim, Y. (2013)	X			ns	ns	Tier 3, Promising Evidence
Improving Comprehension Online	Online strategic digital reading environment	Proctor, C. P., Dalton, B., Uccelli, P., Biancarosa, G., Mo, E., Snow, C., & Neugebauer, S. (2011)	X			Urban	ns	Tier 3, Promising Evidence

Intervention	Intervention type	Author	Grades			Location	State	ESSA tier
			K–5	6–8	9–12			
Science achievement								
Online science units								
Project eText Supports for Collaborative Online Learning and Academic Reading	Online, interactive science units	Terrazas-Arellanes, F. E., Strycker, L. A., Walden, E. D., & Gallard, A. (2017)		X		ns	OR, GA	Tier 3, Promising Evidence

ns = Not specified.

Appendix B. Study summaries

Chung, G. K. W. K., Choi, K., Baker, E., & Cai, L. (2014). *The effects of math video games on learning: A randomized evaluation study with innovative impact estimation techniques*. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing, University of California at Los Angeles. https://eric.ed.gov/?id=ED555700

- **Intervention examined in the study:** Math video games
- **Specified outcome(s) of interest:** Mathematics achievement
- **Specified population(s) of interest:** Middle school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Chung et al. (2014). Eight math video games were developed for this study through the process of knowledge specification, software design and testing, teacher professional development, and assessment development. Four games covered fractions concepts (number line concepts, fraction addition, relationships among whole numbers and fractions using multiplication and division, direct variation), and four games covered solving equations concepts (integer operations, expressions, solving equations—conceptual, solving equations—procedural). The four fractions games were Wiki Jones, Save Patch, Tlaloc's Book, and Rosie's Rates, and the four solving equations games were Monster Line, Expresso, Zooples in Space, and AlgebRock.

Teachers were expected to dedicate 40 minutes of time per day to use the math video games for 12 instructional days.

Who participated in the study. The sample included 59 grade 6 classrooms in 23 rural, urban, and suburban schools. Classrooms were randomly assigned within each school to either the treatment or comparison condition. The comparison condition was similar to the treatment condition, expect the four math video games focused on equation solving.

The study included 1,468 students. Approximately 50% of students were female, 49% were Hispanic, 24% were White, 5% were Black, 4% were Asian, 2% were American Indian, and 5% were from an "other" race or ethnicity.

What the study found. The study found positive, statistically significant effects favoring the treatment group of math video games on students' mathematics achievement as measured by the Fractions Knowledge posttest.

Cost. Not available.

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/80943). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Wiburg, K., Chamberlin, B., Valdez, A., Trujillo, K., & Stanford, T. B. (2016). Impact of Math Snacks games on students' conceptual understanding. *Journal of Computers in Mathematics and Science Teaching, 35*(2), 173–193.
https://eric.ed.gov/?id=EJ1095367#:~:text=Teachers%20integrated%20four%20%22Math%20Snacks,number%20systems%2C%20fractions%20and%20decimals.&text=Students'%20mean%20gains%20over%205,group%20not%20receiving%20the%20intervention[1]

- **Intervention examined in the study:** Math Snacks
- **Specified outcome(s) of interest:** Mathematics achievement
- **Specified population(s) of interest:** Elementary school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Wiburg et al. (2016). The overarching goal of the Math Snacks games is to help middle school students understand the concepts behind traditionally misunderstood mathematical content by encouraging multiple and visual representations of numbers and operations, providing a context or situation in which numbers and operations are used, and demonstrating understanding of concepts through applications using numbers and operations. The Math Snacks games are not designed to be a comprehensive curriculum but, rather, a series of tools to address specific key conceptual topics that students consistently struggle to understand.

The suite of Math Snacks products includes six animations and five games, all of which are available in English and Spanish and freely available to play online (http://mathsnacks.org). Math Snacks also includes various supporting materials for classroom use such as teacher and learner guides, "how-to" teaching videos, and comic book transcripts. The current study included four of the Math Snacks games: Monster Schoolbus, which helps students think strategically about how to make numbers that add up to exactly 10, 100, or 1 using whole numbers, fractions, and decimals; Gate, which builds familiarity with large and small numbers, builds number sense and place value understanding, and naturally connects numbers with addition, subtraction, multiplication, and division; Ration Rumble, which focuses on whole numbers, fractions, and two- and three-part ratios; and Game Over Gopher, which helps students understand plane coordinates and the x-y coordinate system.

Teachers in the study were asked to use the four games, engage in guided discussion with their classes, and lead students in additional inquiry-based activities related to game play. The lesson protocol for each Math Snacks game included a gameplay session with group discussion lasting 30–40 minutes, hands-on activities related to gameplay lasting 30–40 minutes, and a second gameplay session with final discussion lasting 30–40 minutes. For the study, teachers were instructed to use the recommended lesson protocol and spend 90–120 minutes of class time per lesson during a five-week period.

Who participated in the study. The sample consisted of 28 teachers and their 741 students from a low-income school district in southern New Mexico.

Teachers were randomly assigned to treatment and comparison conditions using stratified blocked random assignment. Classrooms were stratified based on school performance (low-, medium-, and high-performing) and school characteristics. Teachers in the comparison condition continued business-as-usual, which is not described.

[1] Not available for free.

What the study found. The study found a statistically significant effect of the program favoring the treatment group on students' mathematics achievement as measured by the researcher-developed Measure of Mathematics Learning II test.

Cost. Free. https://mathsnacks.com/

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/89722). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study included a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable. The assessment was developed by the researchers using released items from the state standardized test and original items developed by staff on the project.

Wang, H., & Woodworth, K. (2011). *Evaluation of Rocketship Education's use of DreamBox Learning's online mathematics program.* Menlo Park, CA: SRI International.
https://go.dreambox.com/rs/715-ORW-647/images/ef-2011-08-SRI_Rocketship_Evaluation.pdf

- **Intervention examined in the study**: DreamBox Learning
- **Specified outcome(s) of interest**: Mathematics achievement
- **Specified population(s) of interest**: Elementary school students
- **Specified setting(s) of interest**: United States

Brief description of the intervention excerpted from Wang et al. (2011). DreamBox Learning provides an adaptive learning environment that tailors instruction to students' needs and provides feedback to teachers to facilitate student learning. DreamBox generates information on program use (for example, notifications of students who are struggling with a concept or unit or working inefficiently in the program) and student progress (proficiency and growth) but does not prescribe a specific role for teachers. DreamBox Learning recommends that students spend a minimum of 90 minutes per week on the program.

The DreamBox Learning curriculum is based on the National Council of Teachers of Mathematics standards and has been aligned with Common Core State Standards. It focuses on learning numbers and operations, place value, and number sense. The number-related activities often make use of the open number line, thereby touching upon measurement and geometry.

Who participated in the study. The study included 583 kindergarten and grade 1 students at three Rocketship Education charter elementary schools in San Jose, California. The number of classrooms in the study is not reported. Within grade levels, students were randomly assigned to either the intervention or comparison groups at a 4:1 ratio. Students in the comparison condition received no additional mathematics instruction. However, they received additional literacy instruction via an online program during the time and in the same location as intervention group students using the DreamBox Learning software.

About 81% of the sample were English learner students, 88% received free or reduced-price lunch, and 53% were female. About 87% of the sample was Hispanic. Other racial/ethnic group information is not provided.

What the study found. The study found positive, statistically significant effects of DreamBox Learning favoring the treatment group on students' mathematics achievement as measured by the Northwest Evaluation Association Measures of Academic Progress Mathematics assessment.

Cost. Contact publisher. https://www.dreambox.com/

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/78475). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Heppen, J. B., Walters, K., Clements, M., Faria, A., Tobey, C., Sorensen, N., & Culp, K. (2012). *Access to Algebra I: The effects of online mathematics for grade 8 students* (NCEE 2012–4021). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.
https://eric.ed.gov/?id=ED527394

- **Intervention examined in the study**: Class.com Algebra I
- **Specified outcome(s) of interest**: Mathematics achievement
- **Specified population(s) of interest**: Middle school
- **Specified setting(s) of interest**: United States

Brief description of the intervention excerpted from Heppen et al. (2012). The online Algebra I course used in the study is a completely web-based course offered by Class.com, based in Lincoln, Nebraska. The Algebra I course was one of Class.com's existing products. As implemented for the study, the online Algebra I course had three instructional components: the online course software, an online teacher (provided by Class.com), and an on-site proctor (provided by the school).

Researchers determined that the topics covered in Class.com's Algebra I course were similar to those in typical Algebra I textbooks used in the region. The material for each topic is presented in the form of an electronic, interactive textbook that consists of computerized direct instruction; guided practice ("your-turn" problems) and practice problem sets, both with automated feedback; and quizzes and exams that provide immediate scores. Other activities include demonstrations of content materials, audio clips, interactive applets that present questions and guided solutions, a messaging feature through which students can send and receive messages from the online teachers, and a discussion board to which students can post questions and comments.

Who participated in the study. The study included 68 middle schools located in rural Vermont and Maine. Schools were randomly assigned to treatment and comparison conditions. Schools in the comparison condition continued business-as-usual by implementing their usual mathematics curriculum.

The analytic sample included 440 grade 8 students. About 49% of the sample was female, and 32% of students were eligible for free or reduced-price lunch. About 7% of the sample was from minority group racial/ethnic backgrounds.

What the study found. The study found positive, statistically significant effects of Class.com Algebra I favoring the treatment group on students' mathematics achievement as measured by the Promise Assessment Algebra Posttest.

Cost. Not available.

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/86375). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K-12 in the U.S. For this evidence review, anywhere in the U.S. was acceptable.

Roschelle, J., Shechtman, N., Tatar, D. G., & Hegedus, S. (2010). Integration of technology, curriculum, and professional development for advancing middle school mathematics: Three large-scale studies. ***American Educational Research Journal, 47*****(4), 833–878.**
https://www.researchgate.net/publication/250184906_Integration_of_Technology_Curriculum_and_Professional_Development_for_Advancing_Middle_School_Mathematics_Three_Large-Scale_Studies

- **Intervention examined in the study:** SimCalc MathWorlds
- **Specified outcome(s) of interest:** Mathematics achievement
- **Specified population(s) of interest:** Middle school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Roschelle et al. (2010). The SimCalc MathWorlds software provides a "representational infrastructure" that is central to enabling this approach. Most distinctively, the software presents animations of motion. Students can control the motions of animated characters by building and editing mathematical functions in either graphical or algebraic forms. After editing the functions, students can press a *play* button to see the corresponding animation. Functions can be displayed in algebraic, graphical, and tabular form, and students are often asked to tell stories that correspond to the functions (and animations). The program developers view student use of the software and teacher explanations and teacher-led discussions as complementary activities. They expect that students can learn more from teacher-led presentations and discussions when they have had direct experience with the software, as in a preparation for future learning paradigm.

The authors developed two replacement mathematics units—one grade 7 unit and one grade 8 unit—to cover mathematics content typically covered in these grades. The grade 7 curriculum, Managing the Soccer Team, addresses central concepts of proportionality, while the grade 8 curriculum, Designing Cell Phone games, addresses linear function and average rate.

The materials for both units were student workbooks, a teacher's guide, and corresponding SimCalc MathWorlds files. The package was designed to be used daily over a two- to three-week period to meet all the requirements to cover an existing topic in the curriculum (that is, rate and proportionality in grade 7 and linear function in grade 8) while also introducing a more advanced perspective. The computer files configured the software to fit a particular lesson. Teachers were required to have access to computer laboratories or classroom computer sets, but students could share computers. Teachers could teach their unit by simply following the problems and questions posed in the workbook in the order given. These were not "scripted" curricula, but they did suggest movements between small-group work, whole-class discussion, and seat work. The teacher guides provided lesson plans that teachers could adapt and hints on possible student responses.

Treatment teachers attended a three-day summer workshop introducing the respective SimCalc replacement units. The teachers worked through the SimCalc materials as learners, experiencing a complete but compressed version of the entire unit. The workshop facilitators emphasized the mathematics in the replacement unit and the mathematics knowledge needed for teaching the unit. The facilitator also modeled best-practice pedagogical methods and drew attention to the techniques she used to prompt thorough exploration of mathematical ideas. In addition, in the grade 7 experiment year 1, treatment teachers attended a two-day workshop called TEXTEAMS, which addressed the mathematical knowledge for teaching rate and proportionality, before the three-day SimCalc material workshop.

The grade 8 experiment used a train-the-trainers model. The SimCalc team trained six teacher educators from five regions of Texas in a two-day workshop. The workshop covered the learning goals, the MathWorlds software, and the curriculum workbooks. Each of these participants then returned to their home region and, at a later date, facilitated a three-day summer workshop for teachers participating in this study.

Who participated in the study. The study includes two randomized controlled trials.

The first experiment, the grade 7 experiment year 1, began in summer 2005 with grade 7 content, students, and teachers. The sample included 1,621 students from 73 schools. About 44% of the sample was White, 49% was Hispanic, 4% was Black, and 2% was Asian. About 50% of the sample was female.

The second, the grade 8 experiment, began in summer 2006 and was designed to extend the findings of the grade 7 experiment year 1 to grade 8 content, students, and teachers and investigate a train-the-trainers approach. The sample included 825 students from 42 schools. About 58% of the sample was White, 32% was Hispanic, 8% was Black, and 1% was Asian. About 47% of the sample was female.

Schools were randomly assigned to treatment and comparison conditions. In both the grade 7 and grade 8 experiments, the business-as-usual comparison curriculum addressed, within the same timeframe as the SimCalc unit, similar basic concepts but provided less coverage of more complex concepts.

What the study found. The study found statistically significant impacts favoring the treatment group on students' mathematics achievement as measured by a grade 7 researcher-created rate and proportions assessment and a grade 8 researcher-created linear functions assessment.

Cost. Contact publisher. https://simcalc.sri.com/technology/index.html

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/78623). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Bottge, B. A., Ma, X., Gassaway, L., Toland, M. D., Butler, M., & Cho, S. (2014). Effects of blended instructional models on math performance. ***Exceptional Children, 80*****(4), 423–437.** https://www.researchgate.net/publication/273585883_Effects_of_Blended_Instructional_Models_on_Math_Performance

- **Intervention examined in the study**: Enhanced Anchored Instruction (EAI)
- **Specified outcome(s) of interest**: Mathematics achievement
- **Specified population(s) of interest**: Middle school students
- **Specified setting(s) of interest**: United States

Brief description of the intervention excerpted from Bottge et al. (2014). The EAI curriculum is an instructional method developed for improving the computation and problem-solving skills of middle school students with disabilities in math. EAI includes interactive lessons with computers, anchored problems displayed through video, and applied projects that are hands on, using a mix of explicit instruction and problem-solving activities. Realistic problems are embedded in interesting contexts and presented in interactive, video-based formats. The anchors consist of an 8- to 15-minute video in which adolescents are shown attempting to solve a challenging problem.

The intervention consists of five units: Fractions at Work, which is a series of computer modules that helped build competence with rational numbers; Fraction of the Cost, which is a computer-based exercise where students managed available funds and materials in order to build a skateboard ramp; a hovercraft project, which is a hands on activity where students designed and built rollover cages for a hovercraft; Kim's Komet, which is a video episode that required students to use time and distance to calculate speed; and a grand pentathlon during which students competed in a pentathlon of events and graphed times and distances from the event results and used them to calculate speed.

Class sessions typically last between 45 and 60 minutes, although some classes met for 90 minutes.

Who participated in the study. The study included 335 grades 6–8 students in 31 schools in a large metropolitan area in the southeastern United States. Schools were randomly assigned to treatment and comparison conditions. Teachers in comparison schools continued business-as-usual, following their school's normal math curricula.

Approximately 74% of the sample received free or reduced-price lunch, and 33% were female. About 79% of the sample was White, 16% were Black, 1% were American Indian, and 4% were from other racial/ethnic backgrounds. About 38% of the sample had a mild mental disability, 15% had a specific learning disability, 8% had autism, 6% had an emotional/behavioral disability, and 34% had another health impairment.

What the study found. The study found positive, statistically significant effects of EAI favoring the treatment group on students' mathematics achievement as measured by the Fractions Computations Test.

Cost. Not available.

Caveats. None. The study meets ESSA Tier 2, Moderate Evidence for the mathematics achievement outcome. The study ***Meets WWC Standards with Reservations*** because it is a cluster randomized controlled trial with low cluster-level attrition that provides evidence of effects on clusters by demonstrating that the analytic sample of individuals is representative of the clusters (https://ies.ed.gov/ncee/wwc/Study/84959). The study showed a statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden

by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that met WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—grades K–12 students in the United States. For this evidence review, any setting in the United States was acceptable.

Roschelle, J., Feng, M., Murphy, R. F., & Mason, C. A. (2016). Online mathematics homework increases student achievement. ***AERA Open, 2*****(4), 1–12.**
https://eric.ed.gov/?id=EJ1194398[2]

- **Intervention examined in the study:** ASSISTments
- **Specified outcome(s) of interest:** Mathematics achievement
- **Specified population(s) of interest:** Middle school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Roschelle et al. (2016). The ASSISTments technology is a web-based platform that is made available to schools without charge. ASSISTments was developed with funding from the National Science Foundation and the U.S. Department of Education's Institute of Education Sciences. Content in ASSISTments consists of mathematics problems with answers and hints (and, in some cases, more extensive online guidance on how to solve the problem). These mathematics problems are bundled into problem sets that teachers assign to their students. As the students work online, the computer informs them about the correctness of a solution and offers guidance, if available for that problem. Teachers receive reports on how students perform on the assigned problem sets, including information about common wrong answers.

Two types of ASSISTments content were included in the intervention for this study. One type is closely linked to existing textbook homework problems or to related homework problems that teachers write themselves. All the homework problems from all the mathematics textbooks used in the treatment group were entered into ASSISTments. Therefore, each teacher had access to every homework problem in his or her textbook. The ASSISTments interface enabled teachers to bundle these into problem sets to assign to their students. The second kind of content was specifically developed for mastery-oriented skill practice and was called "skill builders." Existing skill builders in ASSISTments cover more than 300 topics in middle school math. Teachers can assign skill builders to students to provide practice problems that focus on a targeted skill until they reach a teacher-defined criterion for correctness (for example, a streak of three correct answers on similar math problems). Students can be checked at one- and two-week intervals for retention of skills demonstrated on past problem sets. For both types of content, teachers (rather than the system or intervention developers) decided how much and what type of homework was assigned, and they were asked to do so in accordance with their existing school homework policy.

The intervention also incorporated teacher professional development aimed to increase teachers' readiness to use ASSISTments. The target practices included encouraging students to rework problems they initially got wrong (and to enter revised answers), focusing attention on the homework problems that students did not answer correctly, reviewing correct solution processes for the problems that students found difficult, and discussing common wrong answers to address underlying misunderstandings. The professional development training is intended to help teachers learn to use ASSISTments information to make instructional decisions such as which problem to focus on or which student to spend time with. It also coaches teachers to determine when a topic needs to be retaught or student mastery is high enough to move on. Teachers were able to personalize ASSISTments for individual students, groups of students, or the whole class. During their first year of implementation, teachers received coaching from a member of the ASSISTments team who visited every teacher in their classroom at least three times. The coach also conducted remote webinars two to three times per year. During the second year of implementation, teachers taught a new group of students. Data from these students are included in the impact analyses.

[2] Not available for free.

Who participated in the study. The study included 2,728 grade 7 students from 43 schools located in Maine. Approximately, one-half (49%) of the sample was male, and most students (93%) in the study were White. The remaining 7% of students in the sample were from other racial/ethnic backgrounds. About 39% of the sample was eligible for free or reduced-price lunch.

Schools were randomly assigned to treatment and comparison groups. Grade 7 teachers in treatment schools implemented ASSISTments, while grade 7 teachers in the comparison group continued business-as-usual.

What the study found. The study found that students in the treatment group scored statistically significantly higher than the comparison group on the TerraNova Common Core mathematics assessment.

Cost. Free. https://new.assistments.org/

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the mathematics achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/86375). The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Lynch, K., & Kim, J. S. (2017). Effects of a summer mathematics intervention for low-income children: A randomized experiment. *Educational Evaluation and Policy Analysis, 39*(1), 31–53. https://scholar.harvard.edu/jameskim/publications/effects-summer-mathematics-intervention-low-income-children

- **Intervention examined in the study:** TenMarks
- **Specified outcome(s) of interest:** Mathematics engagement
- **Specified population(s) of interest:** Elementary, middle, and secondary school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Lynch and Kim (2017). TenMarks is an online mathematics program in which participating students complete "worksheets" of math questions adjusted to their skill level. According to the author, key components of the TenMarks program include curriculum materials that adjusted content to children's individual skill levels as they worked, embedded text and video "hints" that students could click on for assistance, and digital games that children could unlock as rewards for completing worksheets. Students are intended to complete three worksheets each week for 10 weeks. It was hypothesized that participating in an online summer mathematics practice program would increase low-income students' summer home math engagement and that TenMarks worksheet completion would improve students' knowledge of mathematics and distal outcomes of mathematics test scores. In this study, the authors examined whether being randomly assigned to an offer of a free summerlong subscription to a TenMarks or to an offer of the TenMarks program plus a free laptop computer had an impact on students' mathematics engagement, mathematics achievement, and mathematics attitudes compared with their peers in the business-as-usual control group. Treatment students had access to the TenMarks program for 10 weeks throughout the summer. Although implemented as a summer learning program in this study, the intervention is not specifically designed to be a summer-only product.

Who participated in the study. The study was conducted in four schools (one elementary school, one middle school, and middle/high school, and one high school) in a large, urban school district in the northeastern United States and included 263 students. Approximately 38% of the sample was Black, 31% was Hispanic, 11% was White, 10% was Asian, and 2% were from a different racial/ethnic group. Sixty-two percent of the sample was female, and 59% were eligible for free or reduced-price lunch.

Students were randomly assigned to a treatment group in which students participated in the TenMarks curriculum, a treatment group in which students participated in the TenMarks curriculum and received a free laptop computer, and a business-as-usual control group. Students in the business-as-usual control group were free to participate in whatever other summer activities were available to them. Approximately 43% of control students reported participating in other summer programs, and 16% reported attending summer school.

What the study found. The study found positive, statistically significant effects of the program on students' summer home and family mathematics engagement as measured by a researcher-created survey.

Cost. Not available. https://tenmarks.typepad.com/tenmarks/

Caveats. The study meets ESSA Tier 3, Promising Evidence for the mathematics engagement outcome based on its design, setting, and sample. Although the study used a randomized controlled trial design, the WWC determined that the study did not meet WWC group design standards due to high attrition and lack of baseline equivalence between intervention and comparison groups. The study did include statistical controls for selection bias. The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in

studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences.

What Works Clearinghouse. (2020). *Web-based Intelligent Tutoring for the Structure Strategy (ITSS)* (Intervention Report). Washington, DC: Author.
https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_ALitss_IR_apr2020.pdf

- **Intervention examined in the study**: Intelligent Tutoring for Structure Strategy (ITSS)
- **Specified outcome(s) of interest**: Reading achievement
- **Specified population(s) of interest**: Elementary and middle school students
- **Specified setting(s) of interest**: United States

Studies cited in the intervention report

Tier 1, Strong Evidence
Wijekumar, K., Meyer, B. J. F., & Lei, P. (2012). Large-scale randomized controlled trial with 4th graders using Intelligent Tutoring of the Structure Strategy to improve nonfiction reading comprehension. *Educational Technology Research and Development, 60*(6), 987–1013. https://www.researchgate.net/publication/257682582_Large-scale_randomized_controlled_trial_with_4th_graders_using_intelligent_tutoring_of_the_structure_strategy_to_improve_nonfiction_reading_comprehension

Wijekumar, K., Meyer, B. J. F., & Lei, P. (2017). Web-based text structure strategy instruction improves seventh graders' content area reading comprehension. *Journal of Educational Psychology,* 109(6), 741–760. https://www.apa.org/pubs/journals/features/edu-edu0000168.pdf

Brief description of the intervention excerpted from WWC Intervention Report (2020). ITSS models how to use the structure of the factual text to improve understanding and recall. An animated person, called an Intelligent Tutor (I.T.), explains the five main text structures: comparisons, problems and solutions, cause and effect, sequences, and descriptions. Then, the I.T. displays and reads aloud a passage that illustrates a text structure, modeling appropriate techniques for understanding the displayed passage. Techniques include finding signaling words, identifying the text structure, understanding the main idea of the text, and summarizing the text in written form. ITSS provides approximately 12 lessons for each text structure.

ITSS offers practice exercises using passages from a variety of substantive areas, including science, social studies, sports, and current events. It assesses student progress and provides learners with immediate feedback. After completing a lesson, the program allows students to practice what they learned in a series of exercises, and students work at their own pace. Each exercise involves reading a passage and then completing a series of tasks, such as finding signaling words, describing the main idea of the text, and summarizing the passage. Most exercises in ITSS follow this sequence:

1. Students read nonfiction text displayed on the screen.
2. Students identify the author's top-level text structure (that is, comparison, problem and solution, cause and effect, sequence, or description).
3. Students select signaling words used in the text.
4. Students write a sentence summarizing the main idea of the text, which is displayed on the screen, using the structure strategy.
5. Students generate a thorough summary of the text using the ITSS comprehension tools such as an annotated matrix, diagram, sequence texts, or texts with embedded text structures.

6. Students write a "recall" summary of the text after the text is removed from view. This recall exercise becomes more challenging as students progress through the lessons. In early lessons, students recall and summarize the text while having access to their (or the I.T.'s) main idea summaries from steps 4 or 5. Later practice lessons remove this aid, and students monitor their recall using the structure strategy. More specifically, students use the text structure as a retrieval and writing guide. They monitor their understanding and recall through summarizing the main points according to the recall pattern identified for a particular text structure.
7. Students receive feedback from the I.T. after each step above. In the two studies that contributed to this report, after several unsuccessful attempts, the I.T. offered students hints, showed a model summary of the text, and asked students to correct their work. The students were not allowed to copy the model summary but were asked to think about the text's structure and main idea and then revise their work. If students were unsuccessful after repeated feedback and increased help from the I.T., the I.T. told students to ask teachers for assistance.

The tasks can vary across lessons. Some lessons ask students to write or select a good title for a text based on text structure, write their own texts for each text structure by selecting signaling words from a specified short list, and correct a fictitious student's muddled use of the text structure strategy. As students complete the exercises, the passages become more difficult.

Who participated in the study. The Wijekumar et al. (2012) study included 4,856 grades 4 and 5 students from 259 classrooms in 131 schools in the mid-Atlantic region. Additional descriptive information for the sample is not provided. The study used a multisite cluster randomized trial design in which teachers' classrooms were randomly assigned to treatment and comparison conditions within schools. If a school did not have enough classrooms, schools were grouped with similar characteristics to form a site before random assignment of classrooms to treatment conditions. Students in comparison classrooms received the typical language arts curriculum, which was the same curriculum used by the intervention group classrooms within the same school except for the partial substitution of ITSS. Total daily and weekly amounts of language arts instruction were the same for both intervention and comparison classrooms.

The Wijekumar et al. (2017) study included 1,868 students from 108 grade 7 classrooms in 25 rural and suburban middle schools located in two states. Classrooms were randomly assigned within schools to treatment and comparison conditions. Teachers in the comparison condition continued business-as-usual, which consisted of the same curriculum used by the treatment teachers without the use of ITSS. The total daily and weekly amount of language arts instruction was the same for treatment and comparison teachers.

What the study found. The Wijekumar et al. (2012) and Wijekumar et al. (2017) studies found positive, statistically significant effects of ITSS favoring the treatment group on students' reading achievement as measured by the Gray Silent Reading Test and other researcher-created assessments measuring a variety of structure-related outcomes.

Cost. Not available.

Caveats. None. Both studies meet ESSA Tier 1, Strong Evidence for the reading achievement outcome. The studies were well-designed and well-implemented randomized controlled trials that ***Meet WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/77453; https://ies.ed.gov/ncee/wwc/Study/86126). The studies showed statistically significant and favorable effect of the intervention on students' reading achievement. The studies' findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for

making causal inferences. The studies included large, multisite samples overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Meyer, B. J. F., Wijekumar, K. K., & Lin, Y. (2011). Individualizing a web-based structure strategy intervention for fifth graders' comprehension of nonfiction. ***Journal of Educational Psychology, 103*****(1), 140–168.**
https://www.semanticscholar.org/paper/Individualizing-a-web-based-structure-strategy-for-Meyer-Wijekumar/d903f5d05e3809ab5035c2cbd0812ebacb376b02

- **Intervention examined in the study:** Intelligent Tutoring of the Structure Strategy (ITSS)
- **Specified outcome(s) of interest:** Reading achievement
- **Specified population(s) of interest:** Elementary students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Meyer et al. (2011). ITSS is web-based tutoring system that requires little teacher input. The ITSS system has a talking animated agent, interactive flash activities, parsers, spell checking, synonym checks, Penn Treebank, Wordnet, and elaborated feedback to teach students how to use the structure strategy. ITSS was designed to include modeling of the structure strategy by an animated pedagogical agent (I.T.) who looks and speaks like a high school boy. Voice recordings from an adolescent vocalist with a warm, encouraging manner were used for the agent's speech rather than computer-generated speech. I.T. narrated essential parts of the instructional materials shown visually on the screen. A definition of structure or a new signaling word turns a contrasting color when I.T. speaks about it. For most lessons, I.T. reads the articles aloud as the students read along. Then, students reread the articles by themselves before the recall task. Students can click on the first word of any article if they want I.T. to read the text again with them. The audio component of ITSS was designed to provide needed support for poor readers by helping them to understand the instruction. ITSS presents students with modeling of the strategy, guided and independent practice, and feedback. ITSS provided student interaction with the web-based system in the form of learning activities, assessment of student responses, and immediate, elaborated feedback based on the assessment.

In this study, the individualized version of ITSS attempted to accomplish two goals: provide assistance for students who were having difficulty, and supply enrichment for students who were demonstrating good progress in using the strategy. Based on a student's performance in the current lesson, the learner-adapted instruction placed the student into an appropriate next lesson rather than following the standard sequence of lessons. In the learner-adapted version of ITSS, a student's next lesson may provide remediation by giving the student more practice with the same objectives as the previous lesson but with a new text containing similar length, structure, and readability or similar structure and easier readability. Individualized ITSS did not provide students with more time in ITSS, lessons, or texts to read than did standard ITSS. Instead, individualized ITSS better matched the practice lessons a student received to their immediate needs based on their performance in the current lesson. When individualized ITSS detected difficulties in a student's understanding during a practice lesson, in the subsequent lesson, jumps in complexity were reduced.

In standard ITSS, no adaptations occurred from the standard sequence of lessons.

Students used ITSS three times a week for 30 minutes. ITSS replaced 90 minutes a week of regularly scheduled social studies for all students in participating schools.

Who participated in the study. The study included 131 grade 5 students who were enrolled in two elementary schools in a western Pennsylvania suburban school district. About 81% of students were White, 11% were Black, 2% were Asian, and 6% were from other racial/ethnic backgrounds. Only about 10% of students received free or reduced-price lunch.

Random assignment was used to create six groups. Students were first stratified by reading comprehension ability and elementary school. Next, students were randomly assigned to two design variations (individualized and standard ITSS) and three experimenter-designed test forms.

What the study found. The study found positive, statistically significant effects of the adaptable version of ITSS favoring the treatment group on students' reading achievement as measured by the Gray Silent Reading Test.

Cost. Not available.

Caveats. The study meets ESSA Tier 3, Promising Evidence for the reading achievement outcome based on its design, setting, and sample. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/86233). However, the student sample contained fewer than 350 students. Therefore, it does not meet the ESSA Tier 1 and 2 large sample size requirements. The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study did include statistical controls for selection bias.

What Works Clearinghouse. (2016). *WWC intervention report: READ 180*. Washington, DC: Author.

https://ies.ed.gov/ncee/wwc/InterventionReport/665

- **Intervention examined in the study**: READ 180®
- **Specified outcome(s) of interest**: Reading achievement
- **Specified population(s) of interest**: Middle school students
- **Specified setting(s) of interest**: United States

Studies cited in the intervention report with relevant populations and settings

Tier 1, Strong Evidence

Swanlund, A., Dahlke, K., Tucker, N., Kleidon, B., Kregor, J., Davidson-Gibbs, D., & Hallberg, K. (2012*). Striving readers: Impact study and project evaluation report*. Naperville, IL: American Institutes for Research. https://eric.ed.gov/?id=ED595200

Tier 2, Moderate Evidence

Interactive, Inc. (2002). *An efficacy study of READ 180: A print and electronic adaptive intervention program, grades 4 and above*. Ashland, VA: Author. https://eric.ed.gov/?id=ED506775

Brief description of the intervention excerpted from the WWC Intervention report (2016). The READ 180® blended learning instructional model is 45–90 minutes long and is composed of three parts: whole-group direct instruction, small-group rotations, and whole-group wrap-up. The instruction begins with 20 minutes of whole-group direct instruction, in which the teacher provides instruction in reading, writing, vocabulary, and grammar to the entire class. This is followed by rotations of smaller groups of students through three activities:

- Small-group direct instruction, in which the teacher works closely with individual students using an interactive work text (called the Real Book). Instruction focuses on language development, comprehension, vocabulary, writing, and fluency across six workshops. Each workshop is a four- to six-week module that has distinct subject content, focus questions, anchor videos, and career focus. At the end of each workshop, students complete a career-focused, project-based learning assessment.
- Students' independent use of a computerized READ 180® Student Application that includes six components (called "zones"): Explore, which includes anchor videos with vocabulary activities; Reading, which involves close reading of individualized texts based on a student's instructional reading level; Language, which includes vocabulary building and practice; Fluency, which includes practice in spelling and reading; Writing, which includes crafting argumentative, narrative, and informative essays; and Success, which includes progressively more complex fluency and comprehension activities.
- Modeled and independent reading designed to build comprehension and accountability. Students can select from more than 100 paperbacks, eBooks, or audiobooks using a digital bookshelf or classroom materials. The instruction ends with a brief wrap-up discussion with the whole group. The goal of the READ 180® software is to continually adjust the level of instruction based on student performance.

Reports and periodic updates on student progress are intended to alert teachers to students' needs and direct them to resources for individualizing instruction. READ 180® includes professional development for teachers and leaders to evaluate and improve instruction to support students who are reading below proficiency and help them gain independence with grade-level text.

Who participated in the study. The analytic sample for the Swanlund (2012) study included 619 students from five schools in the Milwaukee Public Schools. Students in grades 6–10 were randomly assigned to treatment and comparison groups within school-by-grade blocks, controlling for special education status. Students in the comparison group attended their regular English language arts class plus a nonreading-related elective or study hall (some students did end up enrolled in reading-related activities). Among the students for whom data were available, the majority of students were eligible for free or reduced-price lunch (88%) and were African American (70%). About 36% were special education students, and 8% were English learner students. Fewer than half of the students (39%) were female.

The Interactive Inc. (2002) study took place in 18 school in four districts in Boston, Massachusetts; Columbus, Ohio; Dallas, Texas; and Houston, Texas. The study included 881 students in grades 6–8. The study was designed as a randomized controlled trial with random assignment at the student level, but students were not assigned entirely by chance. Detailed demographic data for students included in the study are not available. The comparison condition varied within and across school, with many students in the comparison group receiving other literacy interventions.

What the study found. The Swanlund et al. (2012) study found positive, statistically significant effects of READ 180 favoring the treatment group on students' reading achievement as measured by the Northwest Evaluation Association Measures of Academic Progress Reading assessment.

The Interactive Inc. (2002) study found positive, statistically significant effects of READ 180 favoring the treatment group on students' reading achievement as measured by the Stanford 9 Reading Comprehension subtest and Stanford 9 Total Reading Score.

Cost. Contact publisher. https://www.hmhco.com/programs/read-180-universal

Caveats. None. The Swanlund (2012) study meets ESSA Tier 1, Strong Evidence for the reading achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/81700). The study showed statistically significant and favorable effect of the intervention on students' reading achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

The Interactive Inc. (2002) study meets ESSA Tier 2, Promising Evidence for the reading achievement outcome. The study was conducted as a randomized controlled trial; however, not all students were assigned to the treatment condition entirely by chance. Therefore, the study was considered a quasi-experiment. The study was rated ***Meets WWC Standards with Reservations*** because it uses a quasi-experimental design in which the analytic intervention and comparison groups satisfy the baseline equivalence requirement (https://ies.ed.gov/ncee/wwc/Study/9443). The study showed a statistically significant and favorable effect of the intervention on students' reading achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that met the WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study included a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—grades K–12 students in the United States. For this evidence review, anywhere in the United States was acceptable.

Vaden-Kiernan, M., Caverly, S., Bell, N., Sullivan, K., Fong, C., & Atwood, E. (2012). *Louisiana Striving Readers: Final evaluation report.* Austin, TX: Southwest Educational Development Laboratory.
https://eric.ed.gov/?id=ED595145

- **Intervention examined in the study**: Passport Readings Journey
- **Specified outcome(s) of interest**: Reading achievement
- **Specified population(s) of interest**: Middle school students
- **Specified setting(s) of interest**: United States

Brief description of the intervention excerpted from Vaden-Kiernan et al. (2012). Passport Readings Journey is a comprehensive supplemental curriculum published by Voyager Expanded Learning, which blends targeted, teacher-led instruction with student-centered technology. The program offers four levels of instruction appropriate for middle and high school students. Passport Readings Journey uses direct, explicit instruction in comprehension, vocabulary, and word study for adolescents who struggle with reading using age-appropriate fiction and nonfiction texts. The program is delivered through 50-minute daily lessons delivered five days a week. Assessments are embedded in the curriculum to enable teachers to monitor progress and differentiate instruction. The program is formatted as a series of 15 two-week reading expeditions focused on topics related to science or social studies with optional add-ons (reteach or writing). Each week, students spend four days on lessons designed to build their fluency, vocabulary, and comprehension. They spend the fifth day online using SOLO®, an interactive online learning package. A library of Lexile-leveled books and magazines on age-appropriate topics is also provided for each classroom.

Who participated in the study. The study included 1,437 grades 6 and 7 students in 10 Title I middle schools in four districts in Louisiana. The study design involved a multisite randomized controlled trial in which students who were identified as reading Below Basic on the state reading assessment were randomly assigned to one of two groups: a treatment group in which literacy intervention teachers, who were trained in the Passport Reading Journeys program, delivered the curriculum as an add-on to students' regular core reading curriculum; or a business-as-usual comparison group in which teachers continued to deliver supplemental instruction as usual, which included a range of other services and electives available in their school, which were not focused on supplemental literacy services or courses.

The study included 1,102 students. Approximately 4% were English learner students; 88% received free or reduced-price lunch, 43% were female, 71% were Black, 5% were Not Specified, and 24% were White.

What the study found. The study found positive, statistically significant effects of Passport Readings Journey favoring the treatment group on students reading achievement as measured by the Group Reading Assessment and Diagnostic Evaluation.

Cost. Contact publisher. http://store.voyagersopris.com/passport-reading-journeys-with-updated-content

Caveats. None. The study meets ESSA Tier 1, Strong Evidence for the reading achievement outcome. The study was a well-designed and well-implemented randomized controlled trial that ***Meets WWC Standards without Reservations*** (https://ies.ed.gov/ncee/wwc/Study/81701). The study showed statistically significant and favorable effects of the intervention on students' reading achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large,

multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Spichtig, A. N., Gehsmann, J.P., Pascoe, J.P., & Ferrara, J.D. (2019). Scaffolded silent reading instruction on the reading achievement of students in grades 4 and 5. *The Elementary School Journal, 119*(3), 443–467.
https://www.journals.uchicago.edu/doi/abs/10.1086/701705?mobileUi=0&journalCode=esj[3]

- **Intervention examined in the study:** Reading Plus
- **Specified outcome(s) of interest:** Reading achievement
- **Specified population(s) of interest:** Elementary school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Spichtig et al. (2019). Reading Plus is a scaffolded silent reading program that presents students with a choice of informational and literary texts with difficulty levels that are matched to their current instructional focus. The texts are aligned with the readability and text-complexity recommendations outlined in national standards and leveled with reference to the Lexile framework and other metrics for vocabulary, sentence length, syntax, and word count. Once a student has chosen a reading selection, it is presented page by page with pauses between segments, during which students are presented with graphical scaffolds and prompts that encourage them to process what they have just read and/or to predict what might lie ahead. Text presentation differs depending on a student's instructional focus. For those with reading rates below grade-level target, efficiency development is prioritized, and nearly all text is presented using a guided window format. For students with grade-appropriate fluency, the focus is on boosting proficiency with increasingly complex text while maintaining adequate fluency and comprehension. For these students, half of each selection is presented in the guided window format and the other half as static text.

The guided window format presents each page of text using a blur filter through which the general features of the page layout can be discerned. This provides students with a concept of where they are on the page, where paragraph breaks occur, and general word shapes and boundaries—features that play an important role in organizing and integrating textual information as well as guiding the physical aspects of navigating the eyes across lines of print and planning fixations and fixation landing positions. Actual letters and words, however, can be recognized only when the text is revealed in the guided window, which moves across the lines of text at a student's individualized reading rate. The width of the guided window is approximately one-third of a line length, enabling the viewing of approximately 25 characters.

A student's comprehension score determines whether the student can increase, decrease, or maintain the speed of the guided window at the end of a lesson. At the end of each selection, students are presented with 10 comprehension questions aligned with national standards for their reading grade level. The mix of questions increases in complexity, scope, and depth as students advance to higher levels. Many questions allow students to access scaffolds such as a text excerpt or the opportunity to proactively reread a section of text. Relevant excerpts are also presented after an incorrect response, and the student is given a second chance to answer for partial credit. Students who reach a comprehension threshold of 80 percent on a consistent basis advance toward higher text levels.

Students in the treatment group were assigned to use the scaffolded silent reading component of the Reading Plus program at least four times per week during their 25-minute literacy block, with the goal of completing 100 lessons during the school year.

[3] Not available for free.

Who participated in the study. The sample included 426 students (210 grade 4 and 216 grade 5 students) in six elementary schools in an urban school district in the northeastern United States. About 50% of the sample was female, and about 49% of the sample qualified for free or reduced-price lunch. About 71% of the sample was White, 12% was Black, 9% was Asian, 8% were multiracial (two or more races), and less than 1% were Hispanic.

Students were randomly assigned to treatment and comparison conditions. Reading assessment scores and demographic factors were used to pair students. One member of each pair was randomly assigned to the treatment or comparison group, and their matched pair was assigned to the alternate condition. The business-as-usual comparison group received whatever forms of reading instruction the teachers typically provided.

What the study found. The study found statistically significant effects favoring the treatment group on students' post-test scores on the Group Reading Assessment Diagnostic Evaluation overall score and Comprehension and Vocabulary subtests.

Cost. Contact publisher. https://www.readingplus.com/

Caveats. The study meets ESSA Tier 2, Moderate Evidence for the reading achievement outcome. The study was conducted as a randomized controlled trial; however, the WWC determined that randomization was compromised. Therefore, the study was considered a quasi-experiment. The study was rated ***Meets WWC Standards with Reservations*** because it uses a quasi-experimental design in which the analytic intervention and comparison groups satisfy the baseline equivalence requirement (https://ies.ed.gov/ncee/wwc/Study/89730). The study showed statistically significant and favorable effect of the intervention on students' reading achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study included a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Borman, G. D., Park, S. J., & Min, S. (2015). ***The district-wide effectiveness of the Achieve3000 program: A quasi-experimental study.*** (Online submission to ERIC)
https://eric.ed.gov/?id=ED558845

- **Intervention examined in the study:** Achieve3000
- **Specified outcome(s) of interest:** Reading achievement
- **Specified population(s) of interest:** Elementary and middle school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Borman et al. (2015). Achieve3000 is a supplemental online literacy program that provides nonfiction reading content to students in elementary, middle, and high school grades. The intervention focuses on building phonemic awareness, phonics, fluency, reading comprehension, vocabulary, and writing skills. Achieve3000 is designed to help students advance their nonfiction reading skills by providing differentiated online instruction. Teachers use the program with an entire class, but the assignments are tailored to each student's reading ability level. For example, teachers assign an article and related activities to an entire class; the program then tailors the version of the article to each student by automatically increasing the difficulty of text when a student is ready for more challenging text. Assignments follow a five-step literacy model: (1) respond to a Before Reading Poll, (2) read an article, (3) answer activity questions, (4) respond to an After Reading Poll, and (5) answer a Thought Question. Progress reports and student usage data, provided by the online tool, enable teachers to track both whole-class and individual student progress. The intervention is designed for diverse student groups, including general education students, struggling readers in need of intensive tutoring, and English learner students.

Who participated in the study. This study examined the effects of Achieve3000 in K–8 schools in the Chula Vista school district in California. The study took place during the 2011/12 school year and included 9,527 students in grades 4–8. The study participants were 69% Hispanic, 14% Asian, 12% White, and 3% African American. About 30% of students were English learner students, and about 49% of the study participants received free or reduced-price lunch. Close to one-half (51%) of the sample was female. The treatment group included all students in the Achieve3000 program in the Chula Vista district. The comparison group consisted of students who were enrolled at other demographically similar schools in the Chula Vista district. Students in the comparison group did not have access to Achieve3000 and continued to receive English language arts instruction as usual.

What the study found. The study found positive, statistically significant effects of Achieve3000 favoring the treatment group on students' reading achievement as measured by the California Standards Test-English.

Cost. Contact publisher. https://www.achieve3000.com/

Caveats. None. The study meets ESSA Tier 2, Moderate Evidence for the reading achievement outcome. The study was a well-designed and well-implemented study that used a quasi-experimental design that ***Meets WWC Standards with Reservations*** (https://ies.ed.gov/ncee/wwc/Study/84959). The study showed a statistically significant and favorable effect of the intervention on students' reading achievement. The findings of the study were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet the WW evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study includes a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—grades K–12 students in the United States. For this evidence review, any setting in the United States was acceptable.

Kim, Y. (2013). Digital peers to help children's text comprehension and perceptions. ***Educational Technology & Society, 16*****(4) 59–70.**
https://www.researchgate.net/publication/265051543_Digital_Peers_to_Help_Children's_Text_Comprehension_and_Perceptions

- **Intervention examined in the study:** Affable Reading Tutor
- **Specified outcome(s) of interest:** Reading achievement
- **Specified population(s) of interest:** Elementary school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Kim (2013). The intervention was an online strategy lesson named Affable Reading Tutor (ART) delivered via web browsers. The curriculum was reading comprehension of science texts, combining language arts and science education. The specific content was identifying cause-and-effect relationships using questioning strategy. Questioning strategy was chosen because it was the one recommended most broadly in the literature in reading strategy instruction.

In the ART lesson, students read a story about a boy named *Ian* who set up a weekly training schedule to condition himself to run a marathon. The virtual peer *Chris* demonstrated the questioning strategy and encouraged the learners to use the strategy. Before the learners started reading, Chris explained what a cause and an effect were and how to use the questioning strategy to find the cause-and-effect relationship in sentences. During the reading, Chris demonstrated using the strategy by asking the learners questions about what they have read and also presented verbal encouragement for the learners to build a habit of questioning while reading. The learners practiced identifying causes and effects, guided by Chris's questioning. The practice problems were presented in different formats (for example, multiple-choice, short-answer, and open-ended).

Male and female peer images were designed using Curious Labs' Poser. Voices of a similar age boy and a girl were recorded and synchronized with the images. To stimulate a learner's sense of being related to the virtual peer, the talking style was matched with the target learner group's style. Facial expressions, blinking, and pointing gestures were added to make Chris look believable and natural. Students participated in the intervention for one day.

Who participated in the study. The study included 141 grade 4 and grade 5 students from one elementary school located in a mountain-west state in the United States. The author does not provide student demographic information.

Students were randomly assigned to treatment and comparison conditions. Students in the comparison condition completed a paper-based version of the lesson.

What the study found. The study showed positive, statistically significant effects of ART favoring the treatment group on students' reading achievement as measured by a paper-based, researcher-created assessment administered immediately after the lesson and one week later.

Cost. Not available.

Caveats. The study meets ESSA Tier 3, Promising Evidence standards. The study was determined not to meet WWC group design standards because the study does not establish reliability of the outcome measures (https://ies.ed.gov/ncee/wwc/Study/89743). The study did include controls for selection bias. The study showed statistically significant and favorable effect of the intervention on students' reading achievement. The study findings were not overridden by statistically significant and negative (that is,

unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences.

Proctor, C. P., Dalton, B., Uccelli, P., Biancarosa, G., Mo, E., Snow, C., & Neugebauer, S. (2011). Improving comprehension online: Effects of deep vocabulary instruction with bilingual and monolingual fifth graders. ***Reading and Writing, 24*****(5), 517–544.**[4]
https://eric.ed.gov/?id=EJ921556

- **Intervention examined in the study**. Improving Comprehension Online (ICON)
- **Specified outcome(s) of interest**. Reading achievement
- **Specified population(s) of interest**. Elementary school students
- **Specified setting(s) of interest**. United States

Brief description of the intervention excerpted from Proctor et al. (2011). ICON is an Internet-based strategic digital reading (SDR) environment. SDR was designed to promote vocabulary and reading comprehension and consisted of eight short digital texts equipped with a variety of features, including Spanish translations of all texts and directions, human read-alouds of each text in English and Spanish, English monolingual and Spanish–English bilingual pedagogical ‘‘coaches’’ who provided assistance with using the system and responding to prompts, a revisable electronic worklog that collected student responses, a multimedia glossary, and pictures illustrating the narrative and informational text content. All of these features were available to the students; however, their use was not required because students had the option of using supports as they found them necessary.

The ICON intervention consisted of two 50-minute sessions per week, for 16 weeks, in a respective school's computer lab. For all participating ICON classrooms, the intervention was integrated into the existing literacy curriculum, and thus constituted a weekly percentage of the students' literacy instructional block. Students in the ICON group received no additional literacy instructional time by participating in the intervention.

Who participated in the study. The study included four schools and 12 classrooms in three districts in a northeast metropolitan area. Schools were selected to be in the study if they had a medium to large Spanish-speaking populations. A total of 240 grade 5 students participated in the study.

Teachers were randomly assigned to treatment and comparison conditions. Teachers in the business-as-usual comparison condition continued to instruct their classes as usual, which is not described.

About 49% of sample students were Spanish–English bilingual students, and 53% of the sample students were female. The study does not include additional demographic data for students in the study.

What the study found. The study found positive, statistically significant effects of Improving Comprehension Online favoring the treatment group on students' reading achievement as measured by the Vocabulary Knowledge Test.

Cost. Not available.

Caveats. The study meets ESSA Tier 3, Promising Evidence standards. Although the study uses a quasi-experimental design, a WWC review of the study found that it does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups do not satisfy the baseline equivalence requirement (https://ies.ed.gov/ncee/wwc/Study/78759). The study did include statistical controls for selection bias. The study showed statistically significant and favorable effect of the intervention on students' mathematics achievement. The study findings were not overridden

[4] Not available for free.

by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study included a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Terrazas-Arellanes, F. E., Strycker, L. A., Walden, E. D., & Gallard, A. (2017). Teaching with technology: Applications of collaborative online learning units to improve 21st century skills for all. ***Journal of Computers in Mathematics and Science Teaching, 36*****(4), 375–386.**
https://eric.ed.gov/?id=EJ1164500[5]

- **Intervention examined in the study:** Project eText Supports for Collaborative Online Learning and Academic Reading (ESCOLAR)
- **Specified outcome(s) of interest:** Science achievement
- **Specified population(s) of interest:** Middle school students
- **Specified setting(s) of interest:** United States

Brief description of the intervention excerpted from Terrazas-Arellanes et al. (2017). Interactive online middle school science units designed for this project were aligned with national standards for science instruction (that is, Next Generation Science Standards [NGSS]) in grade 6. Four units were tested in the present study. Treatment group students completed the life science unit Knowing My Body and the Earth and space science unit Our Place in the Universe.

Units are divided into multiple stages that operate like chapters in a book, and each stage is organized by lessons. Lessons were designed to activate students' current knowledge, provide activities and reading content to promote new knowledge, and develop scientific thinking skills. Although instruction is guided by teachers, students can determine their learning pace while interacting with the website and completing activities alone or in groups of two to four students, sharing a computer when resources are limited.

Teacher resources were developed for each unit to facilitate implementation, including tables showing how each unit's content aligns with NGSS and Common Core State Standards, detailed lesson plans, ideas for scaffolding activities onto background knowledge, and student assessment reports. In addition, an online professional development course was designed to prepare teachers to implement units in their classrooms, using the structure of the student curriculum to expose teachers to the content and flow of the units as students experience them. Each year, prior to classroom implementation of the units, treatment group teachers attended face-to-face one-day workshops led by project staff using the online professional development course to prepare teachers to teach their district's standard science content using the project's online materials instead of their science textbooks.

Who participated in the study. A total of 28 teachers and 1,451 grade 6 students participated in the study. About 12% were students with disabilities, and 50% were female. About 58% were White, 19% were Black, 11% were Hispanic, and 12% were from other racial/ethnic backgrounds.[6]

Schools within each district were randomly assigned to either the treatment or control condition. Control group teachers continued to conduct business-as-usual, using the many types of curricula, textbooks, school technology, and/or physical or online resources normally used to teach the same concepts and standards addressed by treatment group teachers with the project's online materials.

What the study found. The study found a statistically significant effect of the program favoring the treatment group on students' science achievement as measured by researcher-developed end-of-unit tests.

Cost. Not available.

[5] Not available for free.
[6] Demographics are presented for all students originally identified for the study, not for the 1,451 students included in the analytic sample.

Caveats. The study meets ESSA Tier 3, Promising Evidence standards. The study was determined not to meet WWC group design standards because the study includes only outcomes for the measures were collected differently for students in the intervention and comparison groups (https://ies.ed.gov/ncee/wwc/Study/89720). The assessments were developed by the researchers. The study did include statistical controls for selection bias. The study showed statistically significant and favorable effect of the intervention on students' science achievement. The study findings were not overridden by statistically significant and negative (that is, unfavorable) evidence on the intervention from findings in studies that meet WWC evidence standards with or without reservations or are the equivalent quality for making causal inferences. The study included a large, multisite sample overlapping with the specified population and settings proposed to receive the intervention—students in grades K–12 in the United States. For this evidence review, anywhere in the United States was acceptable.

Appendix C. Evidence review template for WWC standards

Template for using WWC standards to assess the level of evidence provided by a study or report
(Version 2.1, 13 February 2017—for use by WWC-certified reviewers)

Studies for which the ESSA tier ratings are not finalized do not have a final evidence level rating in the templates in appendix C (that is, the box at the end of the template does not have a check mark in a rating category).

Chung, G. K. W. K., Choi, K., Baker, E., & Cai, L. (2014). *The effects of math video games on learning: A randomized evaluation study with innovative impact estimation techniques*. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing, University of California at Los Angeles.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of math video games on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]		statistically significant and positive effect of the intervention on mathematics achievement. The finding is not overridden by unfavorable results.
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 3.0 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

Mark the highest level of evidence provided by this study or report for the intervention or practice of interest:

☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")**

☐ ***Promising Evidence*** **(1 through 4 must be "Yes")**

☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")**

☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**

NOTES

[1]***(requirements 4, 7, and 10)*** To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]***(requirements 5[c] and 8[c])*** To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]***(requirements 5[c][iii] and 8[c][iii])*** *Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Wiburg, K., Chamberlin, B., Valdez, A., Trujillo, K., & Stanford, T. B. (2016). Impact of Math Snacks games on students' conceptual understanding. *Journal of Computers in Mathematics and Science Teaching 35*(2), 173–193.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Math Snacks on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses an experimental design eligible for the highest WWC rating, and it reports a statistically significant and positive effect of the intervention on at least one relevant outcome.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study uses a randomized controlled trial design, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement. The finding is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 4.1 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Wang, H., & Woodworth, K. (2011). *Evaluation of Rocketship Education's use of DreamBox Learning's online mathematics program*. Menlo Park, CA: SRI International.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of DreamBox Learning on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement. The findings are not overridden by any unfavorable results.
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]		on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 2.1 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Heppen, J. B. Walters, K., Clements, M., Faria, A., Tobey, C., Sorensen, N., & Culp, K. (2012). *Access to Algebra I: The effects of online mathematics for grade 8 students* (NCEE 2012–4021). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study includes at least one outcome that is of interest (mathematics achievement) to the stakeholder and included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study includes an intervention (Class.com Algebra I, an online Algebra I course) that is designed to affect students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement. The finding is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 2.1 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Roschelle, J., Shechtman, N., Tatar, D. G., & Hegedus, S. (2010). Integration of technology, curriculum, and professional development for advancing middle school mathematics: Three large-scale studies. *American Educational Research Journal, 47*(4), 833–878.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of SimCalc on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement. The findings are not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 2.1 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Bottge, B. A., Ma, X., Gassaway, L., Toland, M. D., Butler, M., & Cho, S. (2014). Effects of blended instructional models on math performance. *Exceptional Children, 80*(4), 423–437.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Enhanced Anchored Instruction on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses a randomized controlled trial design and reports a statistically significant and positive impact of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards with Reservations* by the WWC using version 4.0 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study meets ESSA Tier 2, Moderate Evidence for the mathematics achievement outcome. The study meets WWC standards with reservations because it is a cluster randomized controlled trial with low cluster-level attrition that provides evidence of effects on clusters by demonstrating that the analytic sample of individuals is representative of the clusters. The study included a large, multisite sample, including students in elementary and middle schools in the United States.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☒ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Roschelle, J., Feng, M., Murphy, R. F., & Mason, C. A. (2016). Online mathematics homework increases student achievement. *AERA Open, 2*(4), 1–12.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of ASSISTments on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement. The finding is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 3.0 standards, the study reports a statistically significant and positive effect of the intervention on mathematics achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Lynch, K., & Kim, J. S. (2017). Effects of a summer mathematics intervention for low-income children: A randomized experiment. *Educational Evaluation and Policy Analysis, 39*(1), 31–53.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on mathematics achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of TenMarks on students' mathematics achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses a randomized controlled trial design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on mathematics achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study was reviewed by the What Works Clearinghouse and determined not to meet group design standards due to high attrition and lack of baseline equivalence between the intervention and comparison groups. The study did not include at least 350 students. Therefore, it does not meet the large sample size requirement. The study does include statistical controls for selection bias.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☐ Yes ☐ No	
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☐ No	
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☒ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

What Works Clearinghouse. (2020). *Intervention report: Web-based Intelligent Tutoring for the Structure Strategy (ITSS)*. Washington, DC: Author.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The intervention report reports on studies that investigate the effect of ITSS on students' reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The intervention report reports on studies that investigate the effect of ITSS on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The intervention report reports a "positive" effect of the intervention on a relevant outcome.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The findings are not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The intervention report, prepared using Version 4.0 of the *Handbook,* reports a "positive" effect of the intervention on a relevant outcome based on a "medium to large" extent of evidence.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant findings are based on samples that overlap with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The intervention report includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The intervention report, prepared using Version 4.0 of the *Handbook,* reports a "positive" effect of the intervention on a relevant outcome based on a "medium to large" extent of evidence.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The studies included in the intervention report show statistically significant and positive effects of the intervention on reading achievement, and the studies included a large, multisite sample.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The findings are not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest:		
☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")**		
☐ ***Promising Evidence*** **(1 through 4 must be "Yes")**		
☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")**		
☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Meyer, B. J. F., Wijekumar, K. K., & Lin, Y. (2011). Individualizing a web-based structure strategy intervention for fifth graders' comprehension of nonfiction. *Journal of Educational Psychology, 103*(1), 140–168.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Intelligent Tutoring of the Structure Strategy on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses a randomized controlled trial design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study was determined to Meet WWC Standards without Reservations using version 4.0 of the standards. Although the study used a randomized controlled trial design, it did not include at least 350 students. Therefore, it does not meet the large sample size requirement. The study does include statistical controls for selection bias.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☐ Yes ☐ No	
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☐ No	
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☒ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

What Works Clearinghouse. (2016). *WWC intervention report: READ 180*. Washington, DC: Author.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The report investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The report describes studies investigating the impact of READ 180 on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The intervention report reports a "positive effect" of the intervention on students' reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The findings in the intervention report are not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The intervention report reports a "positive effect" of the intervention using Version 3.0 of the WWC *Handbook* on a relevant outcome based on a "medium to large" extent of evidence.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant findings are based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The findings in the intervention report are not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The intervention report reports a "positive effect" of the intervention using Version 3.0 of the WWC *Handbook* on a relevant outcome based on a "medium to large" extent of evidence. The reported studies demonstrated statistically significant and positive effects of the intervention on reading achievement, and the studies included large, multisite samples.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant findings are based on samples that overlap with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The findings in the intervention report are not overridden by unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Vaden-Kiernan, M., Caverly, S., Bell, N., Sullivan, K., Fong, C., & Atwood, E. (2012). *Louisiana Striving Readers: Final evaluation report*. Austin, TX: Southwest Educational Development Laboratory.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Passport Reading Journeys on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards without reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards without Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on reading achievement. The finding is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on reading achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards without Reservations* by the WWC using version 3.0 standards, the study reports a statistically significant and positive effect of the intervention on reading achievement, and the study included a large, multisite sample.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☒ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

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[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Spichtig, A. N., Gehsmann, K.M., Pascoe, J.P. & Ferrara, J.D. (2019). Scaffolded silent reading instruction on the reading achievement of students in grades 4 and 5. *The Elementary School Journal, 119*(3), 443–467.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Reading Plus on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses an experimental design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards with Reservations* by the WWC using version 4.0 of the standards, the study reports a statistically significant and positive effect of the intervention on reading achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study was determined to Meet What Works Clearinghouse Standards with Reservations using version 4.0 of the standards.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☒ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

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[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Borman, G. D., Park, S. J., & Min, S. (2015). *The district-wide effectiveness of the Achieve3000 program: A quasi-experimental study*. (Online submission to ERIC)

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Achieve3000 on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study was rated as meeting WWC evidence standards with reservations by the WWC, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study was rated *Meets What Works Clearinghouse Standards with Reservations* by the WWC, and the study reports a statistically significant and positive effect of the intervention on reading achievement. The finding is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☒ Yes ☐ No	The study was rated as *Meets What Works Clearinghouse Standards with Reservations* by the WWC, the study reports a statistically significant and positive effect of the intervention on reading achievement, and the study included a large, multisite sample.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☒ Yes ☐ No	The relevant finding is based on a sample that overlaps with the target population and education setting specified by the stakeholder.
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	The study includes at least one relevant finding that remains and is not overridden by any unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study meets ESSA Tier 2, Moderate Evidence for the literacy achievement outcome. The study used a quasi-experimental design and meets WWC evidence standards with reservations for the reading achievement outcome. The study included a large, multisite sample, including students in elementary and middle schools in the United States.
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☐ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☒ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Kim, Y. (2013). Digital peers to help children's text comprehension and perceptions. *Educational Technology & Society, 16*(4) 59–70.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Affable Reading Tutor on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses a randomized controlled trial design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study was determined not to meet WWC group design standards because the study does not establish reliability of the outcome measure. In addition, the study did not include at least 350 students. Therefore, it does not meet the large sample size requirement. The study does include statistical controls for selection bias.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☐ Yes ☐ No	
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☐ No	
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☒ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Proctor, C. P., Dalton, B., Uccelli, P., Biancarosa, G., Mo, E., Snow, C., & Neugebauer, S. (2011). Improving comprehension online: Effects of deep vocabulary instruction with bilingual and monolingual fifth graders. *Reading and Writing, 24*(5), 517–544.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Improving Comprehension Online on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses a randomized controlled trial design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study meets ESSA Tier 3, Promising Evidence standards. Although the study uses a quasi-experimental design, a WWC review of the study found that it does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups do not satisfy the baseline equivalence requirement. The study does include statistical controls for selection bias.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☐ Yes ☐ No	
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☐ No	
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☒ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

NOTES

[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

[3]*(requirements 5[c][iii] and 8[c][iii]) Large sample* means at least 350 individuals in the analytic sample for a relevant finding satisfying the preceding requirements. For cluster design studies, note in the justification the number of clusters—such as schools, teachers, or classrooms—and the total number of individuals included in a relevant finding (guidance released by ED in September 2016 recommended that there be at least 50 clusters, and 500 individuals in a relevant finding from such a study). *Multi-site* sample includes more than one state, school district, or locality (where "locality" can refer to a county, city, or postsecondary campus). "Yes" can be checked if the study under review plus another study identified for review at the same time and on the *same* intervention or practice *together* satisfy the large sample requirement and the multi-site sample requirement, *provided* each study under review also satisfies the *preceding* requirements on the checklist (that is, 1-5[c][ii], or 1-8[c][ii]). If an additional study is needed to satisfy the large sample requirement or the multi-site sample requirement, and that study was also identified for review on the *same* intervention or practice, include in your justifications cross-references to the review numbers for the related studies.

Terrazas-Arellanes, F. E., Strycker, L. A., Walden, E. D., & Gallard, A. (2017). Teaching with technology: Applications of collaborative online learning units to improve 21st century skills for all. *Journal of Computers in Mathematics and Science Teaching, 36*(4), 375–386.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
1. Does the study or report include at least one outcome of interest to the stakeholder, and that is included in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the effect of the intervention on reading achievement. This is included in a theory of action.
2. Does the study or report include an intervention or practice of interest to the stakeholder or that is designed to affect an outcome in (1), and that is shown in a theory of action (i.e., logic model) prepared by, or provided for, the stakeholder?	☒ Yes ☐ No	The study investigates the impact of Project eText Supports for Collaborative Online Learning and Academic Reading on students' reading achievement.
3. Is the study or report one of the following: a. a practice guide prepared by the WWC reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1); or c. a study or report investigating the impact of an intervention or practice in (2) on a relevant outcome in (1) that i. uses *either* an experimental design eligible for the highest WWC rating (i.e., a randomized controlled trial [RCT], regression discontinuity design [RDD], or single-case design [SCD]), *or* a quasi-experimental design[QED], *or* a correlational design comparing outcomes for an intervention group and a comparison group and using statistical controls for selection bias; and ii. reports a statistically significant and positive (i.e., favorable) impact of the intervention in (2) on at least one relevant outcome in (1)?	☒ Yes ☐ No	The study uses an experimental design eligible for the highest WWC rating, and the study reports a statistically significant and positive effect of the intervention on reading achievement.
4. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified at the same time for review on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (3) that remains and is not overridden by any unfavorable results?[1]	☒ Yes ☐ No	There is at least one relevant finding that is not overridden by unfavorable results.

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
5. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "moderate" evidence base or a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "potentially positive" effect or a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; or c. an experimental [RCT, RDD, or SCD] study or quasi-experimental design [QED] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your *own* study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards with Reservations or Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☒ No	The study was determined not to meet WWC group design standards because the study only includes outcomes for which the measures were collected differently for students in the intervention and comparison conditions. The study did include statistical controls for bias in the outcomes analyses.
6. Is at least one relevant finding or practice recommendation satisfying (5) based on a sample that overlaps with a target population or an education setting specified by the stakeholder?	☐ Yes ☐ No	
7. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (6) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	

REQUIREMENTS (answer each question until an answer is "No")	CHECKLIST	JUSTIFICATION
8. Is the study or report one of the following: a. a practice guide prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "strong" evidence base for a recommendation on a practice in (2); or b. an intervention report prepared by the WWC using Version 2.1 or higher of the WWC *Handbook* reporting a "positive" effect of an intervention in (2) on a relevant outcome in (1) based on a "medium to large" extent of evidence; *or* c. an experimental [RCT, RDD, or SCD] study investigating the impact of an intervention in (2) on a relevant outcome in (1) with—on the basis of a review reported on the WWC website and prepared under Version 2.1 or higher of the WWC *Handbook*, or on the basis of your own study review using Version 3.0 of the WWC *Handbook*[2]— i. at least one relevant finding that *Meets What Works Clearinghouse Standards without Reservations;* and ii. at least one relevant finding in (5)(c)(i) that is statistically significant and positive (i.e., favorable) after applying any corrections specified in the WWC *Handbook*; and iii. at least one relevant finding in (5)(c)(ii) that is from a large sample and a multi-site sample?[3]	☐ Yes ☐ No	
9. Is at least one of relevant finding or practice recommendation satisfying (8) based on a sample that that overlaps with a target population and an education setting specified by the stakeholder?	☐ Yes ☐ No	
10. Taking into account any statistically significant and negative (i.e., unfavorable) impacts of the intervention or practice in (2) on relevant outcomes in (1)—either in the study or report itself, or in another study or report identified for review at the same time on the *same* intervention or practice, or in a WWC report prepared under Version 2.1 or higher of the WWC *Handbook* on the intervention or practice in (2)—is there at least one relevant finding or practice recommendation identified in (9) that remains and is not overridden by any unfavorable results?[1]	☐ Yes ☐ No	
Mark the highest level of evidence provided by this study or report for the intervention or practice of interest: ☐ ***Demonstrates a Rationale*** **(1 and 2 must be "Yes")** ☒ ***Promising Evidence*** **(1 through 4 must be "Yes")** ☐ ***Moderate Evidence*** **(1 through 7 must be "Yes")** ☐ ***Strong Evidence*** **(1 through 10 must be "Yes")**		

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[1]*(requirements 4, 7, and 10)* To see whether any favorable findings of a study or report are overridden by statistically significant and unfavorable findings, consult, in addition to the study or studies or report(s) identified for review, the WWC reviews reported at https://ies.ed.gov/ncee/wwc/FWW, https://ies.ed.gov/ncee/wwc/Publication, and https://ies.ed.gov/ncee/wwc/ReviewedStudies. Focus only on outcomes relevant to the stakeholder. Unless otherwise specified for the purpose of the review, assume the following: If the number of relevant outcomes with statistically significant and *favorable* impacts reviewed and confirmed by you or reported by the WWC is *greater than or equal to* the number of relevant outcomes with statistically significant and *unfavorable* impacts, then the favorable result from the study or report identified for review is *not* overridden. Note in your justification the source of any information on possibly overriding findings: either reported findings from the study itself and any related study identified for review at the same time and on the *same* intervention or practice (for requirement 4); or a review using WWC standards to assess the study and any related study identified for review at the same time on the *same* intervention or practice (for requirements 7 and 10); or a systematic review of evidence reported by the WWC for the *same* intervention or practice (for requirements 4, 7, and 10).

[2]*(requirements 5[c] and 8[c])* To examine whether a single study's relevant findings have been reviewed previously under Version 2.1 or higher of the WWC *Handbook*, consult https://ies.ed.gov/ncee/wwc/ReviewedStudies. If a new assessment using WWC standards is required for a specific study finding, complete a Study Review Guide (SRG) using the most recent WWC *Handbook* (Version 3.0), *Reviewer Guidance*, and *Review of Individual Studies Protocol* available at https://ies.ed.gov/ncee/wwc/Handbooks. Note in your justification which conclusions are based on your own study review, as opposed to information reported on the WWC website for a single study review.

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